Research report

Farm and herd factors influencing antibiotics use on Dutch dairy farms

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Summary

The amount of used antibiotics is a large problem concerning human health. More and more resistance has occurred during the last years. The Dutch government has announced lowering of used antibiotics in the Netherlands has to be reached.
The amount of used antibiotics can be described in several ways. One of these is the daily dosage per animal per year meaning the amount of days a animal is under effective treatment of antibiotics. With this daily dosage, comparisons between farms or even between sectors can be made.
In this report a relation is searched between farm facts and the amount of used antibiotics. The daily dosage of 57 farmers is calculated and a questionnaire is done to purchase farm information. The topics about farm information in this report were; farm size, intensiveness of the farm, health of the cows and farmer information. Next to that social questions are asked about opinions of the farmers, these are not used for analyzing relations with the amount of used antibiotics. Answers of the technical part of the questionnaire are filed into one data file and calculations are made for a better comparability between farms. Technical data about the farms are correlated with daily dosages to get some first directions between the variables. After the results from the correlations were known, regressions between independent variables the farm facts and the dependent variables the daily dosages are made. Daily dosages is split up in daily dosage total, daily dosage used for mastitis, daily dosage used for dry off and daily dosage other. The results were that there are seems to be farm facts which have influence on the amount of daily dosages on a dairy farm in the Netherlands. More research has to be done for more detailed relations and to analyze the relation between social data and the amount of used antibiotics.

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1.1 Introduction

Antibiotics became a part of the therapeutic arsenal in veterinary medicine about 50 years ago. The antibiotics are used for treating and preventing all kind of animals diseases of bacteriological origin. (Dernburg *et al.,* 2007)

Over the last years the amount of used antibiotics is dramatically increased. Between the years 1999 and 2007 the amount of used antibiotics at precept of a veterinarian in terms of grams per kg live weight is doubled. Since 2008 there is a small decrease, but still much more antibiotics are used then in the past. (Mevius *et al.,* 2010)

A problem which is occurred during the years is resistance against antibiotics. Resistance to antimicrobial substances among many bacterial species that are either pathogenic or commensally to food-producing animals and people. (Dernburg *et al.,* 2007). This resistance has caused problems in human health and is more and more an much-discussed topic.

The Netherlands is leading for years an antibiotic policy in the humane health care, with the goal to control the resistance as much as possible. During years more and more indications have occurred that the transfer of resistant bacteria take place from animals to animal keepers. By that it seems to be essential to take measures in the livestock sector to lead to a more justified antibiotic use, a decrease of resistance and prevent the transfer from animal to human. This is important for animal and human health. (Verburg, 2007)

The resistance of antibiotics has caused a lot of pressure in the different livestock sectors, (also the dairy livestock) and it takes care of that the sector has to be reserved and operate transparent with the use of antibiotics. Control of antibiotic use is a very important goal of the government as well of the LTO. For that the convention “Antibiotica resistentie Dierhouderij” is arranged in 2008 between the government and business. A basis of that convenant is a treatment plan for each farm, composed by the veterinarian and farmer together. (MinLNV, 2008)

In 2010 the ministry of agricultural has announced that in 2011 the amount of used antibiotics should be reduced with 20% in comparison with 2009. This will be a first reduction step. Finally this should result in a lowering of 50% in 3 years of time. Then the same level of antibiotic use is reached as in 1999. When the sectors itself does not reach this or can not find a way to reach this goal, the government will handle more concrete steps. (Verburg, 2010)

To reach this goals, the sector has started some projects. One of these project is the project “Efficient en transparent medicine use”.

In the project “Efficiënt en transparant medicijnengebruik” there is observed the medicine use per dairy cow farm and tried to aim to uniformity in registration of the used medicines since 2008. The amount of the total used antibiotics per farm is expressed in “daily dosages”. Between the farms are already found large differences in daily dosages per animal per year.

In this report we will focus on the difference in antibiotic use per farmer. When that is known, it could be more easy to lower the antibiotic use, or at least know where the differences did occur. This project is aimed on dairy cow farms.

1.2 Problem definition

In the Netherlands is used too much antibiotics. A decrease is necessary, according to the wishes of the government. How this decrease has to be reached is not known yet. Also the reasons for variation between farms in antibiotic use is not known. This has to be researched.

1.3 Research objective

The objective of this research is to determine farm facts and personal ways of thinking which influence the causes in variations in the amount of used antibiotics. With information about variation in relation to the amount of used daily dosages antibiotics there can be seen what type of farms have the skills to use a low amount of daily dosages antibiotics, and which type of farms have a high use of daily dosages antibiotics. With that information high users of antibiotics can try to develop their farms in a way that they have also the possibility to lower their antibiotic use.

1.4 Research questions

Main question

Are there technical fact which have influence on the total daily dosage antibiotic use on Dutch dairy cow farms?

Sub questions

The sub questions can be split up in 3 parts. The first part is to write the literature review. These questions have to be answered to know the current situation in the dairy sector. The second part is about the technical and social questions. This questions will be used for the descriptive results as well as for the statistical results. The last part is about the rest of the social data. Of the last part only descriptive results will be written down in this report.

- *What is the current situation of antibiotic use in the Netherlands?*
- *What problems have occurred due to the use of antibiotics?*
- *What are the future demands about the use of antibiotics?*
- *What is known about the relation between farm facts and the use of antibiotics?*

- *What are the results of daily dosages antibiotics on the farms?*
- *What are the technical results on the farms?*
- *Does the size of a farm have influence of the daily dosage of antibiotic use?*
- *Do the health facts have influence on the daily dosage of antibiotic use?*
- *Do farmers facts have influence on the daily dosage of antibiotics?*
- *Do the reasons for the antibiotics which are given have influence on the total used daily dosages antibiotics?*

- *How do the farmers think about their relation with their veterinarian practice?*
- *How do the farmers think about their antibiotic usage?*
- *How do the farmers think about the environment and consumers?*
- *How do the farmers think about other peoples opinions?*
- *How is the registration of the farmers?*

1.5 Hypothesis

The overall hypothesis of this research is: There are farm and herd factors influencing antibiotics use on Dutch dairy farms

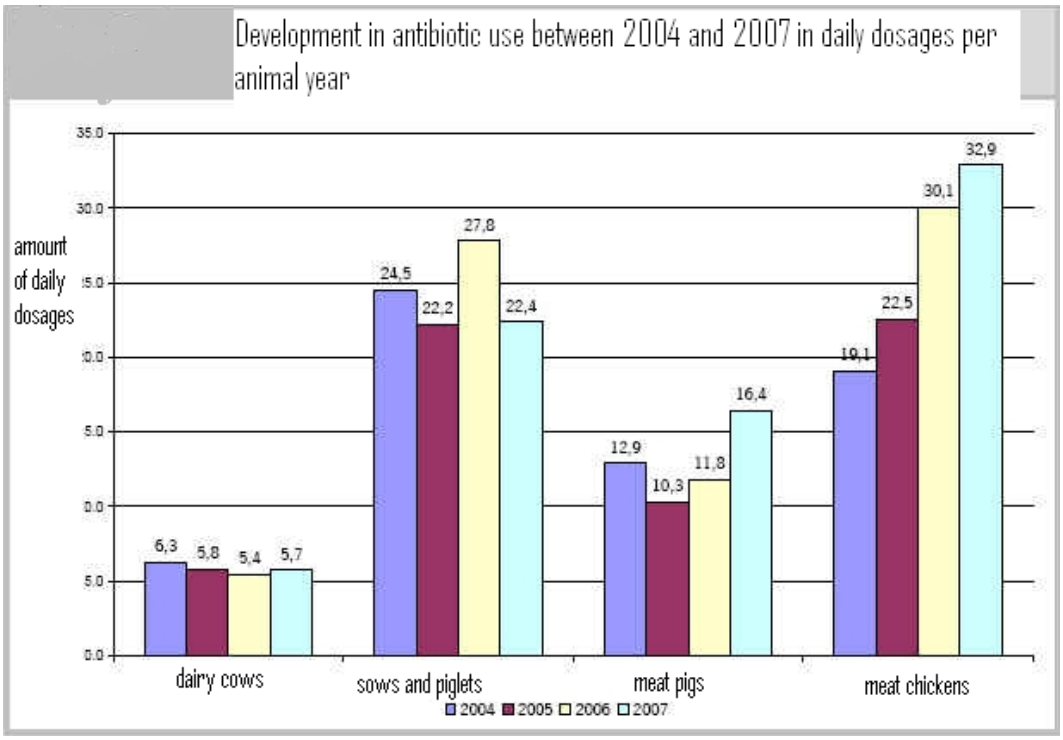
2. Literature review

2.1 Medicine and antibiotic use last years

Use of medicines in animal husbandry can cause risks for human safety, environment, food safety, animal health and animal welfare. The use of antibiotics can lead to resistance on bacteria. In the Netherlands the government will prevent more resistance development from bacteria against antibiotics. *(Bondt et al., 2009)*

The trends about the total sold antibiotics in the Netherlands are as follow; the total use of antibiotics on prescription of a veterinarian expressed in grams per kg live weight is doubled in 2007 compared to 1999 but decreased in 2008. Recent amounts showed a small decrease again in 2009. In this period between 1999 and 2006 the antimicrobial growth promoters are partly forbidden and later on forbidden at all.

The dairy cattle companies in the Netherlands have a yearly variation with an increase since 2006.



(table 2a from LEI institute)

Table 2a shows the different species animals and their antibiotic use in the Netherlands between 2004 and 2007. As can seen the dairy cows use less antibiotics than other animal species. As explained before there is some variation between years in the antibiotic use.

Some European countries of which data about total veterinarian antibiotics is available show that the amount of antibiotics expressed in grams per kg live weight in 2008 is almost the same as in 2007. A decrease of more than 5% is showed in Norway, France and the Netherlands. *(Mevius et al., 2010)*

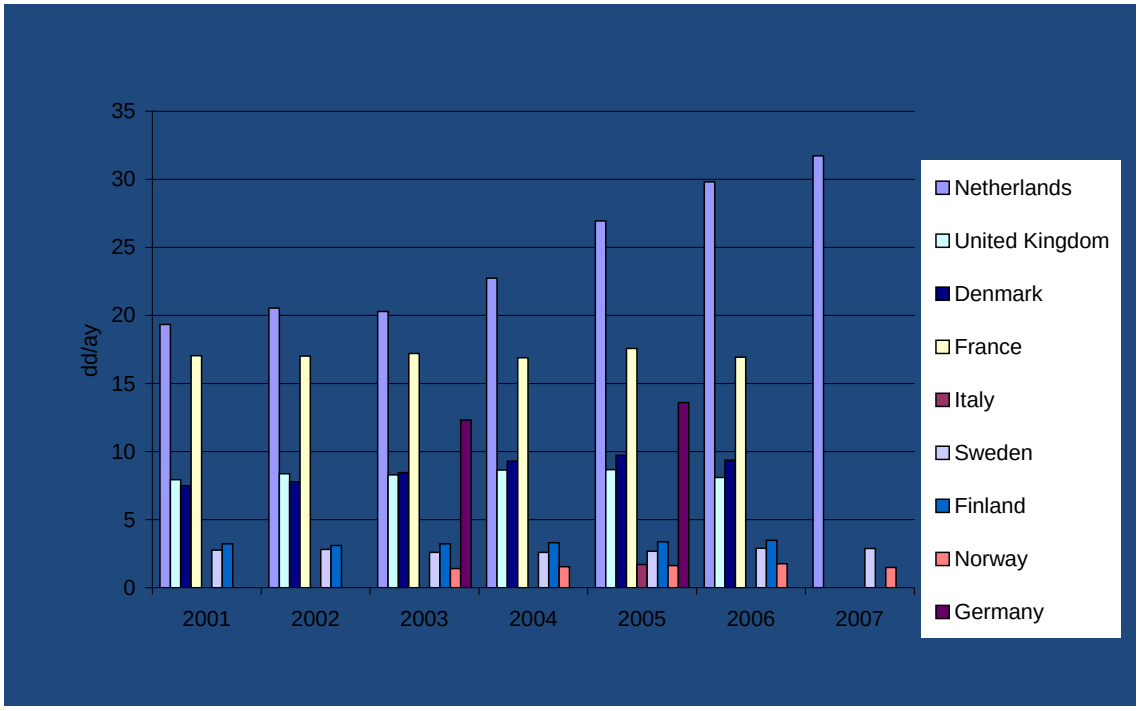


Table 2b; the use of daily dosages antibiotics of the Netherlands and some other countries between 2001 and 2007. (table from LEI institute)

2.2 Different types of antibiotics and therapeutic targets

Antibiotics are invented by Alexander Fleming in 1928. He produced a substance by a penicillium mould which had a antibacterial working and called it penicillin. In 1935 sulfanilamide is detect, a chemical stew which also disputes bacteria. It takes until after the 2nd world war before penicillin could be produced on large scale.

Nowadays about 6000 different kinds of antibiotics are known, of which 250 can be used for people and of which 100 are registered in the Netherlands.

The working mechanisms of antibiotics can work on 4 different ways.

- Inhibition of the synthese of the cell-wall (Betalactam antibiotics, vancomycine, bacitracine);
- Damaging of the cellmembrame (polymyxines, polyenen);
- Interfere in the function of the nucliene acid as part of the chomosomale DNA(nitroimidazolen, nitrofuranen, quinolonen, rifampicine) of the intermediaire nucleïneacid metabolism (sulfonamiden, trimethoprim);
- Inhibition of the protiensynthese by influence of the ribosome (aminoglycosiden, fenicolen, lincosamiden, macroliden, streptograminen, pleuromutilinen, tetracyclinen). *(Mevius, 2008)*

Several types of antimicrobials are commonly used in food animals *(Mitchell et al., 1998).* Antimicrobial classes include beta-lactams (e.g., penicillin, ampicillin, and cephalosporin), tetracyclines (e.g., oxytetracycline, tetracycline, and chlortetracycline), aminoglycosides (e.g., streptomycin, neomycin, and gentamycin), macrolides (e.g., erythromycin), lincosamides (e.g. lincomycin and pirlimycin), and sulfonamides (e.g., sulfamethazine and others) *(Mitchell et al., 1998; Hoeben et al., 1998).*

Antimicrobial drugs are used on dairy farms curative and preventive. Clinical disease has been reported as the primary indicator for initiating therapeutic antimicrobial treatment on dairies *(Friedman et al., 2007).* Common clinical diseases on dairies include respiratory disease and diarrhea in replacement animals *(Zwald et al., 2004)* and mastitis, reproductive tract infections, lameness, pneumonia, and diarrhea in adult dairy cows *(United States Department of Agriculture, 1996).* Annually, respiratory disease and diarrhea in calves have been reported on 58–88% and 66–100% of United States dairy operations, respectively (*Sawant et al., 2005*) and *(United States Department of Agriculture, 2005).* In adult cows, dairy operations most frequently reported mastitis, lameness or metritis, which were reported by 85–100%, 60–100% and 53–79% of operations in a one-year period. (*Sawant et al., 2005*) and*(United States Department of Agriculture, 2005).* Respiratory disease and diarrhea in adult cows were reported less frequently, affecting cows on 24–50% and 12–43% of dairy operations annually. *(Sawant et al., 2005)* and
(United States Department of Agriculture, 2005)

One of the largest uses of preventive antibiotics in dairy production may be for “dry cow” treatment. This practice involves a long-acting intramammary antibiotic infusion given to cows between lactation cycles with the intention of treating existing infections and preventing new infections *(Dodd and Booth, 2000; USDA, 2003b).*

2.3 Antibiotic resistance

Resistance against antibiotics can be defined as the characteristic that a micro-organism (bacteria, virus or parasite) is less sensitive or insensitive for the working of a medicine. In this report we will focus on the resistance of bacteria against antibiotics.

Because every antibiotic has a specific apply point against bacteria the bacteria can also very easy avert against the working of the antibiotics by changing the apply point. This could have the consequence that the antibiotics can not attack the bacteria and resistance has occurred. Resistance can be separated in 2 ways, a natural or purchased resistance. Natural resistance is that a certain bacteria specie can not be killed or restrained by a certain kind of antibiotics. This occurs by the specific and heritable characteristics of the bacteria. Purchased resistance occurs by changes of the heritable characteristics of a bacteria. This can happen by mutations in the DNA whereby proteins which are produced on a basis of the DNA, are changing. Also heritable resistance can occur by the insertion of different DNA from other bacteria or the combinations of this.

In the intensive animal husbandry play the same factors a rule in the origin and spreading of resistance as by human. But the circumstances are not that easy to compare with. This has as reason that an individual animal has an other position in the population on an animal farm

than a human in a hospital. Infection prevention measurements like hygiene and isolation have an other dimension. An animal is part of a herd and within intensive exchange of bacteria by direct or indirect contact by faeces or other particles on the farms. This is also the case in antibiotic use. A lot of antibiotic use is done by herd treatments.

The fast evolution of the resistance of antibiotics is on one side determined by the use of antibiotics and on the other side by the tools antibiotics have to change quick and efficient to changed circumstances. The most dependent environment pressure is the selection pressure of antibiotics. The character extend of the selection pressure will be determined by factors like the characteristics of the used antibiotic, the dosage and the infliction method. The specific bacteria characteristics as written down before are the mechanisms which are involved in the spreading of (multi) resistance.
The chance on a fast revolution will be strongly influenced by the amount of bacteria. In the human medical science the most important places were this circumstances are available hospital units with patients which have an intensive treatment, for example intensive care units. In the animal husbandry are this the stables with large amounts of animals.

Because the same antibiotics are used for animals as for human, or almost the same this has lead to decennia long discussions about human health risks. The risks can be separated in directs risks an indirect risks. With direct risks there can be spoken about zoonotic food pathogens which become resistant by the use of antibiotics. This are bacteria which are available in the intestine composition of animals and which can make people ill by eating infected food. An example of this can be Salmonella. Indirect risks by the use of antibiotics can occur when in animals resistant genes are available which are hereditary. The relation with problems in the health care as result of the hereditary of those resistant genes are very complex and depend of a lot of factors. A role pretend that if animal products are infected with stems which occurs genes, the extend in which those stems each selves can establish in the intestines of humans and assign their genes on the intestines of a human. It can happen that humans which are carrier of these resistance stems or the specific gen will be admitted in a take care organization or hospital. After that those resistant bacteria have to cause a disease or take over their genes on specific hospital bacteria. All these processes will be influenced by a large amount of factors which have nothing to do with the animal husbandry. Although this is very complex and the consequences are dependent from a lot of factors, the final impact for human health can be much bigger than those of the resistant food pathogens. *(Mevius, 2008)*

2.4 Lowering of antibiotics in the Netherlands

From the ministry of Agricultural there is next to a ban on couple treatment with fluorquinolonen in the poultry sector also a demand for more limitation from the use of antimicrobial medicines. In 2011 a reduction of 20% regarding 2007 has to be reached.
2 Years after that, in 2013 just 50% of the antibiotics are allowed to use regarding to amount of used antibiotics in 2009. To reach this goals certain measurements have to be taken. In the beginning of 2010 the ministry of agricultural have asked the advisory committee animal husbandry to come in 2010 with concrete and clear motions to reach these lowering. Of large importance is it that the use of medicines has to be clear and transparent. *(knmvd, minlnv 2010)*
The researches done in the last view years were most about the poultry and pig sector. Less is known about the dairy sector in the Netherlands. The Maran report of 2007 showed an average antibiotics use of 5,7 daily dosages per animal per year, in 2008 this was 6,6 daily dosages per animal per year. This amounts are calculated with the so called "steekproefbedrijven" (randomly chosen farms in the Netherlands) . *(CVI, Knmvd 2010)*
There is still need for efficient and transparent data.

2.5 Daily dosage of antibiotics

The organization of pharmacy and importers of animal medicines in the Netherlands (FIDIN) keeps up the data since 1998 about the amount of kilogram's active stew used antibiotics sold by pharmacies which are connected by FIDIN. The selling amounts give a good impression about the development during the years about the total used antibiotics in the veterinarian sector, but from 80% of the data is not known to which sector the antibiotics are given. There is not an overview about the purchased development in the use between different sectors. *(Geijlswijk et al, 2009)*
The daily dosage per animal living year is a suitable alternative way to measure the total use between different animal groups, companies and sectors. The daily dosage per animal year is determined by the calculation of the total amount of kilograms animal which can be treated with each active ingredient of the antibiotic. With this they calculate with an average treatment for animals with an average for determined weight. (*Mevius et al, 2008)*
The daily dosage method is already used for a longer period in human health. There is daily dosage expressed in daily dosage per 1000 human days or as daily dosage per 100 beds in a hospital.
The total amount of the different active ingredients can not simply be count up due to the variation in effectiveness and prescribed dosage. However the use of antibiotics can be compared and count up when the active antibiotic is expressed in daily dosages per animal year. The daily dosage per animal year can be calculated with the help of the daily dosage per kilogram (DDkg); the amount of the medicine (g or ml), used for the treatment of 1 kilogram animal during one day with the antibiotic. It is based on the registered average dosage of the medicine for an animal species. The daily dosages per animal year can be add up to measure the total expose to antibiotics. The DDkg is specific for the animal specie and is defined for dairy cows, pigs and poultry. *(Mevius et al, 2008)*
The LEI institute has developed a program to calculate these daily dosages. With this calculation they use an average cow of 600kg. Young stock is not included in this calculation. This means that the daily dosage of all antibiotics which is applied to dairy and young stock

over the weight of the dairy cattle is calculated. For example oral antibiotics are applied to young stock but in the calculation it is given to the dairy cows. An other way to calculate the daily dosage is the way of AUV (Ad Usum Veterinarum). Here they use the used antibiotics attributed to the total weight of animals to which the medicine can be applied. Oral medicines are used for animals until < 1 year, a weight of 208 kg is used. The parental medicines will be attributed to the average weight of dairy cattle and the young stock. In this they use for young stock <1 year 208 kg, young stock >1 year 440 kg and for the dairy cattle >2 years 600kg. With the average weight they can calculate the daily dosage for the admitted antibiotics. The dry off injectors and mastitis injectors are only attributed to the weight of the adult cows.

An example about the method of the LEI calculation;
The most dairy cows come in their dry off period after a treatment with dry off injectors which contains antibiotics. For example Orbenin extra dry cow. With this treatment in each quarter of the udder there is putted an injector with antibiotics. Each injector is calculated for 1 daily dosage for 1 animal year. This means that when a cow is coming in her dry off period with the treatment of Orbenin there are 4 daily dosages are applied. So, dry off treatments are easy in calculation.

An other example, the applying of amoxicillin intramuscular 2 times a day during 3 days.

- Amoxicillin contains 10mg active stew per ingredient.
- The registered dosage is 2 times a day 1 ml amoxicillin per 10kg.
- The DDkg is 0,2 ml/kg/day
- For a cow of 600 kg this means 60 ml amoxicillin 2 times a day, so 120 ml per day during 3 days.
- The prescribes 260 ml means a daily dosage per animal year of: (360/0,2=1800 treated kg / 600 kg (weight animal) = 3 daily dosages))
- In one year a farm with 50 cows of 600 kg uses 20 bottles of 100ml (DDkg=0,2)
- Also 10 bottles of 50ml are used with a DDkg = 0,05ml/kg/day
- The total amount of daily dosages = (20*100/0,2+10*50/0,05) /50*600= (10.000+10.000)/30.000=0.667 daily dosages per year.

(Geijlswijk et al, 2009)

2.6 Farm facts in regarding with antibiotics use

Some researches showed interesting facts about farm facts and farm results. Increasing herd size has been associated with increased morbidity and mortality *(Thomsen, 2005).* Larger herd size is associated with increased use of hired labor *(Stahl et al., 1999*), and an increased amount of cows per full-time employee (*Bewley et al., 2001),* possibly affecting disease detection, animal care or disease prevention practices. However, larger dairy herds are more likely to culture clinical mastitis cases *(Hoe and Ruegg, 2006),* which may better enable them to tailor treatment to specific pathogens. Larger herds are also more likely to use antimicrobials prophylactically in heifer feeds and at drying off *(United States Department of Agriculture, 2002b),* more likely to keep computerized records of antimicrobial treatments, and more likely to use veterinary services *(Hoe and Ruegg, 2006).* All of these factors could influence frequency of disease and drug choice.

Less facts are available about the direct relation of farm facts and antibiotic use. A research of ULP (Universitaire Landbouwhuisdierenpraktijk) in Utrecht showed no significant relations between farm facts and antibiotic use. This research is done with 100 farmers of one veterinarian practice. One year data about antibiotic use was available.
In the report is searched for a relation between animal health data and the use of antibiotics. For this management score, animal health scores and daily dosage antibiotic data are used. No relations were found. Also when separated parameters were used, no significant relations were found. The report shows also no significant relation between health scores and management scores. *(Boschma 2010)*

2.7 Pilot project efficient and transparent antibiotic use

In 2008 the project transparent and efficient medicine use has started. The aim of this project is to look to the management of medicine use registration on dairy cow farms. The key words of the project are a more uniform registration, a better utilization of data, efficiencies and transparent data and a better awareness. Before this project 2006-2007 a pilot study is done. Result of that pilot was that farmers are only interested in the medicine management when it was directly attached to the diseases of their animals. Because of this reason diseases and medicine use will be verified in mutual connection. In the pilot project "efficient and transparent medicine" use only the use of antibiotic medicines are measured because of the social interest for that topic.

The pilot has a work group and an advisory committee. The Advisory committee exist out members from the following companies: Frieslands Foods, LTO, Nutreco, KNMvD, NRS/CR-Delta, GD, Nedap, Agro Management Tools.

The Work group exist out of: Veterinarian practice de Graafschap, Veterinarian practice Flevoland, Agrovision, NRS, Friesland Foods, LTO, some farmers and Agro Management Tools.

Results of pilot

The work group has concluded the following points which are important for the pilot:

- The registration of medicine use should have a surplus value for the farmer and veterinarian to motivate them.
- The data structure should be based on the individual animal.
- Veterinarians and chain partners see the possibility about tracing as a plus; there should be worked with individual animals and the batch amounts of the medicines should be known.
- The medicine use should be linked to the animal diseases, the medicine use alone is not enough to activate motivation
- The efficiencies of data can be improved by colleting the data (for example with Pocket pc's) and send the data of medicines from the veterinarian also automatically to the management program. (recopies, visiting notes etc)
- The administrative work should be decreased in stead of increased to stimulate a loyal implementation of new policies.
- The link to policy is important.

During the pilot several questions with the registration of medicines have occurred. One of the problems was the batch amount which had to be putted in to the management program. Often the batch amounts were difficult to read and mistakes were easily made. After the experiences with the pilot the following points need special attention in the future.

- Uniformity in the input of data has to be checked on a larger scale.
- Automatisation from veterinarian practice to farmer management programs has to be further developed.
- Dialing codes for medicine use has to be developed and comparisons between farms and veterinarian practices has to be made.
- The time for medicine registration has to be decreased after new policies instead of increased.
- Data exchanges between different parties in the sector and a synchronization has to be realized for the medicine data.
- Stimulate awareness about medicine use and the registration by informing.

After the pilot the conclusion is made that the pilot has to be proceeded. A proceed of the project is realized in the form of the project Efficient and transparent antibiotics use. *(Kuipers et al, 2007)* A project which is nowadays, January 2011 still in development.

2.8 Project transparent and efficient antibiotics use

Organization project

43 farmers from 6 veterinarian practices take part on the project. Next to those group also the farmers from the pilot group and about 10 other farmers take part on an extensive basis. They deliver a part of the data and do not participate in the study groups. In every veterinarian practice group a study group is developed. The study groups have regular meetings to talk about activities and developments. Also a work group exist, of every veterinarian practice one veterinarian and one farmer are representative for the whole group.
The project leader of the research is Abele Kuipers, Wageningen UR and coordinator Janet Bakker from the LTO. Other cooperating companies are: Animal Science Group, Agro Management Tools, LTO, Friesland Foods, Campina, KNMvD, Nutreco, NRS,GD, the farmers and veterinarians. The project is financed by the LTO and LNV..

Goal

The goal of the project is to collect data about the use of medicines, for a more efficient and sufficient way of medicine registration for the future demand on food safety policies. *(Kuipers et al, 2007)*

Project and future

During the project several of the results of the pilot project are analyzed and developed. The results of the pilot have been further analyzed in the study efficient and transparent medicine use. Some were more easy than others. During the project an interesting topic about the reason for variation has occurred. A sub research is started in about the effects of farms facts regarding the amount of used daily dosages antibiotic. The same farms as in the project could be used so the beginning of a research within the project is started.

3. Materials and methods

3.1 Research design

The basis of the research differences per farm in antibiotic use is he project group of the project “transparent en efficient medicijngebruik”. The project group consist out of 6 veterinarian practices. Each practice has delivered a few farmers who are interested in the topic and are willing to deliver some farm data. The project group exist out of 43 farmers. Next to the farmers from the project group there is searched for some extra farmers. These farmers are extra farmers from the veterinarian practices of the project group, new veterinarian practices or just some farmers who are interested and wants to participate in the study. Of those extra farmers data about there antibiotic use is needed and they have to fill in the questionnaire. They do not have to participate in meetings etc.
Of each farmer there is data needed about the medicine use of the last 5 years (2005, 2006, 2007, 2008 and 2009). The reason for using 5 years instead of one year is the variation on antibiotic use during the years (see table 2.1). When just one year is used the data is not that much reliable. This data is all collect from the veterinarian, they have yearly reports about the total medicine use. Of this data the daily dosage of used antibiotics can be calculated. During those calculation differences per farm are occurred. With the help of all data and a questionnaire a relation will be searched between the farm details and the amount of antibiotics, as explained in the research questions.

The farms in this research are not randomly chosen.

Table progress in antibiotics use.

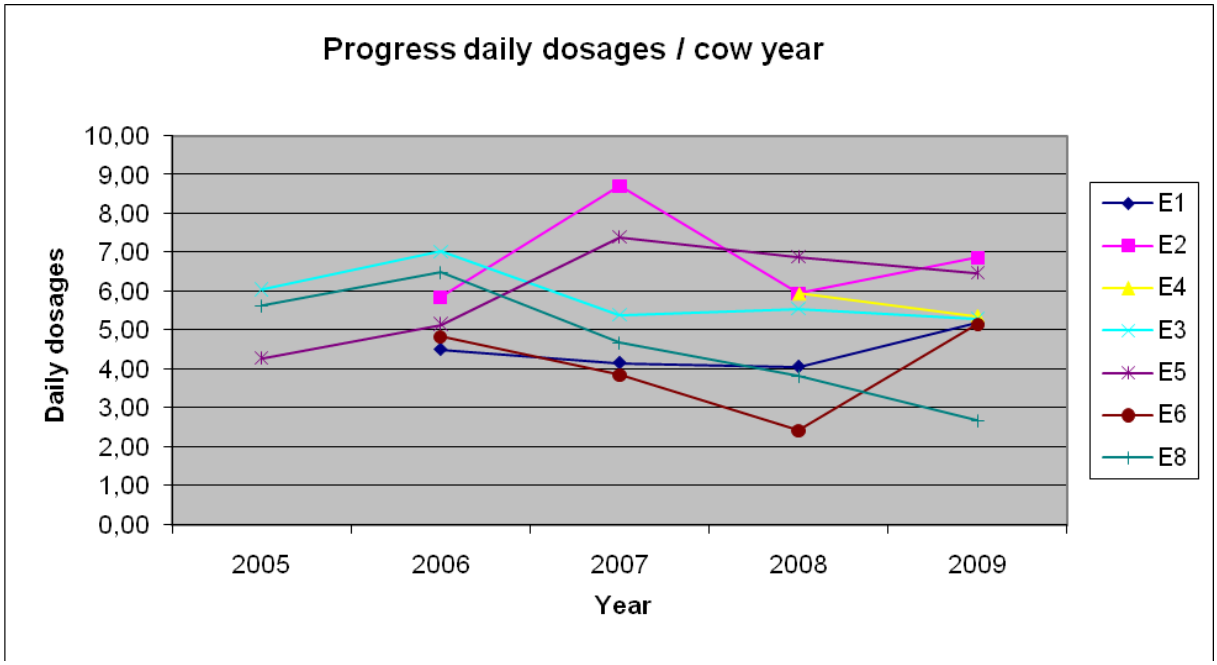


Table 3.1 progress in antibiotic use. (table of F. Kuipers)

3.2 Desk study

A literature study is done to get insight in the topic. Earlier done researches are read en studied. With this information appropriate research questions can be made.

3.3 Data collection

This research is done by a questionnaire. The farmers are asked several questions. This questions will be about farm facts, social visions, future, goals, type of farm, opportunities and threats, character and success in the future. The questionnaire will be observed and with the results a relation with antibiotic use will be searched.
The questionnaire is a written one and has to be filled in by the farmer himself. The questionnaire will be send by post. The first part of the questionnaire is made by myself and the project leader , the last part is from an existing questionnaire of Ron Bergevoet of the LEI institute. For this research just the first part (the self made part) is used to analyze. Also some questions from an earlier done research are used in this study. Most farmers already answered these questions, some did answer them during this research.

3.4 Data processing

The data of the questionnaire will be putted in a program to fill in all data. This program is used in the past for a research in a foreign country. The questions are changed and the program is made usable for this project. From that program the data is transported to excel. In excel some calculations are made for a better comparability between the farms. Also some tables and average amounts are calculated in excel. Statistic tests will be done with SPSS 15.0. Some results will be showed in graphs and tables.

3.5 Description of the variables

The data can be split up in 2 parts, technical data and social data. Some social data will be described shortly is this report. The technical data will be described and analyzed more into detail. Because the focus in this report will be on the technical data a description of the variables is made:

Antibiotic use dependent of technical data, farm and farmer

A. Basis variable
Contains 56 farms.

Dependant variables:

1. Total amount of daily dosages
2. Amount of daily dosages used for mastitis
3. Amount of daily dosages used for dry off injectors
4. Amount of daily dosages used for “other” (total –mastitis-dry off injectors=other)
5. Trend on the total amount of daily dosages
6. Trend on the daily dosages used for mastitis
7. Trend on the daily dosages used for dry off injectors
8. Trend on the daily dosage other

Trends containing mostly 5 years: 2005 t/m 2009; in some cases there are just 3 or 4 years, this because data from earlier years was not available.

Independent variables:
Farm size:

1. average amount of dairy cows (2005 t/m 2009)
2. trend amount of dairy cows (regression coefficient about 5 years)
3. average quota (2005 and 2009)
4. trend in quota (year 2009 minus year 2005)

Intensity farm:

5. average amount young stock per 10 dairy cows (2005 and 2009)
6. trend in average amount of young stock per 10 dairy cows (year 2009 minus year 2005)
7. average amount of cows per hectare (2005 and 2009)
8. trend in average amount of cows per hectare (year 2009 minus year 2005)
9 average amount of concentrates per 100 kg milk (2005 and 2009)
10. trend in average amount of concentrates per 100 kg milk (year 2009 minus 2005)
11. access to pasture yes or no 2009

Herd information:

12. average age of the cows in months. (2005 and 2009)
13 trend in average age of the cows in months (year 2009 minus 2005)
14. average production of kg milk per cow per year.gem. (2005 and 2009)
15. trend in average production of kg milk per cow per year (year 2009 minus 2005)
16. average time between calving in days (2005 and 2009)
17. trend in average time between calving in days (year 2009 minus 2005)
18. % from the cows to destruction (2005 and 2009)
19. trend in % cows to destruction (2009 minus 2005)
20. % cows removed to slaughterhouses, other farmers etc. (2005 en 2009)
21. trend in % cows removed to slaughterhouses, other farms etc. (2009 minus 2005)

Health factors:

22. average cell count (2005 t/m 2009)
23. trend in average cell count (regression coefficient years 2005 t/m 2009)
24. health status 2009

Farmer;

25. age farmer in 2009
26. highest followed education farmers. (lower/middle or bachelor/ master)

4 Results

4.1 Descriptive results technical questionnaire data

Daily dosages

First for al farms a daily dosage of antibiotics is calculated (the amount of day an animal is under effective treatment of antibiotics). The average daily dosage over 5 years is 5,8 daily dosage per cow per year. Also the separated years are calculated. In 2005 the average daily dosage was 5,48, in 2006; 5,87, in 2007; 6,13, in 2008; 5,90 and in 2009; 5,70. The trend of total daily dosage antibiotics was 0,06. If we put the average daily dosage over 5 years in a table the following results are showed:

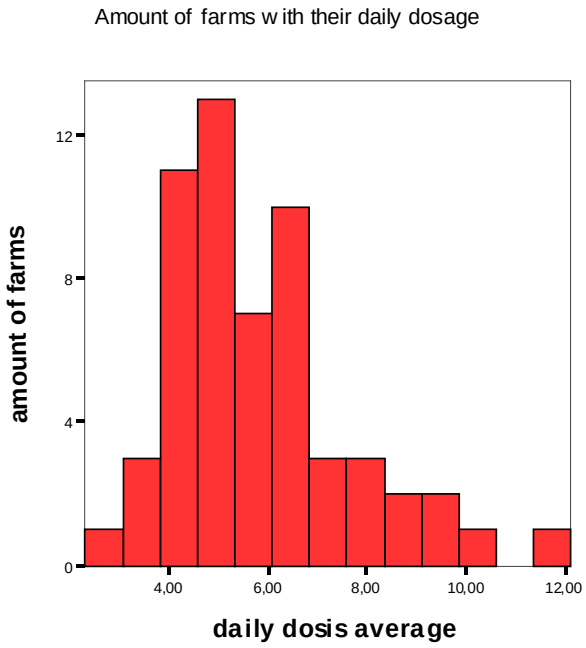


Table 4.1 the amount of farmers with their total daily dosages.

Table 4.1 total daily dosage average shows that the most farms have a total daily dosage between the 4 and 7. So, the cows of the farms are on average 4 till 7 days per year under effective treatment of antibiotics.

Next to the total daily dosage, the use is divided in three parts: Daily dosage mastitis, daily dosage dry off and daily dosage others. “Other” consist all kind of antibiotics which are not antibiotics against mastitis or dry off injectors. Mastitis has an average daily dosage of 1,30 daily dosages per cow per year. The daily dosage of dry off is 2,57 daily dosages per cow per year, for Other is this 1,93 daily dosages per cow per year. The trends are respectively; 0,03, 0,02 and 0,05. (for total table see annex 1.)

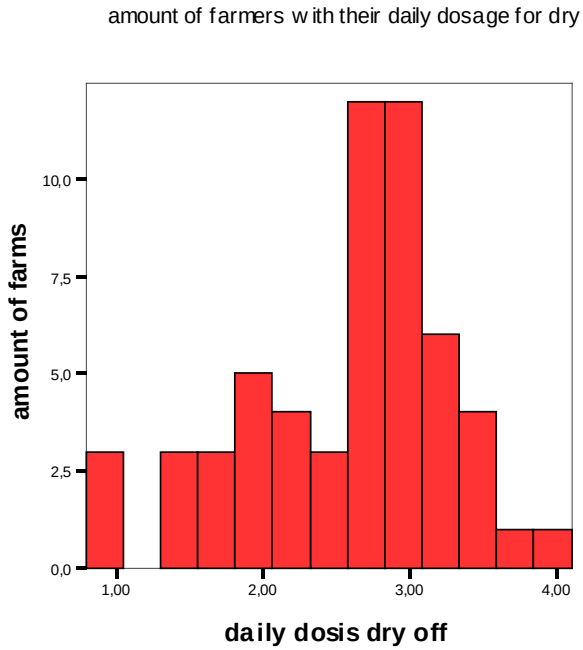


Table 4.2 amount of farmers with their daily dosage for dry off injectors

Table 4.2 about daily dosages antibiotics used for dry off injectors shows that most of the farms have a dosage are around the 3 for dry off injectors. In theory all farmers should have a daily dosage used for dry off injectors around 4. In practice the most cows do not give birth once a year so this lowers the amount of used dry off injectors. Next to that heifers are not given dry off injectors and cows which went to slaughter houses also not. This is the reason why the daily dosage of dry off injectors is lower than 4. The farms which have a daily dosage for dry off injectors between 1 and 2,5 will probably use the method of selective dry off therapy.

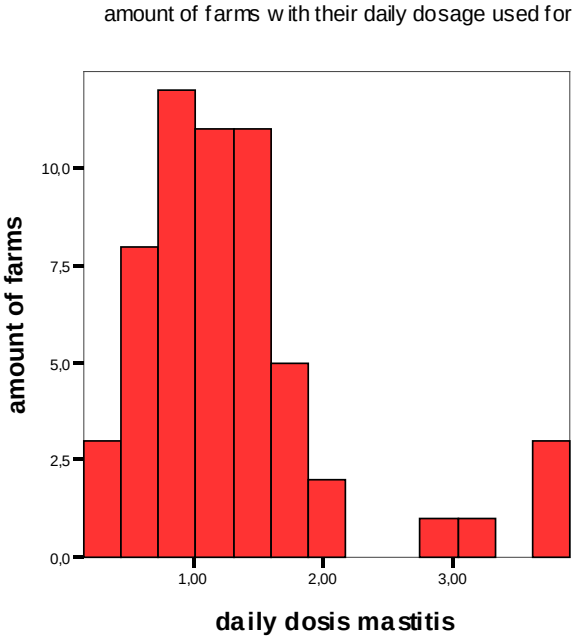


Table 4.3 amount of farms with their daily dosage antibiotics used for mastitis.

Table 4.3 daily dosage antibiotics used for mastitis shows that all farmers have a dosage between the 0 and 4. Most farmers have a daily dosage antibiotics used for mastitis around the 1. This means that on average every cow is under treatment of antibiotics against mastitis for about one day per year.

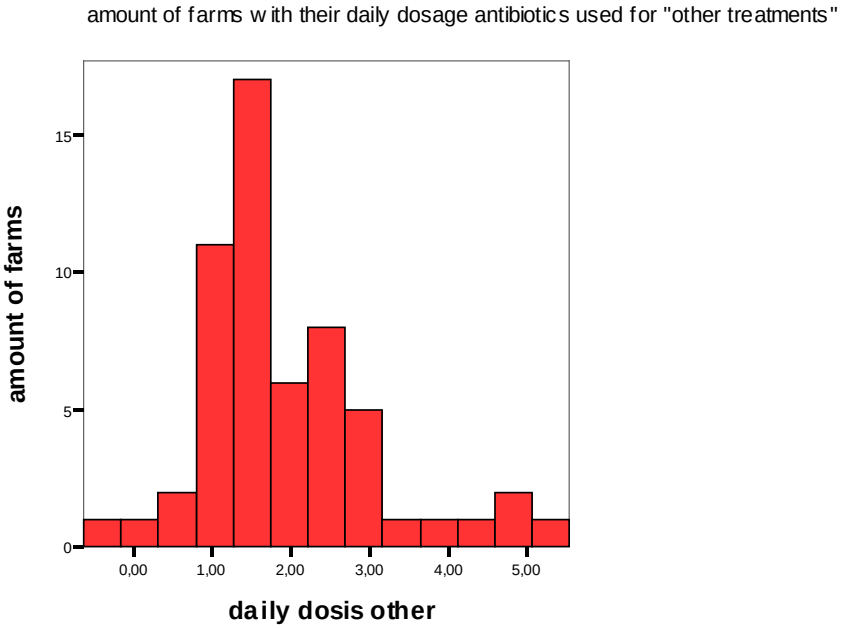


Table 4.4 amount of farms with their daily dosage of antibiotics used for “other treatments”.

Table 4.4 shows the daily dosage of antibiotics other. As explained before other consists of all antibiotics except dry off injector and antibiotics against mastitis. This table shows that most farmers have a dosage between 0 and 3. Other has a bit more variation between the farms than the previous tables showed in this report.

Farm size

The farmers have on average 98,51 cows and 69,62 young stock. On average the farms are increased between 2005 and 2009 with 21,16 cows and 13,95 young stock.
To calculate with this amounts the amount of young stock per 10 cows is also calculated. On average this is 7,19 young stock per 10 cows.
The average quota on these farms was 922.736,61 kg milk. Between 2005 and 2009 an increase of 105.000 kg of milk is realized. (for total table see annex 2)

Intensity farm

To measure the intensiveness of the farm the amount of dairy cows per hectare in calculated, this was on average 1,80 cow per hectare. To calculate the amount of cows per hectare first the amount of hectares is asked, this was on average 39 hectare.
Of the 57 farms 39 farms had cows walking outside in the pasture. (This data was only available about 2009. 18 Farmers kept their animals inside during the whole year.

The amount of concentrates per cow is calculated in kg concentrates per 100kg milk. The average use of concentrates was 23,61 kg per 100 kg milk. The difference between 2005 and 2009 is -1,29 kg concentrates per 100kg milk.
The farmers in had on average 7,26 amount of young stock per 10 dairy cows. In 2009 there were on average 0,43 amount of young stock more than in 2005 (for table see annex 2)

Herd information

The average age of the cows is 53,96 months, this is about 4,5 years. The age of cows is measured in months for a better calculation. The average difference in age of the cows between 2005 and 2009 is 0,05 months.
The average production of the cows in this project group is 8715,15 kg milk, the growth in production between 2005 and 2009 is on average 87,95 kg milk.
The time between calving on average is 409,69 days. In 2009 this is 0,19 days more than in 2005.
Also the amount of cows went to destruction and the amount of cows removed from the farm is calculated. Removed cows are cows which went to slaughterhouses or which are sold to for example other farmers. This data is calculated in percentages for a better comparability between farms. The average amount of cows to destruction is 3,32%, and 26,02% of the cows are removed on average. The differences between 2005 and 2009 are respectively 0,98% and -0,32%. (for table see annex 3)

Animal health

To measure health, questions like cow cell count, amount of free diseases and costs per cow per year are asked. The average cell count over 5 years is 192. (The most farms had cell count data about 5 years, some had less years). Of all farms a minimum of 3 year data is used. The trend of cell count is -1,18.
The farmers are also asked if they were certificated free of diseases. The diseases were: Leptospirose, IBR, BVD, Salmonella, Paratuberculose status A and Neospora. The total amount of free diseases is count and this amount is used as data. The farmers were on average free of 4,3 diseases.
The total costs (for animal health) per cow per year was the last question about animal health. Because it was difficult for the most farmers to find this information only the year 2009 is used in statistics. The average costs of 2009 were €112,64 per cow per year. (for the total table see annex 4)

Farmer information

The farmer is asked about the age and the level of highest education. On average the farmers is this research are 42,6 years old. Of the 57 farmers 18 farmers have done a bachelor study or higher. All other farmers did a lower education than a bachelor study.

4.2 Descriptive results social data

A part of the social data is used for this report. Questions about the relation with the veterinarian practice, the antibiotic use, the environment and consumers, what farmers think about other peoples opinions and medicine registration will be shortly described.
The social data is scored with 5 points, 1 till 5. Point 1 is not agree point 5 is totally agree.
The farmers have given points for every question and the average results of these questions will be described.
Finally questions about medicine registration are asked. The farmers have filled in the amount of minutes a week they spend for registration and how often they registries their medicine use.
The social data results consist less farmers than the technical farm results. This is because not all farmers have got the whole questionnaire.

Results about the questions will be showed in a table within the average answers of the farmers.

Veterinarian practice

	Average score 1-5
I have a good relation with my veterinarian practice	4,64
I always follow the advice of my veterinarian concerning to medicine use	4,10
My veterinarian advised me to give antibiotics after the first symptoms	3

Antibiotic use

	Average score 1-5
I treat a cow more likely a bit faster and more often with antibiotics than that I am to late with the treatment	3,23
It is important for me that a cow build up some own resistance, and because of that I am sparing with the use of antibiotics	3,31
I have to strive for a lower use of antibiotics on my farm	3,67
I have to strive for a lower use of dry off injectors on my farm	1,97
I put my cow in to their dry off period on the following way	4 farmers use selective dry off method, 35 farmers give all cows antibiotics
I read regulary about animal health in specialist journals	4,15

Environment and consumers Average score 1-5

Less antibiotic use is better for human health	3,59
I think that it is possible for all farms to lower the amount of used antibiotics and by that be sufficient to the wishes of the government	3,18
Lowering of the use of antibiotics has disadvantuous consequences for the animal health	3,41
Health measurements like vaccination are a possible solution for a decrease in antibiotics use	3,39

The following persons or organizations think that I should lower the use of antibiotics on my farm
Average score 1-5

My feed supplier	2,28
Community and consumers	3,21
My veterinarian	3
The government	3,92
My family	2,18
My dairy industry	3,21
My interest organization	3,15
My colleague farmers	2,26
The politics	3,74

As shown in the table most farmers have a good relation with their veterinarian practice. The farmers also follow the advice of the veterinarian concerning antibiotic use. About the questions if their veterinarian advises to give antibiotics after the first symptoms the farmers are a bit more in the middle the score was 3. (for table with variation see annex 5)
For the most farmers it is important to treat the cow soon enough but in the same time it is also important for them to lower their use of antibiotics and take care of a good own resistance of the cows. Most farmer do not think that they have to strive to a lower use of dry off injectors. This can also be seen in the amount of farmers which use the selective dry off method, just 4 farmers use this method, 35 farmers treat all cows with antibiotics before the dry off period. Most farmers often read some magazines about animal health. (for table with variation see annex 6)
The questions about environment and consumers score on average all above 3. The farmers in this group think a decrease of antibiotics will be better for human health but has also as consequence that the animal health will be increased. In the same time they think it is possible for most farmers to lower their antibiotic use and that vaccination will be a possible solution to reach this. (for table with variation see annex 7)
The question about what the farmers think about the opinion of other people on their antibiotic use is variable. (for table with variation see annex 8)

Medicine registration

The average farmer spends about 35 minutes a week for medicine registration. The lowest amount of minutes is 5 the highest 120, so there is a lot of variation. This question is filled in by 33 of the farmers, next to those 33 farmers 19 farmers did had no idea, and some farmers did not fill in the question.
The amount of times that a farmer registers his medicine use is variable. In total 52 farmers have filled in this question. 12 Farmers fill in their registration more times a day, 16 farmers do this once a day, 16 farmers do this once a week and 3 farmers do this once a month. 5 Farmers have filled in that they do it on an other way. (whole tables see annex 9)

4.3 *Statistical results*

The analysis performed wanted to examine if the antibiotics use on farm level was dependant on certain farm and cow herd factors and on some characteristics of the farmer.

The level of antibiotics use is expressed by the "total daily dosage per average cow per year" on the farm. This total daily dosage per cow per year is split up in the contribution of mastitis antibiotics, of dry off injectors and “other” health problems. In this analyses these are the so called dependant variables. Also the trend in these variables over 2005-2009 were computed by determining the regression coefficients.

Variables characterising the farm were grouped in factors associated with farm size (4 variables) and intensity of farming (6 variables). The farmer was characterised by age and education. The herd of cows was described by 10 factors, while the health status of the herd was described by 3 factors. This resulted in a total in 26 independant variables. For more detailed description of all these variables, see chapter 'Material and methods".

4.4.1 CORRELATIONS

Technical data is put in a correlation table to see the first results and directions. After the first results of the correlation tables were known, regressions are made.
A correlation table show if there is a relation in direction between 2 variables. For example a correlation of .980 between variable A and variable B. This means that when variable A is increasing, variable B is also increasing, this is called a positive relation. The correlation can also be negative, for example -.980 than this will say that when one of the variables is increasing the other variable will decrease.

Farm size

Several questions in the questionnaire did have something to do with the size of the farm. To see if we could use them all to measure the relation between farm size and the amount of used antibiotics a correlation table about size data is made. In this research the following results are shown. The results of the correlation shown a lot of significant correlations between the variables. For example when there are more milk cows, there is also more young stock, more milk quota and more hectares of land and vice versa.(sig.= <0,01) (for whole table see annex 10).
After analyzing this table shortly the decision in made to use less variables in the other correlation tables. The reason for this is that some variables are familiar to each other or that some are better to compare the farms.

Daily dosages (dependent variables)

The total amount of daily dosages shows positive correlations with; daily dosage mastitis, daily dosage dry off, and daily dosage other . A positive correlation in this means that when the total amount of daily dosages is increasing the daily dosages for mastitis, dry off injectors and others is also decreasing. (sig. = <0,01)
The daily dosage for mastitis shows also just positive correlations. When the dosage for mastitis is increasing the dosages daily dosages total and the daily dosage other is also increasing. (sig. = <0,01)

The daily dosage for dry off injectors shows a positive correlations with the total daily dosage of antibiotics. A negative correlation is seen between the daily dosage for dry off injectors and the trend of the daily dosage for dry off injectors. This means that when one of the variables is increasing the other variable in decreasing.
The daily dosage other sows positive correlations with; total daily dosages, the trend in daily dosage mastitis, the trend in daily dosage dry off injectors and the trend in daily dosages other. So, when the daily dosage other is increasing the variables mentioned are also increasing. (sig. = <0,01
When the trend of daily dosage total is increasing also the trend in daily dosage mastitis, the trend in daily dosage dry off injectors and the trend in daily dosage other is increasing so, positive correlations. (sig. = <0,01)
Than the trend in daily dosages dry off injectors. A negative correlation with the daily dosage for dry off injectors and a positive correlation with the trend in total daily dosages is seen. (sig. = <0,01)
The trend daily dosages other shows that when the trend daily dosage is increasing the trend in total daily dosages is also increasing, a positive correlation. (sig. = <0,01)
(for whole table see annex 11)

After a correlation with variables about daily dosages, also the other variables (independent) are put in a correlation table together with daily dosage (dependent) data. Results of this are as follow:

Daily dosage total and all variables

The total amount of daily dosage shows positive correlations with the following variables: the average amount of dairy cows, the average amount of young stock, the average cell count, the highest education of the farmer, the animal health costs per cow per year in 2009 and the amount of free diseases. When the total daily dosage is increasing the variables mentioned also increasing. (sig.= <0,05)
(for whole table see annex 12)

Daily dosage mastitis and all variables

The total amount of daily dosage mastitis shows positive correlations with: the average amount of dairy cows, the average amount of young stock and the costs for animal health per cow per year in 2009.
Negative correlations are seen between daily dosage mastitis and the trend of total amount of young stock and growth in the amount of young stock per 10 dairy cows. So when one dependent variable , in this case daily dosage mastitis is increasing the independent variable is decreasing. (sig.= <0,05)
(for whole table see annex 13)

Daily dosage dry off injectors and all variables

The total amount of dry off injectors shows that when the amount of daily dosages is increased the amount of milk cows average and the amount of free diseases also increase.
A negative correlation is seen between daily dosage for dry off injectors and the time between calving, the average cell count, and the trend in the amount of hectares. (sig.= <0,05)
(for whole table see annex 14)

Daily dosage other and all variables

The total amount of other medicines shows positive correlations with the following variables: the average amount of milk cows, the average trend in milk cows, the average amount of young stock, the average milk quota in kg milk, the average amount of hectares and the costs for animal health per cow per year in 2009. (sig.= <0,05)
(for whole table see annexes 15)

Trend total daily dosage and all variables

The trend in total daily dosage antibiotics shows a positive correlation with the trend % removed. (sig.= <0,05)
(for whole table see annex 16)

Trend daily dosage mastitis and all variables

This correlation shows that when the trend in daily dosage is increased the trend in % cows removed is also increased, so a positive correlation. (sig.= <0,05)
(for whole table see annex 17)

Trend daily dosage dry off

A positive correlation is seen with cell count. So when there is a increase in daily dosage of dry off injectors the average cell count also increased. (sig.= <0,05)
(for whole table see annex 18)

Trend daily dosage other

Positive as well negative correlations are seen with the trend daily dosages and all variables. A positive correlation between trend daily dosage and trend on amount of young stock per 10 dairy cows is seen. Negative correlation are between trend daily dosage other and the time between calving, the growth in milk cows, and the amount of kg concentrates per 100 kg milk. (sig.= <0,05)
(for whole table see annex 19)

Also some independent variables show correlations with each other. For example, the correlation shows a negative correlation between the age of the cows and the % cows which are removed from the farm. Also a negative correlation is seen between the production of the cows and the cell count, and a positive correlation between production and the amount of free diseases. Because in this report the focus will be on the daily dosage of antibiotics not all correlations between variable will be discussed.

4.3.2 REGRESSIONS

The statistical method called stepwise regression is used to see if the antibiotic use can be explained by the independent variables. The R2 (coefficient of determination) explains the amount of variation in the dependant variable that is explained by the independent variables, which enter into the solution. Below we do this exercition for each antibiotics criteria (total daily dosage, daily dosage mastitis, daily dosage dry off, daily dosage other and the trends) separately. Results of the regressions are showed in the table below, and more into detail in a short written description.

Regressions between dependent and independent variables

Antibiotic criteria	**R2**	**Factors of influence**	**Positive or negative relationship (+/-)**
Total daily dosage	0,36	Milk quota	+
		Cell count	-
		Health status 2009	+
Daily dosage mastitis	0,28	Milk quota	+
		Milk cows average	-
		Access to pasture 2009	+
Daily dosage dry-off	0,44	Cell count	-
		Time between calving	-
		Health status 2009	+
Daily dosage other	0,39	Milk quota	+
		Average amount of young stock per 10 milk cows	+
		Cell count	-
		% cows removed	-
Trend total daily dosage	0,1	Trend % removed	+
Trend daily dosage mastitis	0,24	Trend % removed	+
		Trend milk production	+
Trend daily dosage dry-off	0,17	Cell count	+
		Age farmer	-
Trend daily dosage other	0,26	Trend in milk cows	-
		Amount of kg concentrates per 100 kg milk	-

Table 4.5 regressions between dependent and independent variables

a. Relation of total daily dosage to farm and farmer factors

The dependent variable "total amount of total daily dosages used per cow per year" is influenced by 3 variables coming into the stepwise regression solution, being average milk quota on the farm, average cell count and health status of the herd. The R2 is 0,36, which tells that 36 % of variation in total amount of daily dosages used is explained by these 3 factors. Total daily dosage has a positive relationship to milk quota amount and health status and a negative relationship to cell count. In other words, farms with more quota, a better health status and a lower cell count use more antibiotics. (Whole table see annex 20)

b. Relation of daily dosage mastitis to farm and farmer factors

The dependent variable “total amount of daily dosages used for mastitis per cow per year is influenced by 3 variables in the stepwise regression. Average milk quota on the farm, average amount of milk cows on the farm and if the cows have access to the pasture in 2009 have influence on the daily dosage for mastitis. The R2 is 0,28, which tells that 28% of the variation in the total daily dosages used for mastitis is explained by these 3 factors. The total daily dosage for mastitis has a positive relationship to milk quota and if the cows have access to pasture in 2009 and a negative relationship to the amount of milk cows average. In other words, farms with more milk quota, with cows walking outside and a lower amount of milk cows use more antibiotics for mastitis. (Whole table see annex 21)

c. Relation of daily dosage dry-off to farm and farmer factors

The dependent variable “total amount daily dosage used for dry off per cow per year is influenced by 3 of the variables in the stepwise regression. These variables are: the average cell count, the average time between calving and the amount of free diseases in 2009. The R2 is 0,44, which tells that 44% of the variation in the total daily dosage used for dry off is explained by these 3 factors. The total daily dosage for dry off has a positive relationship with the amount of free diseases in 2009 and a negative relationship with average cell count and the time between calving. In other words farms with a high amount of free diseases, a low cell count and a low time between calving use more antibiotics for dry off. (Whole table see annex 22)

d. Relation of daily dosage other illnesses to farm and farmer factors

The dependent variable “total amount daily dosage used for other is influenced by 4 of the variables in the stepwise regression. Average milk quota on the farm, average amount of young stock per 10 milk cows on the farm, the average cell count and the % cows which are removed from the farm have influence on the total amount of daily dosages other. The R2 is 0,39, which tells that 39% of the variation in the total daily dosages used for other is explained by these 4 factors. The total daily dosage for other has a positive relationship to the average milk quota and the average amount of young stock per 10 milk cows and a negative relationship with the average cell count and % cows removed. In other words farms with a high milk quota, a high amount of young stock per 10 milk cows, a low amount of cell count and a low % cows removed have a higher use in antibiotics other. (Whole table see annex 23)

e. Relation of trend in total daily dosage total to farm and farmer factors

The dependent variable “trend in total amount daily dosage used in total is influenced by 1 of the variables in the stepwise regression; the variable trend in % cows removed. The R2 is 0,1, which tells that 10% of the variation in the trend total daily dosage total is explained by this variable. The trend in total daily dosage total has a positive relationship with the trend in % cows removed. In other words, a farm with a high % cows removed have a higher trend in total daily dosage total. (Whole table see annex 24)

f. Relation of trend in total daily dosage for mastitis to farm and farmer factors

The dependent variable “trend in total amount daily dosages mastitis” is influenced by 2 of the variables in the stepwise regression. The variables are the trend in % cows removed and the trend in milk production. The R2 is 0,24, which tells that 24% of the variation in the trend total daily dosages used for mastitis is explained by these variables. The trend in total daily dosage used for mastitis has a positive relationship with the trend in % cows removed and the trend in milk production. In other words, a farm with a high trend in % cows removed and a high trend in milk production have a higher trend in total daily dosage for mastitis. (Whole table see annex 25)

g. Relation of trend in total daily dosage dry off to farm and farmer factors

The dependent variable “trend in total amount daily dosage dry off” is influenced by 2 of the variables in the stepwise regression. The variables are the amount of cell count and the age of the farmer. The R2 is 0,17, which tells that 17% of the variation in the trend total daily dosage dry off is explained by these variables. The trend in total daily dosage dry off has a positive relationship with the amount of cell count and a negative relationship with the age of the farmer. In other words, a farm with a high cell count and with a young farmer have a higher trend in total daily dosage dry off. (Whole table see annex 26)

h. Relation of trend in total daily dosage other to farm and farmer factors

The dependent variable “trend in total daily dosage other” is influenced by 2 of the variables in the stepwise regression. The variables which have influence on the trend in total amount of daily dosage other are the trend in milk cows and the amount of kg concentrates per 200kg milk. The R2 is 0,26, which tells that 26 of the variation in the trend daily dosage other is explained by these variables. The trend in total daily dosages other have a negative relationship with the trend in milk cows and the amount of kg concentrates per 100kg milk. In other words, a farm with a low trend in the amount of milk cows and with a low amount of kg concentrates per 100kg milk have a high trend in the total daily dosage other. (Whole table see annex 27)

5 Discussion

Although the report shows some interesting results, discussion points exist which can cause doubts about the reliability of the results.

5.1 Earlier done researches

A partly comparable research is done last year by the ULP (Universitaire Landbouwhuisdierenpraktijk) Utrecht. That research used some other variables and they had fewer years of data but with the same final goal; find farm facts which have influence on the amount of used daily dosages antibiotics. Not any relations were found in that research. *(Boschma, 2010)*
A reason for this can be, as noticed before, that they had less amount of years with the data. They used just one year of data about antibiotic use and one year data of independent variables. Also other variables are used than in this research. Probably this can explain the reason of different results.

5.2 Medicine data

Method to calculate daily dosage

The data about the daily dosages of antibiotics is calculated with a new program of the LEI institute. During the project a lot of mistakes in the program occurred and were corrected. In this report the results from the LEI program are used. It is possible that still some small mistakes can be presented which causes wrong data about the daily dosages. This might influence the results of the research.

File data into program

Also the way of filing the data into the LEI program can cause some mistakes. Although all data is filed by one and the same person mistakes can be easily made. For example, it can happen that a farmer has bought a box of dry off injectors but that due to vague lists of bought medicines just one injector is filled into the program. The consequence of this will be a daily dosage which is not correct and which can influence the results.

Medicine data collected from the veterinarians

All medicine data are collected at the veterinarian practices of the farmers. All farmers were asked if they also bought medicines in other places, for example web shops, other veterinarian practices etc. We have assumed that all medicine data of the farmers was available to us, but it is possible that some data is missing. Missing data about medicines will have the consequence that the data of daily dosages which is used for this report is not correct and the daily dosages are slightly different in reality. This can give other results in the statistics. An extra note in this should be that for example just one dry off injector extra does not change the data very much.

Kind of data

The data in this report is collected over different years 2005 and 2009. Although the data is asked over more years still it is some rough data. Reasons for this are that the answers on the questionnaires could be searched by the farmers in different data files. Some farmers will have found their data in their own management programs (others will asked for the data to companies they work with.) To prevent that the data was searched in too much different data files we as project have added some notes to the questionnaire for the farmers were the data could be found. The first intention for doing this was to help the farmers to find the needed data. Probably it has also helped to prevent data from all types of data files. Still there is not one equal data base were the farmers have searched up their data. This can have some influence on the results, but based on the high R2 results in the regressions probably the data was precisely enough. A more equal data base can occur an even more precise result.

5.3 Questionnaires

Filled in by farmers

Filling in questionnaires can be done on several ways. In this report the questionnaire is send to the farmers and filled in by them. No control is available to check if they have filled in the correct answers, or that they have just made some assumptions. During the period of this research it can be said that sending a questionnaire to a farm presuming that the questionnaire is filed in correct is not the most trustful method. This can have 2 reasons, or that the farmers did not looked up the really exact amounts but filled in some estimations or as explained before that the data is been searched up in different data files. An example of those last points can be the average amount of cell count per year. This can be looked up in yearly lists of the MPR but can also be collected from the dairy factory; the results will not be exactly the same. Again based on the R2 results probably this small differences does not have a lot of influence but it is a fact that difference have occurred.

Not randomly chosen

The farmers in this research were all part of a study group or are asked to participate in the study. To conclude a research is representative for the whole country randomly selected data / farmers have to be used. Is this report the farmers are not representative for the country because they are not randomly chosen.

5.4 Research

Done by student

All input of technical and social data into excel, SPSS etc is done by a student. Although there is worked precisely and the accompaniment was good, mistakes can be made which can have influenced the results.

6.Conclusion

Based on the results of this report the following things can be concluded:

Influences of daily dosages on each other

The daily dosages which are divided in; daily dosage mastitis, daily dosage dry off and daily dosage have influence on each other. Actually a logic result. The total daily dosage is influenced by the daily dosage mastitis, daily dosage dry off and daily dosage other, in which daily dosage mastitis and daily dosage other have the most influence. This can be explained by the amount of daily dosages for dry off. The variation in daily dosage dry off is not so much and next to that a maximum of a daily dosage of about 4 per cow per year can be reached for dry off. (Dry off period once a year). The variation in mastitis and other can be bigger; a farm which has a lot of mastitis and other health problems can use a lot of antibiotics against that. There is not a maximum as mentioned by the dry off injectors.

Variables and their influence on the daily dosages

All parts of the daily dosages are influenced by certain variables. In general the following conclusions can be made;

Farms with a lot of milk quota a high health status and a low cell count use more antibiotics. Probably for these types of farms it is important to have healthy cows. They reach this to be active and high with their health status and keep their cell count low. The consequence of this is that the amount of total daily dosages is increasing.

The total daily dosages are split up in mastitis, dry off and other.
Farms with more milk quota, less amount of milk cows and with milk cows which have access to the pasture use more antibiotics. Again the milk quota has influence, but now together with a less amount of milk cows and cows which have access to the pasture in 2009.

The daily dosage dry off is high on farms with a low cell count, a low time between calving and a high amount of free diseases. This results says that farms which have a short time between calving use more dry off injectors, a logic result as explained earlier in this report. Once a year a dry off period will conduct a daily dosage for dry off injectors of 4, how closer this time between calving is to 365 days how closer the amount of daily dosages for dry off is to 4. Than the cell count; a farm with lower cell count uses more dry off injectors. This can have something to do with selective dry off therapy; maybe farms with selective dry off therapy have a higher cell count. An other assumption can be that a low cell count means a good general health which causes also a low time between calving which causes a higher daily dosage of dry off injectors.

A lot off milk quota, a high amount of young stock per 10 milk cows, a low cell count and a low % cows removed take care of a high daily dosage other. In this daily dosage the amount of young stock per 10 milk cows is one of the influencing factors. That they influence the daily dosage other can be explained by that young stock is mostly not treated against mastitis and uses no dry off injectors. In the program to calculate the daily dosages young stock is not taken into account, just milk cows are calculated. So when there is more young stock although

they use just about 5% of the total used medicines on a farm they influence the amount of daily dosages other.

General conclusion

In general there are variables which have influence on the amount of daily dosages antibiotics. By that conclusion there can be said that the hypothesis: *There are facts on a farm which have influence on the differences per farm about the amount of used antibiotics* can be accepted.

7. Recommendations

The results and conclusions in this report show very interesting results, but it is just a start for more research. The results from the statistics need more analyzing by a statisticus to find more relations and to give more detailed conclusions. In this research the focus is on independent variables which have influence on the dependent variables. Probably the independent variables also influencing each other. This has to be reached more.

The social data is not used in the statistics. On forehand more relations were expected on the social part of the questionnaire than in the technical part. Results in this report show already a lot of influence by the technical part so the social part seems to be even more interesting. Social data is already available so the research can be started if classified people are available to do this.

For the sector animal husbandry these results are something to think about. Some results show that farms with better animal health use more antibiotics. When a decrease of antibiotics has to be reached the animal health probably will also decrease, is this we want to reach….. Something to carefully consider about.
The farmers in the Netherlands can probably learn a lot from each other, results in this report show that there are types of farm which use fewer antibiotics than other types of farms. Study groups already keep meetings to talk about this kind of topics. Finally companies can always be developed more, so learn from each other, in this report especially about type of farming and the amount of antibiotics used!

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9. Annexes

Annex 1; daily dosages

	2005	2006	2007	2008	2009	Average	Trend
Daily dosage total	5,48	5,90	6,16	5,93	5,70	5,82	0,06
Daily dosage mastitis	1,25	1,37	1,33	1,23	1,35	1,30	0,02
Daily dosage dry off	2,38	2,57	2,68	2,70	2,50	2,57	0,02
Daily dosage other	1,65	1,97	2,17	2,01	1,89	1,95	0,05

Annex 2 ; farm size / intensiveness

	2005	2006	2007	2008	2009	Average	Difference 05-09
Amount of dairy cow	93,92	94,43	95,64	101,73	105,58	98,68	3,63
Amount of young stock	62,70				76,54	69,62	13,83
Amount of Total animals						168,30	33,74
Amount of young stock per 10 dairy cows	7,05				7,39	7,26	0,43
Milk quota	797562				919497	802500	121935
Amount of hectares	52,59 ha				58,45 ha	55,52 ha	5,86 ha
Amount of cows per hectare	1,78				1,83	1,80	0,05
Amount of kg concentrates/ 100kg milk	24,31 kg				23,02 kg	23,61 kg	-1,29 kg
Amount of farms with cows in pasture					39		

Annex 3; cow information

	2005	2009	Average	Difference 05-09
Age cows	53,93 months	53,98 months	53,96 months	0,05 months
Production cows	8571.18 kg	8859,12 kg	8715,15 kg	287,95 kg
Time between calving	409,60	409,79	409,69	0,19
% cows to destruction	2,83%	3,81%	3,32%	0,98%
% cows removed	26,19%	25,86%	26,02%	-0,32%

Annex 4; animal health

	2005	2006	2007	2008	2009	Average	Difference 05-09 / trend
Costs for animal health per cow/year					€112,64		
Cell count	182,35	187,71	202,07	200,64	182,72	192,44	-1,18
Amount of free diseases					4,3		

Annex 5; veterinarian practice

I have a good relation with my veterinarian practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1,0	2,6	2,6
	3	1	1,0	2,6	5,1
	4	9	9,4	23,1	28,2
	5	28	29,2	71,8	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

I always follow the advices of my veterinarian

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	2,1	5,1	5,1
	3	3	3,1	7,7	12,8
	4	23	24,0	59,0	71,8
	5	11	11,5	28,2	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

My vet advises to use antibiotics after the first symptoms

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	4,2	10,5	10,5
	2	7	7,3	18,4	28,9
	3	14	14,6	36,8	65,8
	4	11	11,5	28,9	94,7
	5	2	2,1	5,3	100,0
	Total	38	39,6	100,0	
Missing	System	58	60,4		
Total		96	100,0		

Annex 6; antibiotic use

I give my cows rather quickly and more often antibiotics than that I am too late with treatment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	2,6	2,6
	2	10	10,4	25,6	28,2
	3	12	12,5	30,8	59,0
	4	11	11,5	28,2	87,2
	5	5	5,2	12,8	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

It is important for me that a cow builds up some own resistance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6,3	15,4	15,4
	2	1	1,0	2,6	17,9
	3	14	14,6	35,9	53,8
	4	11	11,5	28,2	82,1
	5	7	7,3	17,9	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

On my farm I have to strive to a lower use of antibiotics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3,1	7,7	7,7
	2	6	6,3	15,4	23,1
	3	3	3,1	7,7	30,8
	4	16	16,7	41,0	71,8
	5	11	11,5	28,2	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

On my farm I have to strive to a lower use of dry off injectors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	19,8	48,7	48,7
	2	10	10,4	25,6	74,4
	3	3	3,1	7,7	82,1
	4	6	6,3	15,4	97,4
	5	1	1,0	2,6	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Method of dry off

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	all with antibiotics	35	36,5	89,7	89,7
	selective	4	4,2	10,3	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

I read often about animal health in specialist journals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	2,6	2,6
	2	2	2,1	5,1	7,7
	3	5	5,2	12,8	20,5
	4	13	13,5	33,3	53,8
	5	18	18,8	46,2	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Annex 7; Environment and consumers

Less antibiotic use is better for human health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2,1	5,1	5,1
	2	4	4,2	10,3	15,4
	3	11	11,5	28,2	43,6
	4	13	13,5	33,3	76,9
	5	9	9,4	23,1	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

I think it is possible for all farmers to decrease the antibiotics use to suffice to the wishes of the government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	2,6	2,6
	2	9	9,4	23,7	26,3
	3	14	14,6	36,8	63,2
	4	10	10,4	26,3	89,5
	5	4	4,2	10,5	100,0
	Total	38	39,6	100,0	
Missing	System	58	60,4		
Total		96	100,0		

Lowering of the use of antibiotics has disadvantuous consequences for the animal health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1,0	2,6	2,6
	2	4	4,2	10,3	12,8
	3	16	16,7	41,0	53,8
	4	14	14,6	35,9	89,7
	5	4	4,2	10,3	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Health measurements like vaccination is a possible solution to lower the use of antibiotics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	5,2	13,2	13,2
	2	5	5,2	13,2	26,3
	3	6	6,3	15,8	42,1
	4	14	14,6	36,8	78,9
	5	8	8,3	21,1	100,0
	Total	38	39,6	100,0	
Missing	System	58	60,4		
Total		96	100,0		

Annex 8; The following persons or organizations think that I should lower the use of antibiotics on my farm

Feed supplier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	13,5	33,3	33,3
	2	5	5,2	12,8	46,2
	3	18	18,8	46,2	92,3
	4	3	3,1	7,7	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Veterinarian

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6,3	15,4	15,4
	2	4	4,2	10,3	25,6
	3	16	16,7	41,0	66,7
	4	10	10,4	25,6	92,3
	5	3	3,1	7,7	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3,1	7,7	7,7
	2	1	1,0	2,6	10,3
	3	9	9,4	23,1	33,3
	4	9	9,4	23,1	56,4
	5	17	17,7	43,6	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	15,6	38,5	38,5
	2	4	4,2	10,3	48,7
	3	18	18,8	46,2	94,9
	4	2	2,1	5,1	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Dairy product producers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7,3	17,9	17,9
	2	3	3,1	7,7	25,6
	3	10	10,4	25,6	51,3
	4	13	13,5	33,3	84,6
	5	6	6,3	15,4	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

The interest organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6,3	15,4	15,4
	2	4	4,2	10,3	25,6
	3	11	11,5	28,2	53,8
	4	14	14,6	35,9	89,7
	5	4	4,2	10,3	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Colleague farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	12,5	30,8	30,8
	2	7	7,3	17,9	48,7
	3	18	18,8	46,2	94,9
	4	2	2,1	5,1	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Politics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7,3	17,9	17,9
	2	2	2,1	5,1	23,1
	3	3	3,1	7,7	30,8
	4	9	9,4	23,1	53,8
	5	18	18,8	46,2	100,0
	Total	39	40,6	100,0	
Missing	System	57	59,4		
Total		96	100,0		

Annex 9; Medicine registration

Statistics

Amount of minutes the administration takes per week

N	Valid	33
	Missing	63
Mean		35,15
Std. Deviation		32,870

Amount of minutes the administration takes per week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	1	1,0	3,0	3,0
	10	3	3,1	9,1	12,1
	15	11	11,5	33,3	45,5
	20	2	2,1	6,1	51,5
	25	1	1,0	3,0	54,5
	30	6	6,3	18,2	72,7
	40	1	1,0	3,0	75,8
	45	1	1,0	3,0	78,8
	60	3	3,1	9,1	87,9
	90	1	1,0	3,0	90,9
	120	3	3,1	9,1	100,0
	Total	33	34,4	100,0	
Missing	System	63	65,6		
Total		96	100,0		

Statistics

How often will the data put in the registration system?

N	Valid	52
	Missing	44
Mean		2,48
Std. Deviation		1,196

How often will the data put in the registration system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more times a day	12	12,5	23,1	23,1
	once a day	16	16,7	30,8	53,8
	once a week	16	16,7	30,8	84,6
	once a month	3	3,1	5,8	90,4
	other	5	5,2	9,6	100,0
	Total	52	54,2	100,0	
Missing	System	44	45,8		
Total		96	100,0		

Correlations Annex 10; farm size

		milk cows average	grow in milk cows	youngstock average	growth in youngstock	hectares average	trend amount of hectares	milk quota average	trend qouta
milk cows average	Pearson Correlation	1	,620**	,956**	,229	,949**	,317*	,978**	,405**
	Sig. (2-tailed)		,000	,000	,086	,000	,016	,000	,002
		57	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,620**	1	,549**	,417**	,570**	,338*	,660**	,783**
	Sig. (2-tailed)	,000		,000	,001	,000	,010	,000	,000
		57	57	57	57	57	57	57	57
youngstock average	Pearson Correlation	,956**	,549**	1	,267*	,933**	,273*	,925**	,377**
	Sig. (2-tailed)	,000	,000		,045	,000	,040	,000	,004
		57	57	57	57	57	57	57	57
growth in youngstock	Pearson Correlation	,229	,417**	,267*	1	,303*	,397**	,175	,453**
	Sig. (2-tailed)	,086	,001	,045		,022	,002	,193	,000
		57	57	57	57	57	57	57	57
hectares average	Pearson Correlation	,949**	,570**	,933**	,303*	1	,396**	,908**	,446**
	Sig. (2-tailed)	,000	,000	,000	,022		,002	,000	,001
		57	57	57	57	57	57	57	57
trend amount of hectares	Pearson Correlation	,317*	,338*	,273*	,397**	,396**	1	,239	,299*
	Sig. (2-tailed)	,016	,010	,040	,002	,002		,074	,024
		57	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,978**	,660**	,925**	,175	,908**	,239	1	,433**
	Sig. (2-tailed)	,000	,000	,000	,193	,000	,074		,001
		57	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,405**	,783**	,377**	,453**	,446**	,299*	,433**	1
	Sig. (2-tailed)	,002	,000	,004	,000	,001	,024	,001	
		57	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,190	,152	,118	-,108	-,088	-,055	,209	-,076
	Sig. (2-tailed)	,157	,260	,383	,426	,516	,686	,119	,573
		57	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,076	,406**	,103	,153	,035	-,472**	,108	,370**
	Sig. (2-tailed)	,573	,002	,446	,255	,796	,000	,424	,005
		57	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,145	-,108	,116	,047	-,064	-,216	-,149	-,012
	Sig. (2-tailed)	,281	,425	,391	,730	,636	,107	,270	,929
		57	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,081	-,137	,062	,592**	,121	,142	,054	-,005
	Sig. (2-tailed)	,547	,310	,647	,000	,371	,294	,689	,968
		57	57	57	57	57	57	57	57
amount of kg concentrates per cow per year average	Pearson Correlation	-,045	,028	-,027	,029	-,088	-,210	,021	-,073
	Sig. (2-tailed)	,739	,838	,841	,831	,515	,117	,877	,588
		57	57	57	57	57	57	57	57
trend in kg concentrates per cow per year	Pearson Correlation	-,153	-,269*	-,198	-,194	-,139	-,269*	-,123	-,124
	Sig. (2-tailed)	,256	,043	,140	,148	,302	,043	,360	,358
		57	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,147	-,072	-,092	-,072	-,174	-,231	-,110	-,185
	Sig. (2-tailed)	,274	,596	,496	,593	,195	,084	,414	,167
		57	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	,063	,209	,122	,184	,059	,187	,046	,144
	Sig. (2-tailed)	,640	,118	,367	,172	,665	,163	,735	,286
		57	57	57	57	57	57	57	57

Correlations Annex 10; farm size

		amount of cows per hectares average	trend amount of cows per hectares	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows	amount of kg concentrates per cow per year average	trend in kg concentrates per cow per year
milk cows average	Pearson Correlation	,190	,076	-,145	,081	-,045	-,153
	Sig. (2-tailed)	,157	,573	,281	,547	,739	,256
		57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,108	-,137	,028	-,269*
	Sig. (2-tailed)	,260	,002	,425	,310	,838	,043
		57	57	57	57	57	57
youngstock average	Pearson Correlation	,118	,103	,116	,062	-,027	-,198
	Sig. (2-tailed)	,383	,446	,391	,647	,841	,140
		57	57	57	57	57	57
growth in youngstock	Pearson Correlation	-,108	,153	,047	,592**	,029	-,194
	Sig. (2-tailed)	,426	,255	,730	,000	,831	,148
		57	57	57	57	57	57
hectares average	Pearson Correlation	-,088	,035	-,064	,121	-,088	-,139
	Sig. (2-tailed)	,516	,796	,636	,371	,515	,302
		57	57	57	57	57	57
trend amount of hectares	Pearson Correlation	-,055	-,472**	-,216	,142	-,210	-,269*
	Sig. (2-tailed)	,686	,000	,107	,294	,117	,043
		57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,149	,054	,021	-,123
	Sig. (2-tailed)	,119	,424	,270	,689	,877	,360
		57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,012	-,005	-,073	-,124
	Sig. (2-tailed)	,573	,005	,929	,968	,588	,358
		57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	-,360**	-,042	,069	-,016
	Sig. (2-tailed)		,744	,006	,758	,611	,908
		57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,201	-,234	,136	-,019
	Sig. (2-tailed)	,744		,133	,080	,312	,888
		57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	1	-,246	,093	-,232
	Sig. (2-tailed)	,006	,133		,065	,491	,082
		57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,246	1	-,014	,078
	Sig. (2-tailed)	,758	,080	,065		,919	,563
		57	57	57	57	57	57
amount of kg concentrates per cow per year average	Pearson Correlation	,069	,136	,093	-,014	1	-,032
	Sig. (2-tailed)	,611	,312	,491	,919		,814
		57	57	57	57	57	57
trend in kg concentrates per cow per year	Pearson Correlation	-,016	-,019	-,232	,078	-,032	1
	Sig. (2-tailed)	,908	,888	,082	,563	,814	
		57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	,221	-,181	,798**	-,118
	Sig. (2-tailed)	,736	,530	,098	,178	,000	,383
		57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,298*	-,081	,064	-,911**
	Sig. (2-tailed)	,858	,676	,024	,548	,636	,000
		57	57	57	57	57	57

Correlations Annex 10; farm size

		kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk
milk cows average	Pearson Correlation	-,147	,063
	Sig. (2-tailed)	,274	,640
		57	57
grow in milk cows	Pearson Correlation	-,072	,209
	Sig. (2-tailed)	,596	,118
		57	57
youngstock average	Pearson Correlation	-,092	,122
	Sig. (2-tailed)	,496	,367
		57	57
growth in youngstock	Pearson Correlation	-,072	,184
	Sig. (2-tailed)	,593	,172
		57	57
hectares average	Pearson Correlation	-,174	,059
	Sig. (2-tailed)	,195	,665
		57	57
trend amount of hectares	Pearson Correlation	-,231	,187
	Sig. (2-tailed)	,084	,163
		57	57
milk quota average	Pearson Correlation	-,110	,046
	Sig. (2-tailed)	,414	,735
		57	57
trend qouta	Pearson Correlation	-,185	,144
	Sig. (2-tailed)	,167	,286
		57	57
amount of cows per hectares average	Pearson Correlation	,046	-,024
	Sig. (2-tailed)	,736	,858
		57	57
trend amount of cows per hectares	Pearson Correlation	,085	,057
	Sig. (2-tailed)	,530	,676
		57	57
amount of youngstock per 10milkcows average	Pearson Correlation	,221	,298*
	Sig. (2-tailed)	,098	,024
		57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,181	-,081
	Sig. (2-tailed)	,178	,548
		57	57
amount of kg concentrates per cow per year average	Pearson Correlation	,798**	,064
	Sig. (2-tailed)	,000	,636
		57	57
trend in kg concentrates per cow per year	Pearson Correlation	-,118	-,911**
	Sig. (2-tailed)	,383	,000
		57	57
kg concentrates per 100kg milk average	Pearson Correlation	1	,217
	Sig. (2-tailed)		,105
		57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	,217	1
	Sig. (2-tailed)	,105	
		57	57

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations annex 11 daily dosages

		daily dosis average	daily dosis mastitis	daily dosis dry off	daily dosis other	trend daily dosis	trend mastitis	trend droogzetters	trend overige medicijnen
daily dosis average	Pearson Correlation	1	,749**	,364**	,839**	-,229	-,160	-,173	-,154
	Sig. (2-tailed)		,000	,005	,000	,087	,234	,197	,252
	N	57	57	57	57	57	57	57	57
daily dosis mastitis	Pearson Correlation	,749**	1	,001	,488**	-,030	-,085	,050	-,038
	Sig. (2-tailed)	,000		,995	,000	,825	,529	,710	,781
	N	57	57	57	57	57	57	57	57
daily dosis dry off	Pearson Correlation	,364**	,001	1	-,026	-,237	,005	-,363**	-,112
	Sig. (2-tailed)	,005	,995		,848	,076	,970	,006	,407
	N	57	57	57	57	57	57	57	57
daily dosis other	Pearson Correlation	,839**	,488**	-,026	1	-,198	-,197	-,090	-,150
	Sig. (2-tailed)	,000	,000	,848		,141	,143	,505	,267
	N	57	57	57	57	57	57	57	57
trend daily dosis	Pearson Correlation	-,229	-,030	-,237	-,198	1	,538**	,562**	,643**
	Sig. (2-tailed)	,087	,825	,076	,141		,000	,000	,000
	N	57	57	57	57	57	57	57	57
trend mastitis	Pearson Correlation	-,160	-,085	,005	-,197	,538**	1	-,096	,192
	Sig. (2-tailed)	,234	,529	,970	,143	,000		,478	,153
	N	57	57	57	57	57	57	57	57
trend droogzetters	Pearson Correlation	-,173	,050	-,363**	-,090	,562**	-,096	1	,138
	Sig. (2-tailed)	,197	,710	,006	,505	,000	,478		,305
	N	57	57	57	57	57	57	57	57
trend overige medicijnen	Pearson Correlation	-,154	-,038	-,112	-,150	,643**	,192	,138	1
	Sig. (2-tailed)	,252	,781	,407	,267	,000	,153	,305	
	N	57	57	57	57	57	57	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations annex 12 daily dosage average

		daily dosis average	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
daily dosis average	Pearson Correlation	1	,304*	,192	,380**	,048	,131	-,187
	Sig. (2-tailed)		,022	,152	,004	,722	,332	,163
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,304*	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,022		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,192	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,152	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,380**	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,004	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,048	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,722	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	,131	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,332	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,187	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,163	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,102	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,452	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,107	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,429	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,220	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,101	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,087	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,519	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	,008	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,955	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,133	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,324	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,123	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,361	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	,221	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,099	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	,015	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,914	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,025	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,854	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,082	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,543	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,171	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,203	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,108	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,423	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,010	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,939	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	-,074	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,583	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,286*	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,031	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,050	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,714	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,377**	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,004	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		daily dosis average	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	-,138	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,306	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,318*	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,016	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
daily dosis average	Pearson Correlation	,102	,107	,220	-,087	,008	-,133	,123
	Sig. (2-tailed)	,452	,429	,101	,519	,955	,324	,361
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
daily dosis average	Pearson Correlation	,221	,015	-,025	-,082	-,171	,108	,010
	Sig. (2-tailed)	,099	,914	,854	,543	,203	,423	,939
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
daily dosis average	Pearson Correlation	-,074	-,286*	-,050	,377**	-,138	,318*
	Sig. (2-tailed)	,583	,031	,714	,004	,306	,016
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annex 12 daily dosage average

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations annex 13 daily dosage mastitis

		daily dosis mastitis	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
daily dosis mastitis	Pearson Correlation	1	,283*	,147	,321*	,028	-,058	-,288*
	Sig. (2-tailed)		,033	,275	,015	,835	,666	,030
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,283*	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,033		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,147	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,275	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,321*	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,015	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,028	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,835	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,058	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,666	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,288*	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,030	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,119	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,380	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,072	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,597	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,163	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,227	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,064	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,638	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	,203	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,129	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,064	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,635	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,187	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,164	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	,041	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,760	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,208	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,120	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,068	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,616	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,126	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,351	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,141	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,294	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,063	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,642	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,023	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,867	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	-,060	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,656	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,008	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,953	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,043	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,753	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,200	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,136	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		daily dosis mastitis	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	-,028	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,835	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,227	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,090	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
daily dosis mastitis	Pearson Correlation	,119	-,072	,163	-,064	,203	-,064	,187
	Sig. (2-tailed)	,380	,597	,227	,638	,129	,635	,164
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
daily dosis mastitis	Pearson Correlation	,041	-,208	,068	-,126	-,141	,063	,023
	Sig. (2-tailed)	,760	,120	,616	,351	,294	,642	,867
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
daily dosis mastitis	Pearson Correlation	-,060	-,008	-,043	,200	-,028	,227
	Sig. (2-tailed)	,656	,953	,753	,136	,835	,090
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annex 13 daily dosage mastitis

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations annex 14 daily dosage for dry off injectors

		daily dosis dry off	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
daily dosis dry off	Pearson Correlation	1	-,108	-,164	-,055	-,184	,060	,042
	Sig. (2-tailed)		,423	,222	,687	,170	,657	,755
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	-,108	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,423		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,164	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,222	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	-,055	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,687	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,184	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,170	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	,060	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,657	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,042	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,755	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,049	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,718	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,012	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,931	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,029	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,830	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,228	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,088	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	,051	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,707	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,041	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,763	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,167	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,216	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	,145	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,284	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	,044	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,745	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,476**	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,000	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,031	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,817	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,068	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,613	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,003	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,982	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,160	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,235	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,252	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,058	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,501**	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,000	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,029	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,830	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,327*	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,013	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		daily dosis dry off	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	,043	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,748	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,170	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,206	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
daily dosis dry off	Pearson Correlation	-,049	,012	,029	-,228	,051	,041	,167
	Sig. (2-tailed)	,718	,931	,830	,088	,707	,763	,216
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
daily dosis dry off	Pearson Correlation	,145	,044	-,476**	-,031	-,068	,003	,160
	Sig. (2-tailed)	,284	,745	,000	,817	,613	,982	,235
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
daily dosis dry off	Pearson Correlation	,252	-,501**	-,029	,327*	,043	,170
	Sig. (2-tailed)	,058	,000	,830	,013	,748	,206
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annex 14 daily dosage for dry off injectors

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations annes 15 daily dosage other

		daily dosis other	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
daily dosis other	Pearson Correlation	1	,348**	,299*	,409**	,167	,210	-,122
	Sig. (2-tailed)		,008	,024	,002	,215	,116	,366
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,348**	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,008		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,299*	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,024	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,409**	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,002	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,167	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,215	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	,210	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,116	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,122	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,366	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,107	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,427	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,211	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,116	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,216	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,107	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	,043	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,749	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,159	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,238	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,190	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,158	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,035	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,798	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	,232	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,082	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	,140	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,298	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,199	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,138	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,024	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,861	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,131	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,331	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,125	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,353	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,095	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,482	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	-,226	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,090	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,145	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,283	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,031	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,818	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,260	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,051	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		daily dosis other	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	-,224	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,094	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,243	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,069	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
daily dosis other	Pearson Correlation	,107	,211	,216	,043	-,159	-,190	-,035
	Sig. (2-tailed)	,427	,116	,107	,749	,238	,158	,798
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
daily dosis other	Pearson Correlation	,232	,140	,199	-,024	-,131	,125	-,095
	Sig. (2-tailed)	,082	,298	,138	,861	,331	,353	,482
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
daily dosis other	Pearson Correlation	-,226	-,145	-,031	,260	-,224	,243
	Sig. (2-tailed)	,090	,283	,818	,051	,094	,069
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annes 15 daily dosage other

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations annex 16 trend daily dosage

		trend daily dosis	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
trend daily dosis	Pearson Correlation	1	-,001	-,191	-,047	-,100	-,242	,153
	Sig. (2-tailed)		,996	,154	,727	,458	,070	,256
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	-,001	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,996		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,191	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,154	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	-,047	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,727	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,100	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,458	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,242	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,070	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,153	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,256	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,089	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,512	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,142	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,293	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,240	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,072	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,155	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,251	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	,040	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,766	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,054	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,688	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,004	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,974	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,146	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,278	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	,139	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,303	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,204	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,128	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,029	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,833	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,096	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,477	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,073	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,588	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,141	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,296	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,312*	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,018	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	,224	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,094	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,114	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,399	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,031	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,820	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		trend daily dosis	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	-,149	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,269	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	-,125	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,354	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
trend daily dosis	Pearson Correlation	-,089	-,142	-,240	-,155	,040	,054	-,004
	Sig. (2-tailed)	,512	,293	,072	,251	,766	,688	,974
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
trend daily dosis	Pearson Correlation	-,146	,139	-,204	-,029	-,096	,073	-,141
	Sig. (2-tailed)	,278	,303	,128	,833	,477	,588	,296
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
trend daily dosis	Pearson Correlation	,312*	,224	,114	-,031	-,149	-,125
	Sig. (2-tailed)	,018	,094	,399	,820	,269	,354
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annex 16 trend daily dosage

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations annex 17; trend daily dosage mastitis

		trend mastitis	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
trend mastitis	Pearson Correlation	1	-,066	-,121	-,065	-,068	-,215	,063
	Sig. (2-tailed)		,625	,371	,633	,614	,109	,642
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	-,066	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,625		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,121	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,371	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	-,065	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,633	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,068	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,614	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,215	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,109	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,063	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,642	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,137	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,308	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,184	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,171	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,041	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,762	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,104	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,443	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,006	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,962	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,043	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,752	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,069	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,611	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,028	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,835	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	,222	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,097	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,133	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,326	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,002	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,987	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,126	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,352	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,646	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,071	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,600	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,425**	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,001	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	,164	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,222	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,197	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,141	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,042	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,755	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		trend mastitis	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	,112	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,409	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	-,106	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,435	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
trend mastitis	Pearson Correlation	-,137	-,184	-,041	-,104	-,006	-,043	,069
	Sig. (2-tailed)	,308	,171	,762	,443	,962	,752	,611
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
trend mastitis	Pearson Correlation	-,028	,222	-,133	,002	,126	,062	-,071
	Sig. (2-tailed)	,835	,097	,326	,987	,352	,646	,600
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
trend mastitis	Pearson Correlation	,425**	,164	,197	-,042	,112	-,106
	Sig. (2-tailed)	,001	,222	,141	,755	,409	,435
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annex 17; trend daily dosage mastitis

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

correlations annex 18; trend daily dosages for dry off injectors

		trend droogzetters	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
trend droogzetters	Pearson Correlation	1	,218	,211	,188	,161	-,164	-,010
	Sig. (2-tailed)		,104	,114	,162	,232	,222	,941
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,218	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,104		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,211	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,114	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,188	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,162	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,161	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,232	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,164	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,222	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,010	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,941	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,121	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,368	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,084	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,534	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,199	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,138	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	,052	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,700	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	,063	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,641	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,029	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,832	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,036	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,788	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,057	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,674	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,107	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,430	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,027	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,840	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,001	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,991	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,096	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,479	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,242	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,069	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,086	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,523	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	-,100	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,458	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	,269*	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,043	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,073	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,590	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,061	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,654	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

correlations annex 18; trend daily dosages for dry off injectors

		trend droogzetters	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	-,230	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,085	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	-,008	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,953	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

correlations annex 18; trend daily dosages for dry off injectors

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
trend droogzetters	Pearson Correlation	,121	,084	-,199	,052	,063	,029	-,036
	Sig. (2-tailed)	,368	,534	,138	,700	,641	,832	,788
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

correlations annex 18; trend daily dosages for dry off injectors

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

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		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
trend droogzetters	Pearson Correlation	-,057	-,107	-,027	,001	-,096	-,242	-,086
	Sig. (2-tailed)	,674	,430	,840	,991	,479	,069	,523
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

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		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

correlations annex 18; trend daily dosages for dry off injectors

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
trend droogzetters	Pearson Correlation	-,100	,269*	-,073	,061	-,230	-,008
	Sig. (2-tailed)	,458	,043	,590	,654	,085	,953
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

correlations annex 18; trend daily dosages for dry off injectors

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations annex 19 trend daily dosage other

		trend overige medicijnen	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
trend overige medicijnen	Pearson Correlation	1	-,170	-,354**	-,230	-,131	-,148	,336*
	Sig. (2-tailed)		,206	,007	,086	,332	,271	,010
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	-,170	1	,620**	,978**	,405**	-,145	,081
	Sig. (2-tailed)	,206		,000	,000	,002	,281	,547
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,354**	,620**	1	,660**	,783**	-,108	-,137
	Sig. (2-tailed)	,007	,000		,000	,000	,425	,310
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	-,230	,978**	,660**	1	,433**	-,149	,054
	Sig. (2-tailed)	,086	,000	,000		,001	,270	,689
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,131	,405**	,783**	,433**	1	-,012	-,005
	Sig. (2-tailed)	,332	,002	,000	,001		,929	,968
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,148	-,145	-,108	-,149	-,012	1	-,246
	Sig. (2-tailed)	,271	,281	,425	,270	,929		,065
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,336*	,081	-,137	,054	-,005	-,246	1
	Sig. (2-tailed)	,010	,547	,310	,689	,968	,065	
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,177	,190	,152	,209	-,076	-,360**	-,042
	Sig. (2-tailed)	,187	,157	,260	,119	,573	,006	,758
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,215	,076	,406**	,108	,370**	,201	-,234
	Sig. (2-tailed)	,109	,573	,002	,424	,005	,133	,080
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,333*	-,147	-,072	-,110	-,185	,221	-,181
	Sig. (2-tailed)	,011	,274	,596	,414	,167	,098	,178
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,240	,063	,209	,046	,144	,298*	-,081
	Sig. (2-tailed)	,072	,640	,118	,735	,286	,024	,548
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	,105	-,269*	-,230	-,338*	-,234	,105	-,215
	Sig. (2-tailed)	,438	,043	,085	,010	,080	,438	,107
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,058	-,019	-,267*	-,071	-,248	-,178	,060
	Sig. (2-tailed)	,667	,888	,045	,601	,062	,185	,658
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,086	-,015	-,195	,003	-,086	-,112	-,090
	Sig. (2-tailed)	,525	,914	,145	,981	,525	,407	,503
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,176	,123	,077	,214	,063	-,123	,224
	Sig. (2-tailed)	,191	,364	,569	,110	,641	,363	,095
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	,131	-,115	-,055	-,069	,107	,236	,114
	Sig. (2-tailed)	,330	,394	,683	,610	,429	,077	,400
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,263*	,286*	,216	,286*	,153	,120	-,122
	Sig. (2-tailed)	,048	,031	,107	,031	,255	,375	,366
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,010	-,089	-,148	-,089	-,020	,290*	-,080
	Sig. (2-tailed)	,942	,509	,271	,510	,884	,029	,552
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,150	,037	-,016	,011	-,011	,058	,044
	Sig. (2-tailed)	,264	,786	,906	,936	,933	,669	,743
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,038	-,037	-,280*	-,064	-,253	,270*	-,060
	Sig. (2-tailed)	,778	,783	,035	,634	,058	,042	,656
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,011	,013	,016	,049	,065	,225	-,090
	Sig. (2-tailed)	,936	,923	,903	,717	,630	,092	,504
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,246	,042	-,210	,032	-,092	-,433**	,435**
	Sig. (2-tailed)	,065	,759	,116	,814	,496	,001	,001
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	,030	,331*	,246	,256	,299*	,010	,013
	Sig. (2-tailed)	,826	,012	,065	,055	,024	,943	,922
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,063	,034	-,213	,020	-,100	-,069	,038
	Sig. (2-tailed)	,642	,801	,112	,884	,459	,612	,780
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,031	,052	-,070	,101	-,124	,102	-,097
	Sig. (2-tailed)	,821	,700	,607	,456	,357	,450	,473
	N	57	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		trend overige medicijnen	milk cows average	grow in milk cows	milk quota average	trend qouta	amount of youngstock per 10milkcows average	trend amount of youngstock per 10 milk cows
age of the farmer	Pearson Correlation	-,079	-,114	-,001	-,130	,161	,030	-,110
	Sig. (2-tailed)	,558	,400	,993	,335	,233	,823	,415
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	-,175	,223	,181	,279*	-,044	-,132	,024
	Sig. (2-tailed)	,193	,095	,177	,036	,743	,328	,860
	N	57	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
trend overige medicijnen	Pearson Correlation	-,177	-,215	-,333*	-,240	,105	,058	-,086
	Sig. (2-tailed)	,187	,109	,011	,072	,438	,667	,525
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,190	,076	-,147	,063	-,269*	-,019	-,015
	Sig. (2-tailed)	,157	,573	,274	,640	,043	,888	,914
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,152	,406**	-,072	,209	-,230	-,267*	-,195
	Sig. (2-tailed)	,260	,002	,596	,118	,085	,045	,145
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,209	,108	-,110	,046	-,338*	-,071	,003
	Sig. (2-tailed)	,119	,424	,414	,735	,010	,601	,981
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,076	,370**	-,185	,144	-,234	-,248	-,086
	Sig. (2-tailed)	,573	,005	,167	,286	,080	,062	,525
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,360**	,201	,221	,298*	,105	-,178	-,112
	Sig. (2-tailed)	,006	,133	,098	,024	,438	,185	,407
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	-,042	-,234	-,181	-,081	-,215	,060	-,090
	Sig. (2-tailed)	,758	,080	,178	,548	,107	,658	,503
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	1	,044	,046	-,024	-,166	,096	,005
	Sig. (2-tailed)		,744	,736	,858	,217	,479	,968
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,044	1	,085	,057	-,119	-,117	-,305*
	Sig. (2-tailed)	,744		,530	,676	,377	,388	,021
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	,046	,085	1	,217	,063	,018	,075
	Sig. (2-tailed)	,736	,530		,105	,642	,896	,582
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,024	,057	,217	1	,039	,018	-,091
	Sig. (2-tailed)	,858	,676	,105		,776	,892	,500
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,166	-,119	,063	,039	1	,149	,167
	Sig. (2-tailed)	,217	,377	,642	,776		,270	,216
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	,096	-,117	,018	,018	,149	1	,150
	Sig. (2-tailed)	,479	,388	,896	,892	,270		,267
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	,005	-,305*	,075	-,091	,167	,150	1
	Sig. (2-tailed)	,968	,021	,582	,500	,216	,267	
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	-,045	,006	-,011	-,280*	-,256	-,155	-,059
	Sig. (2-tailed)	,740	,965	,933	,035	,055	,249	,660
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,148	-,042	,220	,435**	-,256	-,055	-,021
	Sig. (2-tailed)	,273	,755	,101	,001	,055	,683	,876
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,053	,098	,082	,180	-,055	,075	,177
	Sig. (2-tailed)	,693	,467	,545	,180	,683	,582	,188
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	-,154	-,087	-,065	-,006	,012	-,094	,004
	Sig. (2-tailed)	,251	,518	,633	,964	,930	,485	,975
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	-,071	-,095	-,106	-,021	-,159	-,100	-,060
	Sig. (2-tailed)	,598	,481	,431	,879	,237	,458	,659
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	-,210	-,229	,216	,025	-,013	,139	,073
	Sig. (2-tailed)	,117	,086	,107	,852	,924	,301	,588
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	,243	,010	-,199	-,034	-,111	-,322*	,046
	Sig. (2-tailed)	,069	,940	,138	,799	,409	,015	,734
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,114	-,233	-,235	-,341**	-,019	,057	,182
	Sig. (2-tailed)	,397	,082	,079	,009	,888	,676	,175
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,250	,039	-,125	,272*	,041	,053	,036
	Sig. (2-tailed)	,060	,773	,353	,041	,765	,697	,791
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	-,184	-,327*	,055	-,123	-,142	,110	,312*
	Sig. (2-tailed)	,170	,013	,682	,360	,292	,417	,018
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	-,078	-,063	,158	-,145	,152	,067	,215
	Sig. (2-tailed)	,563	,643	,240	,283	,261	,618	,108
	N	57	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		amount of cows per hectares average	trend amount of cows per hectares	kg concentrates per 100kg milk average	trend kg concentrates per 100 kg milk	access to pastures last year	age cows average	trend age cows
age of the farmer	Pearson Correlation	-,250	,106	,076	,079	-,040	,071	,280*
	Sig. (2-tailed)	,061	,433	,577	,560	,766	,598	,035
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,327*	,105	,266*	-,190	-,135	,063	-,016
	Sig. (2-tailed)	,013	,437	,045	,156	,317	,640	,904
	N	57	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
trend overige medicijnen	Pearson Correlation	-,176	,131	-,263*	-,010	-,150	,038	-,011
	Sig. (2-tailed)	,191	,330	,048	,942	,264	,778	,936
	N	57	57	57	57	57	57	57
milk cows average	Pearson Correlation	,123	-,115	,286*	-,089	,037	-,037	,013
	Sig. (2-tailed)	,364	,394	,031	,509	,786	,783	,923
	N	57	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	,077	-,055	,216	-,148	-,016	-,280*	,016
	Sig. (2-tailed)	,569	,683	,107	,271	,906	,035	,903
	N	57	57	57	57	57	57	57
milk quota average	Pearson Correlation	,214	-,069	,286*	-,089	,011	-,064	,049
	Sig. (2-tailed)	,110	,610	,031	,510	,936	,634	,717
	N	57	57	57	57	57	57	57
trend qouta	Pearson Correlation	,063	,107	,153	-,020	-,011	-,253	,065
	Sig. (2-tailed)	,641	,429	,255	,884	,933	,058	,630
	N	57	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,123	,236	,120	,290*	,058	,270*	,225
	Sig. (2-tailed)	,363	,077	,375	,029	,669	,042	,092
	N	57	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,224	,114	-,122	-,080	,044	-,060	-,090
	Sig. (2-tailed)	,095	,400	,366	,552	,743	,656	,504
	N	57	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	-,045	-,148	,053	-,154	-,071	-,210	,243
	Sig. (2-tailed)	,740	,273	,693	,251	,598	,117	,069
	N	57	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	,006	-,042	,098	-,087	-,095	-,229	,010
	Sig. (2-tailed)	,965	,755	,467	,518	,481	,086	,940
	N	57	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,011	,220	,082	-,065	-,106	,216	-,199
	Sig. (2-tailed)	,933	,101	,545	,633	,431	,107	,138
	N	57	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,280*	,435**	,180	-,006	-,021	,025	-,034
	Sig. (2-tailed)	,035	,001	,180	,964	,879	,852	,799
	N	57	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,256	-,256	-,055	,012	-,159	-,013	-,111
	Sig. (2-tailed)	,055	,055	,683	,930	,237	,924	,409
	N	57	57	57	57	57	57	57
age cows average	Pearson Correlation	-,155	-,055	,075	-,094	-,100	,139	-,322*
	Sig. (2-tailed)	,249	,683	,582	,485	,458	,301	,015
	N	57	57	57	57	57	57	57
trend age cows	Pearson Correlation	-,059	-,021	,177	,004	-,060	,073	,046
	Sig. (2-tailed)	,660	,876	,188	,975	,659	,588	,734
	N	57	57	57	57	57	57	57
production average	Pearson Correlation	1	-,109	,126	,041	,071	,097	-,009
	Sig. (2-tailed)		,422	,350	,763	,601	,474	,947
	N	57	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,109	1	-,137	,150	-,175	,207	,035
	Sig. (2-tailed)	,422		,311	,264	,194	,123	,795
	N	57	57	57	57	57	57	57
time between calving average	Pearson Correlation	,126	-,137	1	,031	,244	,140	-,115
	Sig. (2-tailed)	,350	,311		,822	,068	,298	,395
	N	57	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,041	,150	,031	1	-,091	,375**	,215
	Sig. (2-tailed)	,763	,264	,822		,500	,004	,109
	N	57	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,071	-,175	,244	-,091	1	-,084	-,071
	Sig. (2-tailed)	,601	,194	,068	,500		,533	,600
	N	57	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,097	,207	,140	,375**	-,084	1	-,160
	Sig. (2-tailed)	,474	,123	,298	,004	,533		,233
	N	57	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,009	,035	-,115	,215	-,071	-,160	1
	Sig. (2-tailed)	,947	,795	,395	,109	,600	,233	
	N	57	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	,129	-,047	-,175	,059	,145	,062	-,038
	Sig. (2-tailed)	,338	,727	,193	,663	,283	,645	,780
	N	57	57	57	57	57	57	57
cellcount average	Pearson Correlation	-,295*	-,081	,382**	-,029	,210	-,014	-,216
	Sig. (2-tailed)	,026	,549	,003	,829	,117	,916	,106
	N	57	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,227	-,033	-,036	,135	,164	,356**	-,036
	Sig. (2-tailed)	,089	,807	,793	,315	,222	,007	,792
	N	57	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,298*	-,025	,100	,065	,016	,186	-,161
	Sig. (2-tailed)	,024	,856	,457	,633	,905	,165	,231
	N	57	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		production average	trend on milk production	time between calving average	trend on time between calving	% to destruction average	trend percentage to destruction	% cows removed average
age of the farmer	Pearson Correlation	-,159	-,075	,071	,118	,072	,033	-,066
	Sig. (2-tailed)	,238	,581	,601	,381	,593	,810	,625
	N	57	57	57	57	57	57	57
higest education	Pearson Correlation	,218	-,081	,041	-,066	-,032	,012	,143
	Sig. (2-tailed)	,104	,550	,763	,628	,811	,931	,289
	N	57	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
trend overige medicijnen	Pearson Correlation	,246	,030	-,063	-,031	-,079	-,175
	Sig. (2-tailed)	,065	,826	,642	,821	,558	,193
	N	57	57	57	57	57	57
milk cows average	Pearson Correlation	,042	,331*	,034	,052	-,114	,223
	Sig. (2-tailed)	,759	,012	,801	,700	,400	,095
	N	57	57	57	57	57	57
grow in milk cows	Pearson Correlation	-,210	,246	-,213	-,070	-,001	,181
	Sig. (2-tailed)	,116	,065	,112	,607	,993	,177
	N	57	57	57	57	57	57
milk quota average	Pearson Correlation	,032	,256	,020	,101	-,130	,279*
	Sig. (2-tailed)	,814	,055	,884	,456	,335	,036
	N	57	57	57	57	57	57
trend qouta	Pearson Correlation	-,092	,299*	-,100	-,124	,161	-,044
	Sig. (2-tailed)	,496	,024	,459	,357	,233	,743
	N	57	57	57	57	57	57
amount of youngstock per 10milkcows average	Pearson Correlation	-,433**	,010	-,069	,102	,030	-,132
	Sig. (2-tailed)	,001	,943	,612	,450	,823	,328
	N	57	57	57	57	57	57
trend amount of youngstock per 10 milk cows	Pearson Correlation	,435**	,013	,038	-,097	-,110	,024
	Sig. (2-tailed)	,001	,922	,780	,473	,415	,860
	N	57	57	57	57	57	57
amount of cows per hectares average	Pearson Correlation	,114	-,250	-,184	-,078	-,250	,327*
	Sig. (2-tailed)	,397	,060	,170	,563	,061	,013
	N	57	57	57	57	57	57
trend amount of cows per hectares	Pearson Correlation	-,233	,039	-,327*	-,063	,106	,105
	Sig. (2-tailed)	,082	,773	,013	,643	,433	,437
	N	57	57	57	57	57	57
kg concentrates per 100kg milk average	Pearson Correlation	-,235	-,125	,055	,158	,076	,266*
	Sig. (2-tailed)	,079	,353	,682	,240	,577	,045
	N	57	57	57	57	57	57
trend kg concentrates per 100 kg milk	Pearson Correlation	-,341**	,272*	-,123	-,145	,079	-,190
	Sig. (2-tailed)	,009	,041	,360	,283	,560	,156
	N	57	57	57	57	57	57
access to pastures last year	Pearson Correlation	-,019	,041	-,142	,152	-,040	-,135
	Sig. (2-tailed)	,888	,765	,292	,261	,766	,317
	N	57	57	57	57	57	57
age cows average	Pearson Correlation	,057	,053	,110	,067	,071	,063
	Sig. (2-tailed)	,676	,697	,417	,618	,598	,640
	N	57	57	57	57	57	57
trend age cows	Pearson Correlation	,182	,036	,312*	,215	,280*	-,016
	Sig. (2-tailed)	,175	,791	,018	,108	,035	,904
	N	57	57	57	57	57	57
production average	Pearson Correlation	,129	-,295*	,227	,298*	-,159	,218
	Sig. (2-tailed)	,338	,026	,089	,024	,238	,104
	N	57	57	57	57	57	57
trend on milk production	Pearson Correlation	-,047	-,081	-,033	-,025	-,075	-,081
	Sig. (2-tailed)	,727	,549	,807	,856	,581	,550
	N	57	57	57	57	57	57
time between calving average	Pearson Correlation	-,175	,382**	-,036	,100	,071	,041
	Sig. (2-tailed)	,193	,003	,793	,457	,601	,763
	N	57	57	57	57	57	57
trend on time between calving	Pearson Correlation	,059	-,029	,135	,065	,118	-,066
	Sig. (2-tailed)	,663	,829	,315	,633	,381	,628
	N	57	57	57	57	57	57
% to destruction average	Pearson Correlation	,145	,210	,164	,016	,072	-,032
	Sig. (2-tailed)	,283	,117	,222	,905	,593	,811
	N	57	57	57	57	57	57
trend percentage to destruction	Pearson Correlation	,062	-,014	,356**	,186	,033	,012
	Sig. (2-tailed)	,645	,916	,007	,165	,810	,931
	N	57	57	57	57	57	57
% cows removed average	Pearson Correlation	-,038	-,216	-,036	-,161	-,066	,143
	Sig. (2-tailed)	,780	,106	,792	,231	,625	,289
	N	57	57	57	57	57	57
trend percentage removed	Pearson Correlation	1	,009	,246	,151	-,107	,198
	Sig. (2-tailed)		,947	,065	,262	,428	,140
	N	57	57	57	57	57	57
cellcount average	Pearson Correlation	,009	1	,061	-,196	,259	-,194
	Sig. (2-tailed)	,947		,650	,144	,051	,148
	N	57	57	57	57	57	57
trend celgetal	Pearson Correlation	,246	,061	1	,079	,240	,008
	Sig. (2-tailed)	,065	,650		,560	,072	,951
	N	57	57	57	57	57	57
amount of free diseases	Pearson Correlation	,151	-,196	,079	1	-,087	,300*
	Sig. (2-tailed)	,262	,144	,560		,520	,023
	N	57	57	57	57	57	57

Correlations annex 19 trend daily dosage other

		trend percentage removed	cellcount average	trend celgetal	amount of free diseases	age of the farmer	higest education
age of the farmer	Pearson Correlation	-,107	,259	,240	-,087	1	-,412**
	Sig. (2-tailed)	,428	,051	,072	,520		,001
	N	57	57	57	57	57	57
higest education	Pearson Correlation	,198	-,194	,008	,300*	-,412**	1
	Sig. (2-tailed)	,140	,148	,951	,023	,001	
	N	57	57	57	57	57	57

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Annex 20 Regression

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Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	milk quota average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	cellcount average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
3	amount of free diseases	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: daily dosis average

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,380[a]	,144	,129	1,71334
2	,549[b]	,302	,276	1,56223
3	,606[c]	,367	,331	1,50108

a. Predictors: (Constant), milk quota average

b. Predictors: (Constant), milk quota average, cellcount average

c. Predictors: (Constant), milk quota average, cellcount average, amount of free diseases

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27,223	1	27,223	9,274	,004[a]
	Residual	161,454	55	2,936		
	Total	188,678	56			
2	Regression	56,886	2	28,443	11,654	,000[b]
	Residual	131,791	54	2,441		
	Total	188,678	56			
3	Regression	69,256	3	23,085	10,246	,000[c]
	Residual	119,421	53	2,253		
	Total	188,678	56			

a. Predictors: (Constant), milk quota average

b. Predictors: (Constant), milk quota average, cellcount average

c. Predictors: (Constant), milk quota average, cellcount average, amount of free diseases

d. Dependent Variable: daily dosis average

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,744	,415		11,442	,000
	milk quota average	1,23E-006	,000	,380	3,045	,004
2	(Constant)	7,457	,865		8,620	,000
	milk quota average	1,57E-006	,000	,485	4,120	,000
	cellcount average	-,016	,004	-,410	-3,486	,001
3	(Constant)	5,569	1,158		4,811	,000
	milk quota average	1,43E-006	,000	,442	3,861	,000
	cellcount average	-,013	,004	-,347	-2,990	,004
	amount of free diseases	,360	,154	,264	2,343	,023

a. Dependent Variable: daily dosis average

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	-1,556[a]	-2,752	,008	-,351	,043
	grow in milk cows	-,104[a]	-,622	,536	-,084	,564
	trend qouta	-,143[a]	-1,037	,305	-,140	,812
	amount of cows per hectares average	,023[a]	,180	,857	,025	,956
	trend amount of cows per hectares	,067[a]	,527	,600	,072	,988
	amount of youngstock per 10milkcows average	,192[a]	1,538	,130	,205	,978
	trend amount of youngstock per 10 milk cows	-,209[a]	-1,699	,095	-,225	,997
	age cows average	-,107[a]	-,851	,399	-,115	,995
	trend age cows	,122[a]	,977	,333	,132	1,000
	production average	,146[a]	1,147	,256	,154	,954
	trend on milk production	,041[a]	,325	,746	,044	,995
	time between calving average	-,145[a]	-1,120	,268	-,151	,918
	trend on time between calving	-,049[a]	-,386	,701	-,052	,992

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	cellcount average	-,410[a]	-3,486	,001	-,429	,935
	trend celgetal	-,057[a]	-,455	,651	-,062	1,000
	% to destruction average	-,175[a]	-1,419	,162	-,190	1,000
	trend percentage to destruction	,133[a]	1,068	,290	,144	,996
	% cows removed average	-,008[a]	-,065	,948	-,009	,998
	trend percentage removed	-,086[a]	-,689	,494	-,093	,999
	access to pastures last year	,154[a]	1,164	,250	,156	,886
	kg concentrates per 100kg milk average	,265[a]	2,180	,034	,284	,988
	trend kg concentrates per 100 kg milk	-,105[a]	-,836	,407	-,113	,998
	age of the farmer	-,090[a]	-,714	,478	-,097	,983
	higest education	,230[a]	1,809	,076	,239	,922
	amount of free diseases	,342[a]	2,910	,005	,368	,990
2	milk cows average	-,942[b]	-1,603	,115	-,215	,036
	grow in milk cows	-,049[b]	-,316	,753	-,043	,558
	trend qouta	-,051[b]	-,390	,698	-,053	,774
	amount of cows per hectares average	-,119[b]	-,972	,336	-,132	,858
	trend amount of cows per hectares	,071[b]	,620	,538	,085	,988
	amount of youngstock per 10milkcows average	,212[b]	1,886	,065	,251	,975
	trend amount of youngstock per 10 milk cows	-,209[b]	-1,877	,066	-,250	,997
	age cows average	-,078[b]	-,678	,501	-,093	,990
	trend age cows	,137[b]	1,204	,234	,163	,999
	production average	-,005[b]	-,037	,971	-,005	,824
	trend on milk production	,015[b]	,130	,897	,018	,991
	time between calving average	-,009[b]	-,068	,946	-,009	,816
	trend on time between calving	-,051[b]	-,446	,657	-,061	,992
	trend celgetal	-,034[b]	-,297	,768	-,041	,996
	% to destruction average	-,095[b]	-,812	,420	-,111	,954
	trend percentage to destruction	,134[b]	1,182	,243	,160	,996
	% cows removed average	-,108[b]	-,923	,360	-,126	,942
	trend percentage removed	-,086[b]	-,754	,454	-,103	,999
	access to pastures last year	,217[b]	1,814	,075	,242	,868
	kg concentrates per 100kg milk average	,227[b]	2,026	,048	,268	,978
	trend kg concentrates per 100 kg milk	,003[b]	,021	,983	,003	,925
	age of the farmer	,035[b]	,289	,774	,040	,891
	higest education	,122[b]	,988	,328	,134	,847
	amount of free diseases	,264[b]	2,343	,023	,306	,937

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
3	milk cows average	-,762[c]	-1,326	,191	-,181	,036
	grow in milk cows	,008[c]	,050	,960	,007	,543
	trend qouta	-,009[c]	-,070	,945	-,010	,758
	amount of cows per hectares average	-,069[c]	-,571	,571	-,079	,826
	trend amount of cows per hectares	,091[c]	,821	,415	,113	,983
	amount of youngstock per 10milkcows average	,181[c]	1,644	,106	,222	,958
	trend amount of youngstock per 10 milk cows	-,184[c]	-1,700	,095	-,229	,986
	age cows average	-,103[c]	-,935	,354	-,129	,981
	trend age cows	,082[c]	,724	,473	,100	,945
	production average	-,070[c]	-,566	,574	-,078	,784
	trend on milk production	,024[c]	,214	,831	,030	,990
	time between calving average	-,057[c]	-,462	,646	-,064	,794
	trend on time between calving	-,071[c]	-,641	,524	-,089	,986
	trend celgetal	-,059[c]	-,529	,599	-,073	,988
	% to destruction average	-,113[c]	-1,010	,317	-,139	,950
	trend percentage to destruction	,086[c]	,769	,445	,106	,956
	% cows removed average	-,049[c]	-,421	,676	-,058	,890
	trend percentage removed	-,128[c]	-1,164	,250	-,159	,976
	access to pastures last year	,160[c]	1,337	,187	,182	,819
	kg concentrates per 100kg milk average	,192[c]	1,746	,087	,235	,955
	trend kg concentrates per 100 kg milk	,028[c]	,241	,810	,033	,917
	age of the farmer	,036[c]	,312	,756	,043	,891
	higest education	,060[c]	,490	,626	,068	,800

a. Predictors in the Model: (Constant), milk quota average

b. Predictors in the Model: (Constant), milk quota average, cellcount average

c. Predictors in the Model: (Constant), milk quota average, cellcount average, amount of free diseases

d. Dependent Variable: daily dosis average

Annex 21 Regression

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Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	milk quota average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	access to pastures last year	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
3	milk cows average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: daily dosis mastitis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,321[a]	,103	,087	,76912
2	,461[b]	,213	,183	,72717
3	,531[c]	,282	,241	,70109

a. Predictors: (Constant), milk quota average

b. Predictors: (Constant), milk quota average, access to pastures last year

c. Predictors: (Constant), milk quota average, access to pastures last year, milk cows average

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,731	1	3,731	6,307	,015[a]
	Residual	32,535	55	,592		
	Total	36,266	56			
2	Regression	7,712	2	3,856	7,292	,002[b]
	Residual	28,554	54	,529		
	Total	36,266	56			
3	Regression	10,215	3	3,405	6,928	,001[c]
	Residual	26,051	53	,492		
	Total	36,266	56			

a. Predictors: (Constant), milk quota average

b. Predictors: (Constant), milk quota average, access to pastures last year

c. Predictors: (Constant), milk quota average, access to pastures last year, milk cows average

d. Dependent Variable: daily dosis mastitis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,913	,186		4,905	,000
	milk quota average	4,56E-007	,000	,321	2,511	,015
2	(Constant)	-,250	,459		-,545	,588
	milk quota average	6,25E-007	,000	,440	3,428	,001
	access to pastures last year	,604	,220	,352	2,744	,008
3	(Constant)	-,391	,447		-,874	,386
	milk quota average	2,51E-006	,000	1,769	2,940	,005
	access to pastures last year	,762	,224	,444	3,410	,001
	milk cows average	-,018	,008	-1,327	-2,257	,028

a. Dependent Variable: daily dosis mastitis

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	-,698[a]	-1,143	,258	-,154	,043
	grow in milk cows	-,115[a]	-,672	,505	-,091	,564
	trend qouta	-,136[a]	-,963	,340	-,130	,812
	amount of cows per hectares average	,054[a]	,410	,684	,056	,956
	trend amount of cows per hectares	-,107[a]	-,834	,408	-,113	,988
	amount of youngstock per 10milkcows average	-,011[a]	-,084	,934	-,011	,978
	trend amount of youngstock per 10 milk cows	-,306[a]	-2,503	,015	-,322	,997
	age cows average	-,042[a]	-,323	,748	-,044	,995
	trend age cows	,186[a]	1,469	,148	,196	1,000
	production average	-,029[a]	-,217	,829	-,029	,954
	trend on milk production	-,187[a]	-1,476	,146	-,197	,995
	time between calving average	-,026[a]	-,194	,847	-,026	,918

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	trend on time between calving	-,098[a]	-,761	,450	-,103	,992
	cellcount average	-,096[a]	-,725	,471	-,098	,935
	trend celgetal	-,049[a]	-,381	,705	-,052	1,000
	% to destruction average	-,145[a]	-1,138	,260	-,153	1,000
	trend percentage to destruction	,084[a]	,652	,517	,088	,996
	% cows removed average	,007[a]	,054	,957	,007	,998
	trend percentage removed	-,071[a]	-,549	,585	-,075	,999
	access to pastures last year	,352[a]	2,744	,008	,350	,886
	kg concentrates per 100kg milk average	,201[a]	1,581	,120	,210	,988
	trend kg concentrates per 100 kg milk	-,079[a]	-,611	,544	-,083	,998
	age of the farmer	,014[a]	,106	,916	,014	,983
	higest education	,149[a]	1,121	,267	,151	,922
	amount of free diseases	,169[a]	1,328	,190	,178	,990
2	milk cows average	-1,327[b]	-2,257	,028	-,296	,039
	grow in milk cows	-,110[b]	-,684	,497	-,094	,564
	trend qouta	-,100[b]	-,737	,465	-,101	,804
	amount of cows per hectares average	,090[b]	,722	,474	,099	,946
	trend amount of cows per hectares	-,079[b]	-,641	,524	-,088	,981
	amount of youngstock per 10milkcows average	-,031[b]	-,248	,805	-,034	,975
	trend amount of youngstock per 10 milk cows	-,247[b]	-2,057	,045	-,272	,953
	age cows average	-,087[b]	-,712	,480	-,097	,977
	trend age cows	,131[b]	1,067	,291	,145	,968
	production average	,041[b]	,319	,751	,044	,916
	trend on milk production	-,097[b]	-,760	,450	-,104	,907
	time between calving average	-,042[b]	-,331	,742	-,045	,916
	trend on time between calving	-,092[b]	-,752	,455	-,103	,992
	cellcount average	-,147[b]	-1,169	,248	-,159	,916
	trend celgetal	-,001[b]	-,011	,991	-,002	,979
	% to destruction average	-,093[b]	-,755	,454	-,103	,973
	trend percentage to destruction	,096[b]	,793	,432	,108	,994
	% cows removed average	,041[b]	,334	,740	,046	,987
	trend percentage removed	-,068[b]	-,557	,580	-,076	,999
	kg concentrates per 100kg milk average	,192[b]	1,598	,116	,214	,987
	trend kg concentrates per 100 kg milk	-,098[b]	-,806	,424	-,110	,995
	age of the farmer	,044[b]	,360	,721	,049	,975
	higest education	,164[b]	1,316	,194	,178	,920
	amount of free diseases	,107[b]	,866	,390	,118	,951

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
3	grow in milk cows	-,175[c]	-1,117	,269	-,153	,547
	trend qouta	-,121[c]	-,932	,356	-,128	,799
	amount of cows per hectares average	,079[c]	,658	,514	,091	,945
	trend amount of cows per hectares	-,112[c]	-,948	,348	-,130	,966
	amount of youngstock per 10milkcows average	-,035[c]	-,297	,768	-,041	,974
	trend amount of youngstock per 10 milk cows	-,198[c]	-1,647	,106	-,223	,908
	age cows average	-,033[c]	-,268	,790	-,037	,934
	trend age cows	,093[c]	,771	,444	,106	,946
	production average	-,078[c]	-,591	,557	-,082	,777
	trend on milk production	-,141[c]	-1,143	,258	-,157	,887
	time between calving average	-,037[c]	-,299	,766	-,041	,916
	trend on time between calving	-,093[c]	-,789	,434	-,109	,992
	cellcount average	-,049[c]	-,370	,713	-,051	,782
	trend celgetal	,032[c]	,266	,792	,037	,964
	% to destruction average	-,044[c]	-,363	,718	-,050	,938
	trend percentage to destruction	,137[c]	1,162	,251	,159	,974
	% cows removed average	,003[c]	,024	,981	,003	,967
	trend percentage removed	-,053[c]	-,455	,651	-,063	,996
	kg concentrates per 100kg milk average	,142[c]	1,194	,238	,163	,944
	trend kg concentrates per 100 kg milk	-,079[c]	-,669	,507	-,092	,989
	age of the farmer	,072[c]	,600	,551	,083	,965
	higest education	,103[c]	,823	,414	,113	,865
	amount of free diseases	,028[c]	,217	,829	,030	,862

a. Predictors in the Model: (Constant), milk quota average

b. Predictors in the Model: (Constant), milk quota average, access to pastures last year

c. Predictors in the Model: (Constant), milk quota average, access to pastures last year, milk cows average

d. Dependent Variable: daily dosis mastitis

Annex 22 Regression

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Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	cellcount average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	time between calving average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
3	amount of free diseases	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: daily dosis dry off

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,501[a]	,251	,238	,60974
2	,588[b]	,346	,322	,57512
3	,660[c]	,435	,403	,53956

a. Predictors: (Constant), cellcount average

b. Predictors: (Constant), cellcount average, time between calving average

c. Predictors: (Constant), cellcount average, time between calving average, amount of free diseases

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,868	1	6,868	18,472	,000[a]
	Residual	20,448	55	,372		
	Total	27,315	56			
2	Regression	9,454	2	4,727	14,292	,000[b]
	Residual	17,861	54	,331		
	Total	27,315	56			
3	Regression	11,886	3	3,962	13,609	,000[c]
	Residual	15,430	53	,291		
	Total	27,315	56			

a. Predictors: (Constant), cellcount average

b. Predictors: (Constant), cellcount average, time between calving average

c. Predictors: (Constant), cellcount average, time between calving average, amount of free diseases

d. Dependent Variable: daily dosis dry off

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,964	,335		11,833	,000
	cellcount average	-,007	,002	-,501	-4,298	,000
2	(Constant)	9,752	2,093		4,658	,000
	cellcount average	-,005	,002	-,374	-3,144	,003
	time between calving average	-,015	,005	-,333	-2,797	,007
3	(Constant)	9,998	1,966		5,086	,000
	cellcount average	-,004	,002	-,289	-2,504	,015
	time between calving average	-,018	,005	-,397	-3,484	,001
	amount of free diseases	,161	,056	,310	2,890	,006

a. Dependent Variable: daily dosis dry off

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	,065[a]	,524	,602	,071	,890
	grow in milk cows	-,044[a]	-,359	,721	-,049	,940
	milk quota average	,079[a]	,650	,518	,088	,935
	trend qouta	-,038[a]	-,307	,760	-,042	,911
	amount of cows per hectares average	-,186[a]	-1,564	,124	-,208	,937
	trend amount of cows per hectares	,031[a]	,266	,791	,036	,998
	amount of youngstock per 10milkcows average	,065[a]	,554	,582	,075	1,000
	trend amount of youngstock per 10 milk cows	,049[a]	,416	,679	,057	1,000
	age cows average	,067[a]	,574	,568	,078	,997
	trend age cows	,185[a]	1,605	,114	,213	,999
	production average	-,004[a]	-,029	,977	-,004	,913
	trend on milk production	,003[a]	,029	,977	,004	,993

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	time between calving average	-,333[a]	-2,797	,007	-,356	,854
	trend on time between calving	-,046[a]	-,391	,697	-,053	,999
	trend celgetal	,002[a]	,015	,988	,002	,996
	% to destruction average	,038[a]	,319	,751	,043	,956
	trend percentage to destruction	-,004[a]	-,035	,972	-,005	1,000
	% cows removed average	,054[a]	,447	,657	,061	,953
	trend percentage removed	,257[a]	2,284	,026	,297	1,000
	access to pastures last year	,071[a]	,607	,546	,082	,998
	kg concentrates per 100kg milk average	-,034[a]	-,290	,773	-,039	,984
	trend kg concentrates per 100 kg milk	-,099[a]	-,810	,421	-,110	,926
	age of the farmer	,186[a]	1,559	,125	,208	,933
	higest education	,076[a]	,633	,529	,086	,962
	amount of free diseases	,238[a]	2,057	,045	,270	,962
2	milk cows average	,129[b]	1,093	,279	,148	,860
	grow in milk cows	,000[b]	-,003	,997	,000	,922
	milk quota average	,153[b]	1,321	,192	,179	,893
	trend qouta	-,024[b]	-,202	,841	-,028	,909
	amount of cows per hectares average	-,137[b]	-1,192	,238	-,162	,911
	trend amount of cows per hectares	,060[b]	,536	,594	,073	,990
	amount of youngstock per 10milkcows average	,105[b]	,949	,347	,129	,984
	trend amount of youngstock per 10 milk cows	,007[b]	,060	,952	,008	,981
	age cows average	,086[b]	,776	,441	,106	,994
	trend age cows	,247[b]	2,292	,026	,300	,968
	production average	,090[b]	,749	,457	,102	,847
	trend on milk production	-,032[b]	-,289	,774	-,040	,980
	trend on time between calving	-,032[b]	-,290	,773	-,040	,997
	trend celgetal	-,018[b]	-,162	,872	-,022	,992
	% to destruction average	,099[b]	,860	,394	,117	,925
	trend percentage to destruction	,046[b]	,405	,687	,056	,975
	% cows removed average	,043[b]	,375	,709	,051	,952
	trend percentage removed	,205[b]	1,870	,067	,249	,963
	access to pastures last year	,048[b]	,431	,668	,059	,992
	kg concentrates per 100kg milk average	,010[b]	,086	,932	,012	,965
	trend kg concentrates per 100 kg milk	-,072[b]	-,621	,537	-,085	,919
	age of the farmer	,176[b]	1,565	,124	,210	,932
	higest education	,117[b]	1,038	,304	,141	,947
	amount of free diseases	,310[b]	2,890	,006	,369	,926

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
3	milk cows average	,100[c]	,892	,377	,123	,853
	grow in milk cows	,015[c]	,141	,889	,020	,920
	milk quota average	,116[c]	1,052	,298	,144	,879
	trend qouta	,002[c]	,015	,988	,002	,903
	amount of cows per hectares average	-,086[c]	-,778	,440	-,107	,884
	trend amount of cows per hectares	,083[c]	,792	,432	,109	,985
	amount of youngstock per 10milkcows average	,081[c]	,769	,445	,106	,977
	trend amount of youngstock per 10 milk cows	,029[c]	,271	,788	,038	,976
	age cows average	,065[c]	,627	,534	,087	,989
	trend age cows	,194[c]	1,853	,070	,249	,929
	production average	,021[c]	,180	,858	,025	,807
	trend on milk production	-,026[c]	-,251	,803	-,035	,980
	trend on time between calving	-,048[c]	-,460	,647	-,064	,994
	trend celgetal	-,051[c]	-,484	,630	-,067	,981
	% to destruction average	,091[c]	,843	,403	,116	,924
	trend percentage to destruction	-,003[c]	-,032	,975	-,004	,949
	% cows removed average	,112[c]	1,033	,307	,142	,910
	trend percentage removed	,150[c]	1,410	,164	,192	,924
	access to pastures last year	-,007[c]	-,062	,951	-,009	,960
	kg concentrates per 100kg milk average	-,025[c]	-,234	,816	-,032	,952
	trend kg concentrates per 100 kg milk	-,036[c]	-,330	,743	-,046	,907
	age of the farmer	,186[c]	1,776	,082	,239	,931
	higest education	,042[c]	,380	,705	,053	,886

a. Predictors in the Model: (Constant), cellcount average

b. Predictors in the Model: (Constant), cellcount average, time between calving average

c. Predictors in the Model: (Constant), cellcount average, time between calving average, amount of free diseases

d. Dependent Variable: daily dosis dry off

Annex 23 Regression

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Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	milk quota average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	amount of youngstock per 10milkcows average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
3	cellcount average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
4	% cows removed average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: daily dosis other

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,409[a]	,168	,152	1,07348
2	,493[b]	,243	,215	1,03329
3	,563[c]	,317	,278	,99074
4	,621[d]	,386	,339	,94808

a. Predictors: (Constant), milk quota average

b. Predictors: (Constant), milk quota average, amount of youngstock per 10milkcows average

c. Predictors: (Constant), milk quota average, amount of youngstock per 10milkcows average, cellcount average

d. Predictors: (Constant), milk quota average, amount of youngstock per 10milkcows average, cellcount average, % cows removed average

ANOVA[e]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12,752	1	12,752	11,066	,002[a]
	Residual	63,379	55	1,152		
	Total	76,132	56			
2	Regression	18,477	2	9,238	8,653	,001[b]
	Residual	57,655	54	1,068		
	Total	76,132	56			
3	Regression	24,109	3	8,036	8,187	,000[c]
	Residual	52,023	53	,982		
	Total	76,132	56			
4	Regression	29,391	4	7,348	8,175	,000[d]
	Residual	46,741	52	,899		
	Total	76,132	56			

a. Predictors: (Constant), milk quota average

b. Predictors: (Constant), milk quota average, amount of youngstock per 10milkcows average

c. Predictors: (Constant), milk quota average, amount of youngstock per 10milkcows average, cellcount average

d. Predictors: (Constant), milk quota average, amount of youngstock per 10milkcows average, cellcount average, % cows removed average

e. Dependent Variable: daily dosis other

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,207	,260		4,645	,000
	milk quota average	8,42E-007	,000	,409	3,327	,002
2	(Constant)	-,217	,664		-,327	,745
	milk quota average	9,27E-007	,000	,451	3,762	,000
	amount of youngstock per 10milkcows average	,188	,081	,277	2,316	,024
3	(Constant)	,895	,788		1,136	,261
	milk quota average	1,08E-006	,000	,525	4,411	,000
	amount of youngstock per 10milkcows average	,197	,078	,291	2,532	,014
	cellcount average	-,007	,003	-,282	-2,395	,020
4	(Constant)	2,170	,919		2,361	,022
	milk quota average	1,17E-006	,000	,567	4,927	,000
	amount of youngstock per 10milkcows average	,245	,077	,361	3,176	,003
	cellcount average	-,009	,003	-,354	-3,041	,004
	% cows removed average	-,052	,022	-,281	-2,424	,019

a. Dependent Variable: daily dosis other

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	-1,213[a]	-2,119	,039	-,277	,043
	grow in milk cows	,052[a]	,314	,755	,043	,564
	trend qouta	-,013[a]	-,094	,925	-,013	,812
	amount of cows per hectares average	,023[a]	,180	,858	,024	,956

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	trend amount of cows per hectares	,168[a]	1,371	,176	,183	,988
	amount of youngstock per 10milkcows average	,277[a]	2,316	,024	,301	,978
	trend amount of youngstock per 10 milk cows	-,145[a]	-1,178	,244	-,158	,997
	age cows average	-,161[a]	-1,317	,193	-,176	,995
	trend age cows	-,036[a]	-,290	,773	-,039	1,000
	production average	,152[a]	1,209	,232	,162	,954
	trend on milk production	,169[a]	1,385	,172	,185	,995
	time between calving average	,089[a]	,691	,492	,094	,918
	trend on time between calving	,013[a]	,103	,918	,014	,992
	cellcount average	-,267[a]	-2,166	,035	-,283	,935
	trend celgetal	-,039[a]	-,317	,752	-,043	1,000
	% to destruction average	-,135[a]	-1,103	,275	-,148	1,000
	trend percentage to destruction	,152[a]	1,241	,220	,167	,996
	% cows removed average	-,115[a]	-,935	,354	-,126	,998
	trend percentage removed	-,240[a]	-1,999	,051	-,263	,999
	access to pastures last year	-,023[a]	-,173	,863	-,024	,886
	kg concentrates per 100kg milk average	,264[a]	2,209	,031	,288	,988
	trend kg concentrates per 100 kg milk	,025[a]	,197	,844	,027	,998
	age of the farmer	-,174[a]	-1,412	,164	-,189	,983
	higest education	,139[a]	1,090	,281	,147	,922
	amount of free diseases	,221[a]	1,824	,074	,241	,990

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
2	milk cows average	-1,214[b]	-2,214	,031	-,291	,043
	grow in milk cows	,057[b]	,355	,724	,049	,564
	trend qouta	-,031[b]	-,233	,817	-,032	,809
	amount of cows per hectares average	,134[b]	1,039	,304	,141	,846
	trend amount of cows per hectares	,113[b]	,923	,360	,126	,940
	trend amount of youngstock per 10 milk cows	-,083[b]	-,678	,501	-,093	,939
	age cows average	-,113[b]	-,933	,355	-,127	,959
	trend age cows	-,005[b]	-,043	,966	-,006	,987
	production average	,180[b]	1,492	,142	,201	,946
	trend on milk production	,112[b]	,921	,361	,125	,943
	time between calving average	,041[b]	,328	,745	,045	,891
	trend on time between calving	-,070[b]	-,561	,577	-,077	,914
	cellcount average	-,282[b]	-2,395	,020	-,313	,932
	trend celgetal	-,021[b]	-,177	,860	-,024	,995
	% to destruction average	-,153[b]	-1,293	,201	-,175	,996
	trend percentage to destruction	,086[b]	,692	,492	,095	,926
	% cows removed average	-,191[b]	-1,583	,119	-,213	,942
	trend percentage removed	-,149[b]	-1,133	,262	-,154	,811
	access to pastures last year	-,040[b]	-,315	,754	-,043	,883
	kg concentrates per 100kg milk average	,216[b]	1,812	,076	,242	,945
	trend kg concentrates per 100 kg milk	-,067[b]	-,531	,598	-,073	,903
	age of the farmer	-,177[b]	-1,496	,140	-,201	,983
	higest education	,168[b]	1,368	,177	,185	,914
	amount of free diseases	,191[b]	1,616	,112	,217	,976

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
3	milk cows average	-,821[c]	-1,392	,170	-,190	,036
	grow in milk cows	,096[c]	,630	,532	,087	,557
	trend qouta	,035[c]	,270	,788	,037	,772
	amount of cows per hectares average	,042[c]	,321	,750	,044	,757
	trend amount of cows per hectares	,113[c]	,965	,339	,133	,940
	trend amount of youngstock per 10 milk cows	-,080[c]	-,679	,500	-,094	,939
	age cows average	-,090[c]	-,771	,444	-,106	,952
	trend age cows	,006[c]	,055	,956	,008	,986
	production average	,089[c]	,705	,484	,097	,818
	trend on milk production	,091[c]	,771	,444	,106	,937
	time between calving average	,153[c]	1,207	,233	,165	,794
	trend on time between calving	-,076[c]	-,637	,527	-,088	,914
	trend celgetal	-,004[c]	-,038	,970	-,005	,991
	% to destruction average	-,099[c]	-,851	,399	-,117	,952
	trend percentage to destruction	,082[c]	,695	,490	,096	,926
	% cows removed average	-,281[c]	-2,424	,019	-,319	,880
	trend percentage removed	-,141[c]	-1,122	,267	-,154	,811
	access to pastures last year	,000[c]	-,003	,998	,000	,866
	kg concentrates per 100kg milk average	,187[c]	1,612	,113	,218	,933
	trend kg concentrates per 100 kg milk	,011[c]	,086	,932	,012	,838
	age of the farmer	-,103[c]	-,851	,399	-,117	,891
	higest education	,095[c]	,766	,447	,106	,841
	amount of free diseases	,133[c]	1,124	,266	,154	,920

Excluded Variables[e]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
4	milk cows average	-,935[d]	-1,664	,102	-,227	,036
	grow in milk cows	,099[d]	,680	,500	,095	,557
	trend qouta	,065[d]	,516	,608	,072	,765
	amount of cows per hectares average	,142[d]	1,091	,281	,151	,693
	trend amount of cows per hectares	,099[d]	,885	,380	,123	,938
	trend amount of youngstock per 10 milk cows	-,090[d]	-,801	,427	-,111	,938
	age cows average	-,178[d]	-1,560	,125	-,213	,879
	trend age cows	,030[d]	,272	,787	,038	,978
	production average	,060[d]	,492	,625	,069	,810
	trend on milk production	,081[d]	,715	,478	,100	,936
	time between calving average	,123[d]	1,001	,322	,139	,785
	trend on time between calving	-,031[d]	-,270	,788	-,038	,889
	trend celgetal	-,006[d]	-,055	,957	-,008	,991
	% to destruction average	-,109[d]	-,979	,332	-,136	,950
	trend percentage to destruction	,016[d]	,136	,892	,019	,870
	trend percentage removed	-,118[d]	-,977	,333	-,135	,805
	access to pastures last year	-,025[d]	-,212	,833	-,030	,859
	kg concentrates per 100kg milk average	,116[d]	,982	,331	,136	,850
	trend kg concentrates per 100 kg milk	-,005[d]	-,039	,969	-,005	,836
	age of the farmer	-,099[d]	-,854	,397	-,119	,891
	higest education	,124[d]	1,045	,301	,145	,833
	amount of free diseases	,060[d]	,509	,613	,071	,848

a. Predictors in the Model: (Constant), milk quota average

b. Predictors in the Model: (Constant), milk quota average, amount of youngstock per 10milkcows average

c. Predictors in the Model: (Constant), milk quota average, amount of youngstock per 10milkcows average, cellcount average

d. Predictors in the Model: (Constant), milk quota average, amount of youngstock per 10milkcows average, cellcount average, % cows removed average

e. Dependent Variable: daily dosis other

Annex 24 regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	trend percentage removed	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: trend daily dosis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,312[a]	,097	,081	,46407

a. Predictors: (Constant), trend percentage removed

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,276	1	1,276	5,927	,018[a]
	Residual	11,845	55	,215		
	Total	13,121	56			

a. Predictors: (Constant), trend percentage removed

b. Dependent Variable: trend daily dosis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,067	,062		1,087	,282
	trend percentage removed	,016	,006	,312	2,435	,018

a. Dependent Variable: trend daily dosis

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	milk cows average	-,014[a]	-,106	,916	-,014	,998
	grow in milk cows	-,131[a]	-1,002	,321	-,135	,956
	milk quota average	-,057[a]	-,443	,660	-,060	,999
	trend qouta	-,072[a]	-,558	,579	-,076	,992
	amount of cows per hectares average	-,126[a]	-,976	,333	-,132	,987
	trend amount of cows per hectares	-,073[a]	-,553	,583	-,075	,946
	amount of youngstock per 10milkcows average	-,131[a]	-,924	,360	-,125	,812
	trend amount of youngstock per 10 milk cows	,021[a]	,149	,882	,020	,811
	age cows average	,037[a]	,285	,777	,039	,997
	trend age cows	-,063[a]	-,482	,631	-,066	,967
	production average	-,190[a]	-1,483	,144	-,198	,983
	trend on milk production	,154[a]	1,206	,233	,162	,998
	time between calving average	-,154[a]	-1,191	,239	-,160	,969
	trend on time between calving	-,047[a]	-,364	,717	-,049	,997
	cellcount average	,221[a]	1,756	,085	,232	1,000
	trend celgetal	,040[a]	,297	,768	,040	,939
	% to destruction average	-,144[a]	-1,116	,269	-,150	,979
	trend percentage to destruction	,054[a]	,417	,678	,057	,996
	% cows removed average	-,129[a]	-1,007	,318	-,136	,999
	access to pastures last year	,046[a]	,358	,722	,049	1,000
	kg concentrates per 100kg milk average	-,177[a]	-1,353	,182	-,181	,945
	trend kg concentrates per 100 kg milk	-,055[a]	-,398	,692	-,054	,884
	age of the farmer	-,117[a]	-,906	,369	-,122	,989
	higest education	-,194[a]	-1,504	,138	-,200	,961
	amount of free diseases	-,080[a]	-,613	,543	-,083	,977

a. Predictors in the Model: (Constant), trend percentage removed

b. Dependent Variable: trend daily dosis

Annex 25 regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	trend percentage removed	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	trend on milk production	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: trend mastitis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,425[a]	,181	,166	,24409
2	,489[b]	,240	,211	,23734

a. Predictors: (Constant), trend percentage removed

b. Predictors: (Constant), trend percentage removed, trend on milk production

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,723	1	,723	12,136	,001[a]
	Residual	3,277	55	,060		
	Total	4,000	56			
2	Regression	,958	2	,479	8,505	,001[b]
	Residual	3,042	54	,056		
	Total	4,000	56			

a. Predictors: (Constant), trend percentage removed

b. Predictors: (Constant), trend percentage removed, trend on milk production

c. Dependent Variable: trend mastitis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,026	,032		,796	,429
	trend percentage removed	,012	,003	,425	3,484	,001
2	(Constant)	-,004	,035		-,118	,907
	trend percentage removed	,012	,003	,437	3,675	,001
	trend on milk production	,000	,000	,243	2,043	,046

a. Dependent Variable: trend mastitis

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	-,084[a]	-,684	,497	-,093	,998
	grow in milk cows	-,033[a]	-,261	,795	-,035	,956
	milk quota average	-,078[a]	-,638	,526	-,086	,999
	trend qouta	-,029[a]	-,238	,813	-,032	,992
	amount of cows per hectares average	-,188[a]	-1,553	,126	-,207	,987
	trend amount of cows per hectares	-,090[a]	-,712	,480	-,096	,946
	amount of youngstock per 10milkcows average	-,038[a]	-,275	,784	-,037	,812
	trend amount of youngstock per 10 milk cows	-,150[a]	-1,111	,272	-,149	,811
	age cows average	-,067[a]	-,545	,588	-,074	,997
	trend age cows	-,009[a]	-,071	,943	-,010	,967
	production average	-,085[a]	-,684	,497	-,093	,983
	trend on milk production	,243[a]	2,043	,046	,268	,998
	time between calving average	-,060[a]	-,480	,633	-,065	,969
	trend on time between calving	-,023[a]	-,187	,853	-,025	,997
	cellcount average	,161[a]	1,326	,191	,178	1,000
	trend celgetal	,099[a]	,780	,439	,106	,939
	% to destruction average	,065[a]	,527	,601	,071	,979
	trend percentage to destruction	,036[a]	,291	,772	,040	,996
	% cows removed average	-,055[a]	-,447	,656	-,061	,999
	access to pastures last year	,002[a]	,014	,989	,002	1,000
	kg concentrates per 100kg milk average	,062[a]	,493	,624	,067	,945
	trend kg concentrates per 100 kg milk	,047[a]	,358	,722	,049	,884
	age of the farmer	,159[a]	1,302	,198	,175	,989
	higest education	-,197[a]	-1,608	,114	-,214	,961
	amount of free diseases	-,109[a]	-,881	,382	-,119	,977

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
2	milk cows average	-,057[b]	-,475	,637	-,065	,985
	grow in milk cows	-,016[b]	-,133	,895	-,018	,952
	milk quota average	-,062[b]	-,519	,606	-,071	,994
	trend qouta	-,055[b]	-,457	,650	-,063	,981
	amount of cows per hectares average	-,157[b]	-1,306	,197	-,177	,967
	trend amount of cows per hectares	-,076[b]	-,621	,537	-,085	,943
	amount of youngstock per 10milkcows average	-,108[b]	-,795	,430	-,109	,766
	trend amount of youngstock per 10 milk cows	-,195[b]	-1,477	,146	-,199	,793
	age cows average	-,054[b]	-,454	,652	-,062	,994
	trend age cows	-,006[b]	-,048	,962	-,007	,967
	production average	-,060[b]	-,494	,623	-,068	,973
	time between calving average	-,024[b]	-,197	,844	-,027	,948
	trend on time between calving	-,062[b]	-,510	,612	-,070	,973
	cellcount average	,181[b]	1,543	,129	,207	,993
	trend celgetal	,104[b]	,848	,400	,116	,939
	% to destruction average	,110[b]	,904	,370	,123	,951
	trend percentage to destruction	-,016[b]	-,130	,897	-,018	,952
	% cows removed average	-,063[b]	-,529	,599	-,072	,997
	access to pastures last year	,069[b]	,554	,582	,076	,934
	kg concentrates per 100kg milk average	,009[b]	,073	,942	,010	,901
	trend kg concentrates per 100 kg milk	-,085[b]	-,601	,551	-,082	,708
	age of the farmer	,180[b]	1,518	,135	,204	,982
	higest education	-,180[b]	-1,502	,139	-,202	,956
	amount of free diseases	-,105[b]	-,870	,388	-,119	,977

a. Predictors in the Model: (Constant), trend percentage removed

b. Predictors in the Model: (Constant), trend percentage removed, trend on milk production

c. Dependent Variable: trend mastitis

Annex 26 regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	cellcount average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	age of the farmer	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: trend droogzetters

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,269[a]	,072	,055	,28728
2	,411[b]	,169	,138	,27447

a. Predictors: (Constant), cellcount average

b. Predictors: (Constant), cellcount average, age of the farmer

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,354	1	,354	4,289	,043[a]
	Residual	4,539	55	,083		
	Total	4,893	56			
2	Regression	,825	2	,412	5,475	,007[b]
	Residual	4,068	54	,075		
	Total	4,893	56			

a. Predictors: (Constant), cellcount average

b. Predictors: (Constant), cellcount average, age of the farmer

c. Dependent Variable: trend droogzetters

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,293	,158		-1,859	,068
	cellcount average	,002	,001	,269	2,071	,043
2	(Constant)	,054	,205		,262	,794
	cellcount average	,002	,001	,352	2,742	,008
	age of the farmer	-,010	,004	-,321	-2,500	,015

a. Dependent Variable: trend droogzetters

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	,144[a]	1,049	,299	,141	,890
	grow in milk cows	,155[a]	1,158	,252	,156	,940
	milk quota average	,127[a]	,947	,348	,128	,935
	trend qouta	,088[a]	,646	,521	,088	,911
	amount of cows per hectares average	,201[a]	1,519	,135	,202	,937
	trend amount of cows per hectares	,074[a]	,564	,575	,077	,998
	amount of youngstock per 10milkcows average	-,167[a]	-1,293	,201	-,173	1,000
	trend amount of youngstock per 10 milk cows	-,014[a]	-,103	,918	-,014	1,000
	age cows average	,015[a]	,111	,912	,015	,997
	trend age cows	-,046[a]	-,352	,726	-,048	,999
	production average	,025[a]	,179	,859	,024	,913
	trend on milk production	-,085[a]	-,652	,517	-,088	,993
	time between calving average	-,152[a]	-1,085	,283	-,146	,854
	trend on time between calving	,009[a]	,071	,944	,010	,999
	trend celgetal	-,090[a]	-,686	,495	-,093	,996
	% to destruction average	-,159[a]	-1,202	,235	-,161	,956
	trend percentage to destruction	-,239[a]	-1,879	,066	-,248	1,000
	% cows removed average	-,029[a]	-,220	,827	-,030	,953
	trend percentage removed	-,103[a]	-,788	,434	-,107	1,000
	access to pastures last year	,052[a]	,399	,692	,054	,998
	kg concentrates per 100kg milk average	-,168[a]	-1,291	,202	-,173	,984
	trend kg concentrates per 100 kg milk	-,023[a]	-,168	,867	-,023	,926
	age of the farmer	-,321[a]	-2,500	,015	-,322	,933
	higest education	,046[a]	,345	,732	,047	,962
	amount of free diseases	,118[a]	,889	,378	,120	,962

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
2	milk cows average	,076[b]	,560	,578	,077	,847
	grow in milk cows	,133[b]	1,038	,304	,141	,935
	milk quota average	,063[b]	,473	,638	,065	,893
	trend qouta	,119[b]	,908	,368	,124	,903
	amount of cows per hectares average	,144[b]	1,101	,276	,149	,901
	trend amount of cows per hectares	,106[b]	,844	,402	,115	,989
	amount of youngstock per 10milkcows average	-,158[b]	-1,281	,206	-,173	,999
	trend amount of youngstock per 10 milk cows	-,051[b]	-,402	,689	-,055	,986
	age cows average	,033[b]	,265	,792	,036	,994
	trend age cows	,044[b]	,340	,735	,047	,920
	production average	-,005[b]	-,035	,973	-,005	,906
	trend on milk production	-,103[b]	-,824	,414	-,112	,990
	time between calving average	-,163[b]	-1,219	,228	-,165	,853
	trend on time between calving	,051[b]	,402	,690	,055	,982
	trend celgetal	-,019[b]	-,144	,886	-,020	,942
	% to destruction average	-,153[b]	-1,211	,231	-,164	,956
	trend percentage to destruction	-,227[b]	-1,872	,067	-,249	,998
	% cows removed average	-,033[b]	-,257	,798	-,035	,953
	trend percentage removed	-,140[b]	-1,121	,267	-,152	,987
	access to pastures last year	,036[b]	,287	,775	,039	,996
	kg concentrates per 100kg milk average	-,134[b]	-1,070	,290	-,145	,972
	trend kg concentrates per 100 kg milk	-,020[b]	-,154	,879	-,021	,926
	higest education	-,087[b]	-,636	,528	-,087	,822
	amount of free diseases	,106[b]	,835	,408	,114	,960

a. Predictors in the Model: (Constant), cellcount average

b. Predictors in the Model: (Constant), cellcount average, age of the farmer

c. Dependent Variable: trend droogzetters

Annex 27 regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	grow in milk cows	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	kg concentrates per 100kg milk average	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: trend overige medicijnen

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,354[a]	,125	,109	,23357
2	,504[b]	,254	,227	,21760

a. Predictors: (Constant), grow in milk cows

b. Predictors: (Constant), grow in milk cows, kg concentrates per 100kg milk average

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,429	1	,429	7,865	,007[a]
	Residual	3,000	55	,055		
	Total	3,430	56			
2	Regression	,873	2	,436	9,215	,000[b]
	Residual	2,557	54	,047		
	Total	3,430	56			

a. Predictors: (Constant), grow in milk cows

b. Predictors: (Constant), grow in milk cows, kg concentrates per 100kg milk average

c. Dependent Variable: trend overige medicijnen

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,113	,039		2,941	,005
	grow in milk cows	-,018	,006	-,354	-2,804	,007
2	(Constant)	,581	,157		3,702	,001
	grow in milk cows	-,019	,006	-,380	-3,222	,002
	kg concentrates per 100kg milk average	-,020	,007	-,361	-3,061	,003

a. Dependent Variable: trend overige medicijnen

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	milk cows average	,080[a]	,494	,623	,067	,616
	milk quota average	,007[a]	,041	,967	,006	,564
	trend qouta	,378[a]	1,907	,062	,251	,387
	amount of cows per hectares average	-,127[a]	-,992	,326	-,134	,977
	trend amount of cows per hectares	-,085[a]	-,614	,542	-,083	,835
	amount of youngstock per 10milkcows average	-,189[a]	-1,504	,138	-,200	,988
	trend amount of youngstock per 10 milk cows	,294[a]	2,404	,020	,311	,981
	age cows average	-,039[a]	-,295	,769	-,040	,929
	trend age cows	-,161[a]	-1,260	,213	-,169	,962
	production average	-,149[a]	-1,184	,242	-,159	,994
	trend on milk production	,112[a]	,886	,380	,120	,997
	time between calving average	-,196[a]	-1,538	,130	-,205	,953
	trend on time between calving	-,064[a]	-,495	,622	-,067	,978
	cellcount average	,124[a]	,954	,345	,129	,940
	trend celgetal	-,145[a]	-1,124	,266	-,151	,955
	% to destruction average	-,156[a]	-1,243	,219	-,167	1,000
	trend percentage to destruction	-,066[a]	-,499	,620	-,068	,921
	% cows removed average	-,005[a]	-,040	,968	-,005	1,000
	trend percentage removed	,179[a]	1,403	,166	,188	,956
	access to pastures last year	,025[a]	,188	,851	,026	,947
	kg concentrates per 100kg milk average	-,361[a]	-3,061	,003	-,385	,995
	trend kg concentrates per 100 kg milk	-,173[a]	-1,354	,181	-,181	,956
	age of the farmer	-,080[a]	-,628	,532	-,085	1,000
	higest education	-,114[a]	-,890	,377	-,120	,967
	amount of free diseases	-,055[a]	-,436	,665	-,059	,995

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
2	milk cows average	,020[b]	,132	,895	,018	,605
	milk quota average	-,033[b]	-,211	,833	-,029	,560
	trend qouta	,269[b]	1,405	,166	,189	,370
	amount of cows per hectares average	-,106[b]	-,889	,378	-,121	,974
	trend amount of cows per hectares	-,037[b]	-,280	,781	-,038	,822
	amount of youngstock per 10milkcows average	-,116[b]	-,959	,342	-,131	,943
	trend amount of youngstock per 10 milk cows	,232[b]	1,970	,054	,261	,945
	age cows average	-,039[b]	-,321	,750	-,044	,929
	trend age cows	-,139[b]	-1,162	,251	-,158	,958
	production average	-,151[b]	-1,293	,202	-,175	,994
	trend on milk production	,199[b]	1,682	,098	,225	,950
	time between calving average	-,161[b]	-1,341	,185	-,181	,944
	trend on time between calving	-,092[b]	-,768	,446	-,105	,972
	cellcount average	,084[b]	,684	,497	,094	,928
	trend celgetal	-,130[b]	-1,080	,285	-,147	,953
	% to destruction average	-,197[b]	-1,696	,096	-,227	,988
	trend percentage to destruction	,011[b]	,087	,931	,012	,883
	% cows removed average	-,080[b]	-,660	,512	-,090	,960
	trend percentage removed	,091[b]	,730	,468	,100	,893
	access to pastures last year	,042[b]	,348	,729	,048	,945
	trend kg concentrates per 100 kg milk	-,091[b]	-,733	,466	-,100	,902
	age of the farmer	-,053[b]	-,445	,658	-,061	,994
	higest education	-,011[b]	-,089	,930	-,012	,889
	amount of free diseases	,000[b]	,000	1,000	,000	,972

a. Predictors in the Model: (Constant), grow in milk cows

b. Predictors in the Model: (Constant), grow in milk cows, kg concentrates per 100kg milk average

c. Dependent Variable: trend overige medicijnen