



Thematic analysis

Animal Husbandry

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1. General

1.1 Land use

Of the total surface available for agricultural production, having a size of 63,989.48 ha, 9,583.67 ha (15%) consists of natural grassland and 4,429.37 ha (7%) of pastures. In addition, 6,624.39 ha (10%) of fallow land is included, that for shorter or longer periods is also used to graze ruminants.

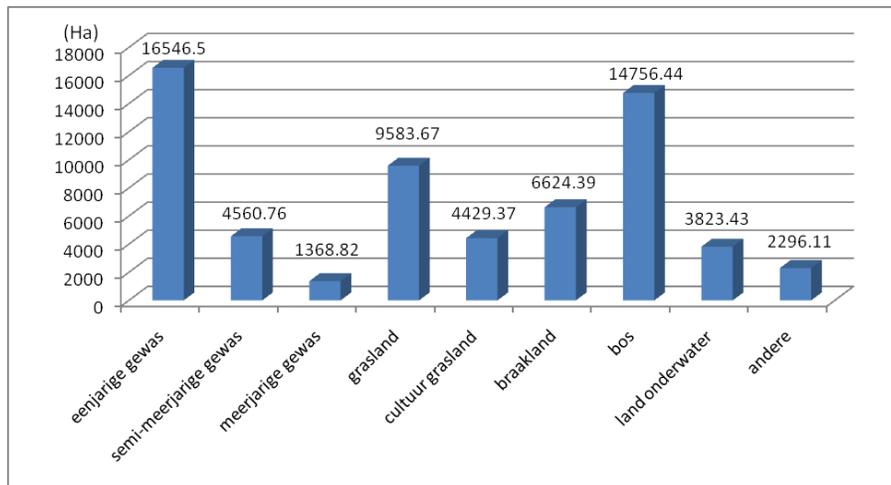


Fig 1.1 Land use in Suriname

Assuming the fact that grassland (natural and cultivated) is used to feed ruminants, and in this census a total of 36,693 cattle, sheep and goats were included, one arrives at a country average of 0.26 ha per head of ruminants. However, since a sheep or goat eats less than a cow, it is more precise to work with Adult Bovine Units (ABU). One cow is equal to 1 sheep or goats, which can be equal to one ABU. According to below table there are 29,131 ABU on 13,965 ha grassland what boils down to on average 0.48 ha per ABU or 2.09 ABU per hectare.

In the coastal plain of Suriname one can count on 2.5 to 3 ABU per ha very well maintained grassland (Bastiaansen, 1995), which means that 1 ABU indicates a need of 0.3 to 0.4 ha grassland. The reality is that pastures in general are poorly maintained, and the maximum allowable cattle density is certainly lower.

The fact that only 32 % of the total pasture is cultivated (cultivated pasture) indicates that in the largest part of cases a cattle density of 2.5 to 3 ABU per hectare cannot be achieved.

The cultivated pasture has to be maintained by regular mowing and fertilization, in which system the animals are moved to another field according to a rotation system. These measures are also often refrained from.

In the districts of Paramaribo and Coronie very high cattle densities are measured. The cattle density of almost 6 ABU per hectare can be explained because of the absence of pasture in Greater Paramaribo. Most ruminants are fastened on (tethered) roadside and empty lots. In

Coronie a cattle density of 26 ABU per hectare is measured. Here as well, we find few pastures that may carry the name, and the animals are grazed on fallow land and along the roadsides. See below table.

Table 1.1 Types of grass lands and average cattle density ruminants per district

DISTRICT	Nat grass	Cult grass	Tot Grassland	Beef ABU	S/G ABU	Tot ABU	Ha/ABU	ABU/Ha
PARAMARIBO	127.78	1.06	128.84	700	52	752	0.17	5.84
WANICA	2,466.82	579.05	3,045.87	7,763	374	8,137	0.37	2.67
NICKERIE	1,800.43	293.92	2,094.35	7,322	177	7,499	0.28	3.58
CORONIE	18.11		18.11	464	12	476	0.04	26.29
SARAMACCA	1,651.30	4.68	1,655.98	2,858	74	2,932	0.56	1.77
COMMEWIJNE	1,191.28	3,540.14	4,731.42	8,242	121	8,363	0.57	1.77
MAROWIJNE	11.18	0.21	11.39	10	9	19	0.60	1.67
PARA	2,268.84	10.11	2,278.95	932	21	953	2.39	0.42
TOTAAL COASTAL PLAIN	9,535.74	4,429.17	13,964.91	28,291	840	29,131	0.48	2.09

Source : Statistic data Fifth Agricultural Census 2008-2009

In conclusion we can state that in principle enough grassland is available for the ruminants, however, an increase of the quantity and quality of the grasslands could be achieved by standard grassland management measures.

1.2 Farms and animal species

Of the total of 7,246 farms with cattle or poultry 1,009 (14%) have dairy cattle, 1,011 (14%) have animals for slaughter, 570 (8%) have sheep, 462 (6%) have goat, 155 (2%) have pigs and 4,039 (56%) are poultry farms.

It should be noted that most farms have more than one animal species.

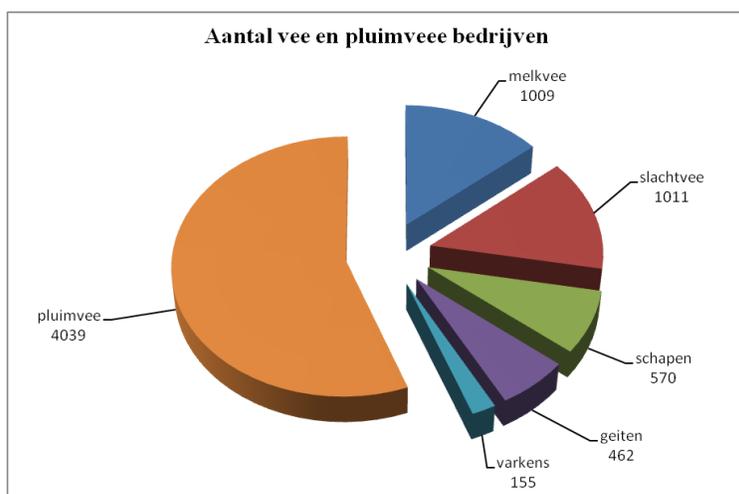


Fig 1.2 Number of cattle and poultry farms

Table 1.2 Number of animals according to types of livestock per district on the baseline day

DISTRICT	TYPES OF LIVESTOCK
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	DAIRY CATTLE	ANIMALS FOR SLAUGHTER	SHEEP	GOATS	PIGS
PARAMARIBO	200	500	470	50	
WANICA	4,563	3,200	2,169	1,575	3,354
NICKERIE	3,470	3,852	1,059	708	575
CORONIE	207	257	116	5	626
SARAMACCA	450	2,408	437	305	3,753
COMMEWIJNE	284	7,956	560	649	157
MAROWIJNE		10	34	56	
PARA	605	327	125	86	510
TOTAL COASTAL PLAIN	9,779	18,510	4,970	3,434	8,975

Source : Statistic data Fifth Agricultural Census 2008-2009

The above table provides the cattle figures per livestock species as provided by the breeders during the agriculture census. It should be noted that the numbers provided do not correspond to reality. Underreporting of almost 50% may be assumed.

As most important reason can be stated that the livestock farmers did not report the correct number of animals on their farms.

As the census was done by means of a structured interview, no literal “count” was performed by the interviewer.

Livestock farmers have maybe resorted to this as they were afraid that the data of this census would be provided to the Tax Authority of the Republic of Suriname. The Post Enumerator Survey (PES) also did not demonstrate any relevant differences in the livestock figures.

An overview of the number of farm animals in Suriname, as used by the Ministry of Agriculture, Animal Husbandry and Fisheries (LVV) is provided in the below table.

Table 1.3 Size of livestock herd 2004-2009

DESCRIPTION	UNIT	2004	2005	2006	2007	2008	2009
SIZE OF LIVESTOCK:							
Total cattle	pcs.	43,240	38,235	43,495	43,595	49,035	53,610
Total pigs	„	26,065	28,640	28,090	28,240	27,127	28,838
Total other cattle (water buffaloes)	„	479	640	752	1,210	750	1,024
Total goats and sheep	„	13,335	12,390	12,565	12,150	12,500	13,000
Total chicken and other poultry	1000 pcs.	4,696	4,929	4,599	6,387	5,272	5,910

Source : Agricultural statistical data 2004-2009

A comparison between tables 1.2 and 1.3 on the basis of the year 2008 provides a picture of the differences in the animal numbers provided during the agricultural census and the regular data collection of the Statistics Department of the Ministry of LVV.

Table 1.4 Comparison of number of animals per livestock species

Animal type	2008	AG Data	Stat 5LBT	Deviation
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Total cattle	pcs.	49,035	28,288	42.30%
Total pigs	„	27,127	8,975	66.90%
Total other cattle (water buffaloes)	„	750	130*	82.60%
Total goats and sheep	„	12,500	8,404	32.70%
Total chicken and other poultry	1000 pcs.	5,272	484	90.80%
*Only male animals included			Average	63.00%

In the comparison it is striking that an underscore of on average 63% for all animal species can be demonstrated, having as highlights water buffaloes and chicken and other poultry.

An explanation for the significant deviation within water buffaloes is the fact that for the agricultural census only the male animals were included. When we assume that for each male animal there are also 2 female animals, the deviation percentage amounts to 48%. A possible explanation for the large deviation in chicken and other poultry is given in Chapter 4 Poultry.

A breakdown of the number of farms with the number of animals per district, as included in the agricultural census, is treated for each animal species in a table.

Table 1.5 Comparison Ag census 1959, Ag census 1980 and Ag census 2008

	Cattle			Pigs		
	Farms	Number	Ave.	Farms	Number	Ave.
AC 59	7,725	35,286	4.57	1,000	6,003	6.00
AC 81	7,183	50,499	7.03	628	18,665	29.72
AC 08	2,011	28,288	14.07	155	8,975	57.90

	Poultry			Small ruminants		
	Farms	Number	Ave.	Farms	Number	Ave.
AC 59	13,045	289,965	22.23	3,006	14,270	4.75
AC 81	11,099	1,159,999	104.51	2,577	12,055	4.68
AC 08	3,629	484,000	133.37	1,032	8,404	8.14

When comparing the number of farms and animals included in 3 agricultural censuses, more in particular of 1959, 1981 and 2008 especially the strong decline in the number of farms is striking. In addition, the farms have become steadily bigger in number of animals.

It should therefore be expected that the number of jobs in the agricultural sector has significantly declined over the years.

Table 1.6 Most prevalent farm sizes and age groups of cattle breeders

	Number of animals/ farm	% male	% women	Age male	Age female
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Dairy cattle	3 to 4	83	17	45-54	55-64
Animals for slaughter	5 to 9	87	13	45-54	35-44
Pigs	5 to 9	83	17	45-54	45-54
Chicken for slaughter	10 to 49	90	10	45-54	35-44
Egg-laying chicken	10 to 49	90	10	45-54	45-54
Backyard chicken	10 to 49	82	18	45-54	>65
Ducks	10 to 49	88	12	45-54	45-54
Sheep	5 to 9	85	15	45-54	35-44
Goats	10 to 19	83	17	45-54	55-64

It appears from the above table that the largest part of the male cattle farmers consist of males in the age group 45 to 54 years.

Females on the contrary in age group 35-44 years are more prevalent in the subsectors animals for slaughter, chicken for slaughter and sheep. In the age group 55-64 years there are relatively more women employed in the subsectors dairy cattle and goats. Most women in the highest age group older than 65 years are found in the subsector backyard chicken.

The average gender ratio between cattle farmers is 85.6 % male to only 14.4 % female. For the whole agricultural sector this is 83 % male to 17 % female. It is to be expected that relatively more women are active in the vegetable and fruit growing sector than in animal husbandry.

The subsectors of animal husbandry in which women are better represented than average are dairy cattle, pigs, and backyard chicken.

It should be clear that livestock production in Suriname is performed for a significant part by relatively small farms with a small number of animals.

1.3 Farm acreage

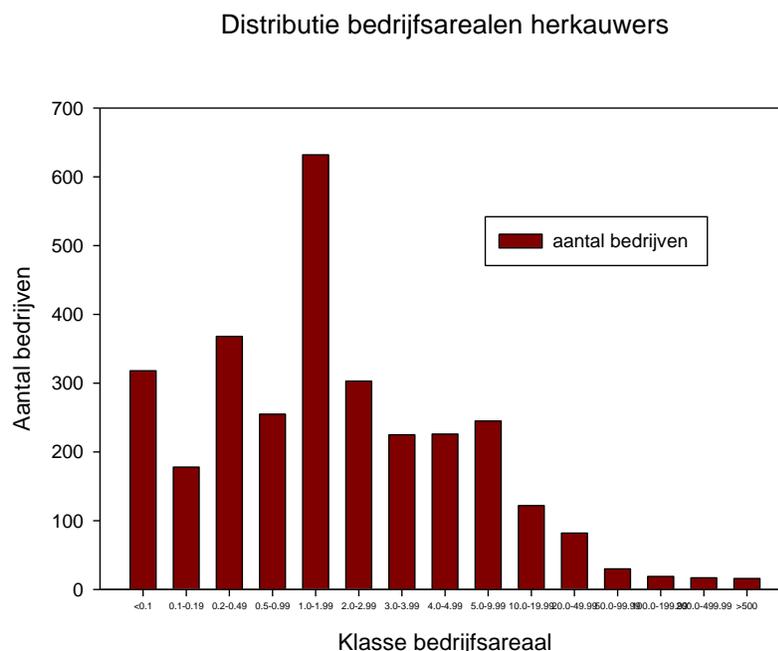


Fig 1.3 Farm acreage for cattle farms per size category.

The above diagram shows that most cattle farms with ruminants own less than 2 hectares of land to perform their activities. This number of 1751 farms is 58% of the total number of farms with ruminants (3036). It should be noted that most farms keep different types of animals. It should be clear that the number of animals that can be kept on such a small farm surface, is also limited.

In addition, other agricultural activities, such as vegetables and fruit growing, as well as housing occur all on the same farm acreage.

The limitation in providing the most important (and cheapest) source of food for the cattle (grass) is for that reason logical. Shortages of grass are then solved by having the animals graze on fallow land, or grass is cut in other locations and supplied to the animals.

This suboptimal rough fodder provision immediately leads to a reduced production and higher cost prices.

1.4 Meat processing and consumption

The largest concentration of butchers can be found, as to be expected, in and around Paramaribo. There are 66 butcheries at present, 33 of which sell only beef, eight only pork and the remaining 25 are mixed butcher's shops. In addition to these meats, almost all butcher's shops sell meat products (sliced cold meats) and chicken or chicken parts.

Nickerie has three butcher's shops, Coronie and Saramacca have one each and Para has two.

In addition to the butcher's shops in the districts, meat and meat products are transported by two butchers from Paramaribo to the West (Nickerie and Coronie) and by two butchers from Paramaribo to the East (Commewijne and Marowijne).

The average per capita meat consumption in 2009 divided in local production and import is represented in the below table.

Table 1.7 Average per capita meat consumption 2009

Meat type	local (kg)	import (kg)	total (kg)
Beef	3.85	2.7	6.55
Pork	3.58	1.34	4.92
Sheep and goat meat	0.03	0.09	0.12
Poultry	15	33.49	48.49
Eggs (pieces)	95	1	96

It should be noted that imported beef consists for 65% of salt beef, the remainder of canned beef. Only a limited quantity of fresh beef is being imported, only for the more expensive segment to provide local restaurants and hotels.

The total import of pork consists for 33 % of fresh pork, for 47 % of preserved pork and for 20 % of salt pork tail.

The import of poultry consists for 91 % of fresh chicken and chicken parts and for 9 % of preserved poultry.

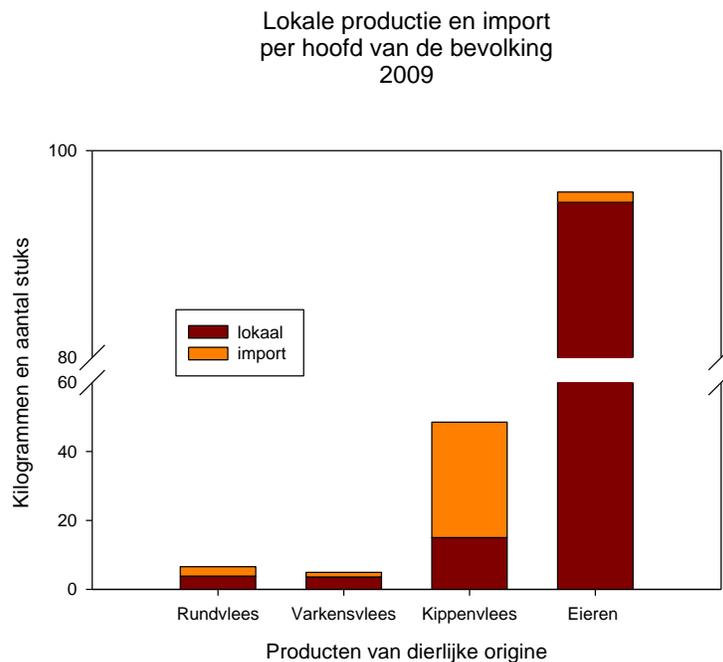


Fig. 1.4 Local production and import meat, meat products and eggs

The level of self-sufficiency for fresh beef is 92 %, for fresh pork 89 %, for sheep and goat meat 25 %, for poultry 33 % and for consumption eggs 99 %.

Above figures indicate that there is a lot of room to expand various preserved meats and preparations.

Average prices at the farm gate and consumer prices

The below table provides an overview of the trends in farm gate prices and consumption prices in butcher's shops.

Table 1.8 Average consumer prices in SRD

	2006	2007	2008	2009
Beef (kg)	20.58	20.49	20.54	20.31
Pork (kg)	17.65	20.65	24.11	19.61
Sheep / goat meat (kg)	25	25	40	37.5
Poultry (kg)	8.37	8.78	11.68	12.76
Eggs (pieces)	0.37	0.49	0.5	0.72

Table 1.9 Average farm gate prices SRD

	2006	2007	2008	2009
Beef (kg slaughtered weight)	9.75	10.00	10.50	10.50
Pork (kg life weight)	5.00	7.50	8.50	7.75
Sheep/ goat (kg slaughtered weight)	9.75	9.75	12.50	12.00

Below diagram Fig. 1.5 provides an image of the differences between average carcass prices and consumer prices. It should be clear that big margins are used for the exploitation of butcher's shops in Suriname, for which the average margin for beef is 2.0 times the carcass price, for pork on average 2.4 times the carcass price, and for sheep even on average 2.8 times the carcass price.

It should be mentioned that part of this margin is used to pay for purchasing live animals from the field. Buyers of live cattle make their living from the margin on the purchase price and the sale price to the butcher's shop.

This system, however, increases the price for the consumer and lowers the income for the producer (livestock farmer).

Karkas prijzen en consumenten prijzen
2006-2009

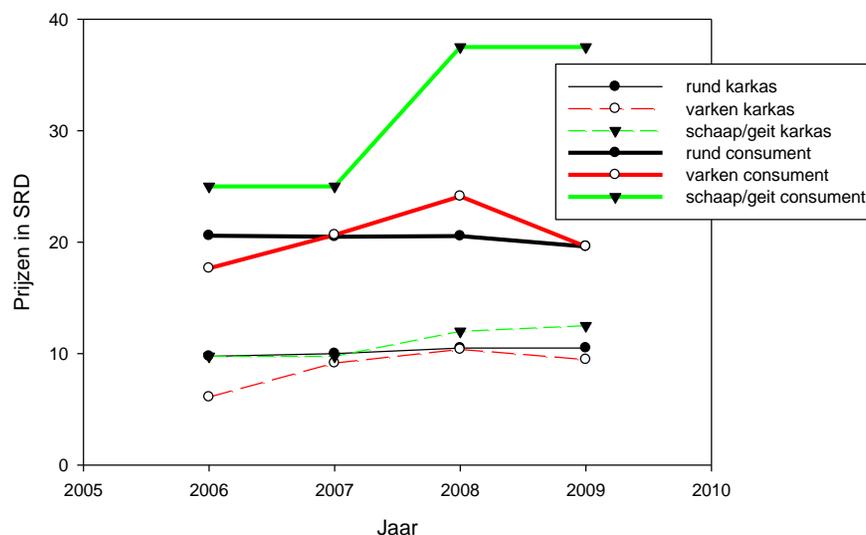


Fig. 1.5 Carcass prices and consumer prices of 3 types of meat

2. Cattle

2.1 Dairy Cattle

Areas where farms are concentrated.

It can be concluded that the majority of the milk production is from the neighborhood Pad van Wanica, followed by the neighborhood Domburg. According to the classification system, used by the Melkcentrale Paramaribo (MCP), the neighborhood Pad van Wanica includes: Indira Gandhiweg and side-roads, the Lelydorp area and surroundings, Javaweg and surroundings, Rijdsijkweg and surroundings, etc.

The neighborhood Domburg includes: the Houttuin Area, Livorno, Highway, Boxel and Domburg. Wanica contributes annually about 55% of the total milk that is delivered to the MCP, while Domburg is responsible for approximately 20% on an annual basis (Statistics Melk Centrale Paramaribo).

The cattle farms register of LVV shows that the concentration of especially small dairy cattle farms can be found in the administrative jurisdiction Wanica-B. The medium-sized to large dairy farms can be found in the Para area.

Operational Systems.

Dairy farming takes place in a large number of small and a small number of (medium to) large farms. In contrast to the animals for slaughter sector, in most cases a limited area is grazed, as the cattle has to come back daily to the stable to be milked.

Grazing occurs in general, with additional feed consisting of supplemental feed and also often cut grass. In a few large farms zero grazing takes place, with the animals being provided for in their needs in the stables. In these cases, but also on the small farms, the grass is in most cases cut outside the farm.

The cattle is in most cases kept in a natural and unimproved pasture, whether or not following a rotation system. Management and maintenance of the pasture in most cases leave a lot to be wished for, and can be improved. As the surface of pasture per cow is less than in the cattle for slaughter sector, it is necessary that the grass on the dairy farms is of better quality. This necessitates a better management of the pasture as well as supplemental feeding of the dairy cattle.

On the small family farms with insufficient land, there is often continuous grazing or tethering and little attention is paid to grassland management.

On the larger farms (> 20 ha) where land is a less limiting factor, a rotation system is often applied. In these cases some attention is paid (although not optimally) to grassland maintenance and management. Supplemental feed consists in these cases of: sharps, factory feed, bananas, etc. Rarely cut grass is given as supplemental feed.

On the large, professional farms the (often imported) milk cows are provided with grass and supplemental feed in the stables. In addition, the animals graze in the field.

Milking by hand is done generally. Mechanized milking is often only used on larger farms having a bigger dairy herd.

Sector

The major part of the local raw milk is processed by the MCP. One could say that MCP buys almost 80% of the totally produced raw milk (Doorrekening Fiscal facilities, Jaarverslag LVV 2008).

The remaining quantity is for: own consumption of the farmer, farm gate sales for customers of the farmer, as well as processing by milk processors, including Nuprocess NV and Rudisa Beverages and Juices NV.

Products according to importance.

The most important and prime product of the sector is raw milk. Other (by) products in this sector are young cattle, especially bull calves.

Table 2.1 Supply of farm milk, import milk powder and production MCP 2004-2009

DESCRIPTION	UNIT	2004	2005	2006	2007	2008	2009
MELKCENTRALE							
PRODUCTION:							
Purchase of farm milk	1000 l	4,401	5,684	5,847	6,065	5,120	4,935
Milk powder	„	6,768	5,475	3,905	3,687	2,694	2,403
TOTAL PROCESSED	1000 l	11,169	11,159	9,752	9,752	7,814	7,338
Pasteurized milk	„	9,229	8,835	7,667	6,935	6,304	5,794
Milk products	„	1,698	1,698	1,310	1,413	1,308	1,529
Share of milk powder	%	61	49	40	38	34	33
VALUE:							
Purchase of farm milk	SRD 1000	7,042	9,094	10,340	11,523	9,728	9,377
Milk powder	„	6,497	4,654	4,686	7,457	4,241	3,379
Milk powder per liter	SRD 1	0.96	0.85	1.20	2.02	1.57	1.41
Farm milk per liter	„	1.60	1.60	1.77	1.90	1.90	1.90
IMPORT MILK POWDER							
- Quantity	ton	1,365	1,259	1,150	1,031	1,272	657
- Value	SRD 1000	9,533	10,157	9,937	13,136	15,255	5,100
- Value per ton	SRD	6,984	8,068	8,641	12,741	11,993	7,763
SHARE MELKCENTRALE							
Process. milk pwdr quantity	ton	846	622	592	380	359	355

Source : Agricultural statistical data 2004-2009

Boerenmelk leveringen en Import melkpoeder Melk Centrale Paramaribo

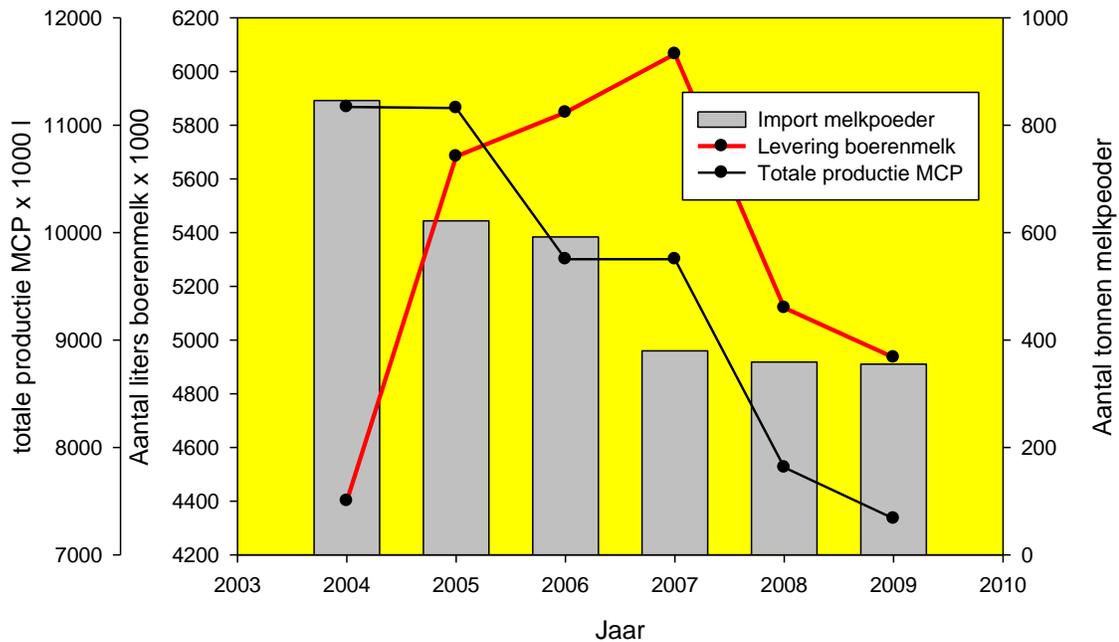


Fig. 2.1 Relationship between farm milk supply and import of milk powder by MCP

Above diagram clearly shows that with an increase of the supply of farm milk, the quantity of milk powder imported decreases. Although this from a viewpoint of food security is a positive development, it has financial consequences for the dairy processor. The purchase price of a liter of raw milk of SRD 1.90 is higher than the price of a liter of milk made out of dissolved milk powder (SRD 1.41, 2009). The cost price of a dairy product based on farm milk will for that reason be higher than of the same product produced with milk powder.

In addition, there is the issue of the microbiological quality of the milk, which in case of farm milk does not always meet the highest standards, while milk powder is sterilized and thus of a very high microbiological quality. See also below.

Most important issue within the subsector.

The issue with regard to the raw feed supply (and the availability of land) can be described as the most important problem of the sector. Quantitatively and qualitatively inadequate raw feed supply results in a strong dependence on raw feed or factory feed.

The shortage in sufficient and qualitative raw feed (that one tries to compensate somewhat by supplemental feed: sharps, factory feed, green bananas) results in milk having a high cost price and a low fat content. In the majority of the cases there is an imbalanced ration that insufficiently covers the needs of the animals. The result is inefficiency: lower productions, shorter lactation period, higher cost price or lower milk fat content.

As a result of the high farm gate price local raw milk can compete hardly with cheaper subsidized milk powder including from the EU. Continuation of this situation can lead to the local production being outcompeted from the market.

Herd composition of dairy cattle

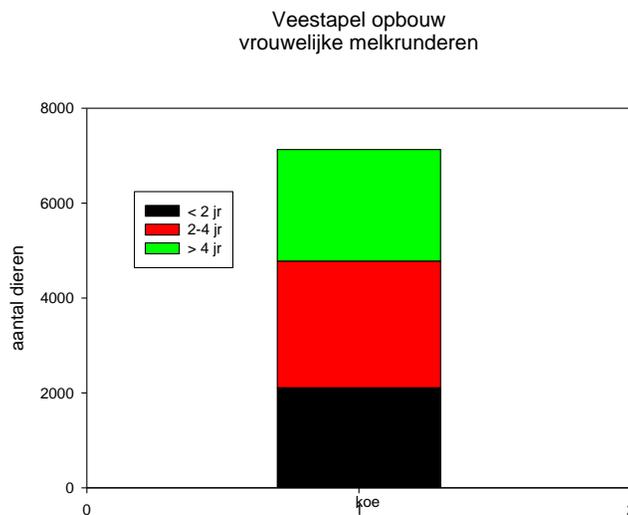


Fig. 2.2 Herd composition of female dairy cattle

If we look at the proportions provided between ages of animals in the national herd we should conclude that the ratio between young animals < 2 years and animals in production (> 2 Year) is not correct. There should proportionally be more young animals on the farms, both for replacement and for growth. With these numbers one can conclude that the herd of female dairy cattle will decline.

When evaluating table 2.2 expansion and loss of the female part of the dairy herd it can be seen that of the 1402 animals that were added to the herd through birth and purchase, 569 were lost through death and other losses. This is 41% of the total expansion. With such losses it is not difficult to conclude that there is no growth of the dairy cattle herd.

As already stated earlier, the number of dairy cattle counted during the agricultural census is underreported. A total number of 7129 female animals older than 2 years was included, of which 4989 animals are not providing dairy on the baseline day.

The supply of raw farm milk over the year 2008 was 5,120,000 liters of milk. Assuming that 80% of the milk production was supplied to the MCP and 20% is purchased at the farm gate, the total milk production over 2008 can be estimated at around 6,400,000 liters of raw farm milk. A lactation period of a dairy cow is estimated at 220 days, with an average milk production of 7 liters per cow per day.

Based on this it can be assumed that 2500 animals have to be milked continuously per day.

The number of lactating animals included in the agricultural census was 2140, which demonstrates that for this category of farm animals underreporting of 8.6% can be assumed.

Table 2.2 Expansion and losses of female dairy cattle

DISTRICT	TOTAL						
	EXPANSION		SALES/LOSSES				
	BIRTHS	PURCHASED/GIFT	SOLD	M1	M2	C/G	OT
PARAMARIBO	70			10	20		
WANICA	597	134	175	98	92	8	134
NICKERIE	220	8	48	13	12	8	8
CORONIE	45		16	3	2	3	
SARAMACCA	69	35	29	12	8		35
COMMEWIJNE	27	102	2	4	1		102
MAROWIJNE							
PARA	94	1	15	8	6		1
TOTAL COASTAL PLAIN	1,122	280	285	148	141	19	280

EXPANSION=EXPANSION BIRTHS=BIRTHS

PURCHASED/GIFT= PURCHASED/GIFT

SALES/LOSSES: SOLD

M1=DIED< 3MNTHS

M2=DIED≥ 3MNTHS

C/G=OWN

CONSUMPTION/GIFT

OT=OTHER LOSS

If the discrepancy between the number of lactating animals is less than 10%, a completely different picture is obtained for milk production.

According to the agricultural census 2140 lactating animals produced a total of 1,628,500 liters of milk in 2008. This is an average of 760 liters per animal per year. An average milk production of 7 liters per cow per day, would only give a lactation period of 110 days. This is very unlikely. A lactation period of 220 days would give a milk production of only 3.5 liters per cow per day. This is also very unlikely.

One can reasonably assume that the dairy cattle farmer has reported a much (50%) lower milk production than is really the case.

The data of MCP over the year 2008 provides us with a total milk supply of 5,120,000 liters for the districts of Paramaribo, Wanica, Saramacca and Commewijne.

The agricultural census recorded only 1,546,138 liters in the same districts. This is a difference of 70%.

Although it is a fact that many cattle farmers do not keep any form of administration, it should be possible to provide an close estimate of the liters of milk supplied to MCP on the basis of the settlement slips that each dairy farmer receives from MCP.

It should be noted that depending on the purchase price of farm milk, animals from dairy cattle herds are transferred to cattle for slaughter hers, and vice versa. In case of a low milk price (according to the livestock farmer) animals that no longer produce, are included in the cattle for slaughter herd so that it produces one cow for slaughter.

Thus it is not possible to give a precise separation between animals belonging to the dairy cattle herd and the animals belonging to the cattle for slaughter herd. During the interviews the farmer was asked for the number of animals that mainly belong to the dairy cattle herd and the animals that mainly belong to the cattle for slaughter herd.

Table 2.3 Farms and dairy cattle per farm per district

DISTRICT	Farms	Dairy cattle	
		Number of animals	Animals/ farm
PARAMARIBO	40	200	5.00
WANICA	658	4563	6.93
NICKERIE	156	3470	22.24
CORONIE	23	207	9.00
SARAMACCA	36	450	12.50
COMMEWIJNE	46	284	6.17
MAROWIJNE	0	0	0.00
PARA	43	605	14.07
TOTAAL COASTAL PLAIN	1,002	9,779	9.76

When looking at above Table 2.3 the large number of animals per farm in Nickerie, Para and Saramacca is striking. This is where the larger dairy cattle farms are established, while the largest part of the supply of farm milk to MCP is done by farms that are located in the District of Wanica and which are on average 58% smaller than the large farms in Nickerie. Para and Saramacca. See also Table 2.3 and Diagram 2.3.

It may be concluded that the larger part of the milk supply to MCP is taken care of by smaller farms with on average 7 dairy cows per farm.

The production of these small farms is, however, not of such a nature that a reasonable income can be earned. That is why there is a constant call to increase the purchase price of raw farm milk, that is however already high, as compared to milk made from milk powder.

In addition, it should be stated that a number of 840 cows were “counted” of households that do not meet the minimum criteria to be called a farm in the sense of the Fifth Agricultural Census 2008-2009.

For the interior 7 farms were recorded that owned together 57 dairy cows. A milk production of 3000 liters was reported.

Table 2.4 Supply of farm milk to the Melk Centrale Paramaribo

<u>SUPPLY OF FARM MILK TO THE MELKCENTRALE N.V.</u>							
Indira Gandhiweg	1000 l	2,177	2,854	2,969	3,339	2,975	2,958
Uitkijk	„	525	673	683	809	658	610
Kwatta	„	318	374	357	343	311	302
Domburg / Houttuin / Livorno	„	1,196	1,568	1,629	1,362	963	876
Meerzorg	„	185	215	209	212	213	189
TOTAL SUPPLY OF FARM MILK	1000 l	4,401	5,684	5,847	6,065	5,120	4,935

Aandeel leveringen boerenmelk per lokatie

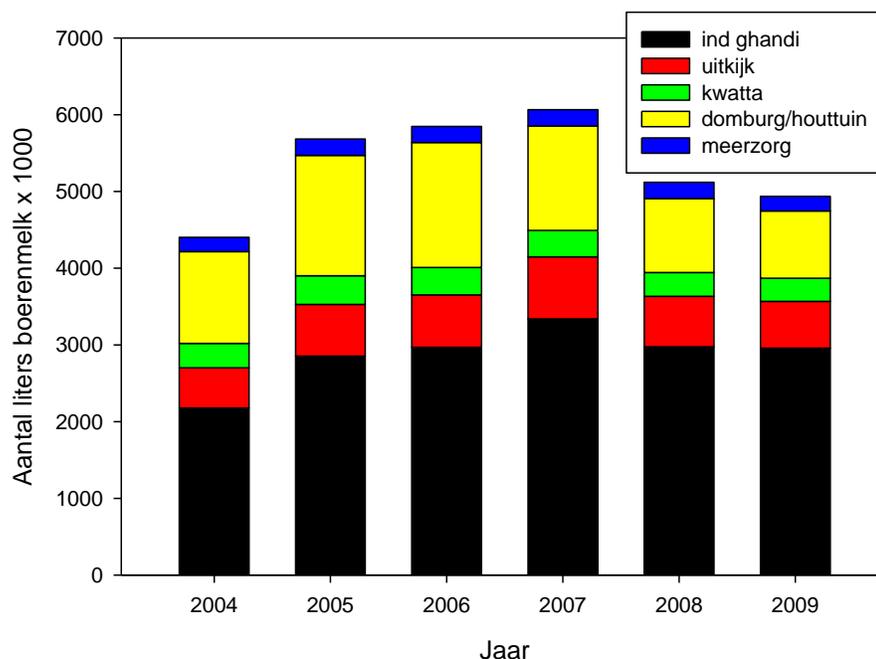


Fig. 2.3 Share of deliveries of farm milk to MCP per location

Veterinary care for dairy cattle

Within the agricultural census attention was also paid to the veterinary care for the national cattle herd. Parts of the composite table will be discussed for each species of animal to which it relates.

Table 2.5 Veterinary care for dairy cattle

DISTRICT	PRIMARILY DAIRY CATTLE								
	1	2	3	4	5	6	7	8	9
PARAMARIBO					30		30		
WANICA	70	185		3	411	57	262	50	278
NICKERIE	3	32	1	1	34	3	22	8	36
CORONIE		10			2		1	3	9
SARAMACCA	4	6	1	1	10	6	6	2	8
COMMEWIJNE	5	12			23	2	8	8	10
MAROWIJNE									
PARA	2	14			23	3	24	6	31
TOTAL COASTAL PLAIN	84	259	2	5	533	71	353	77	372

TYPE OF VETERINARY CARE: 1= ARTIFICIAL INSEMINATION
2= ANTIBIOTICS
3= CASTRATION
4= HORMONES
5= LARVICIDE
6= MASTITIS INJECTION
7= PARASITE CONTROL
8= VACCINATION
9= VITAMINS AND MINERALS

Table 2.5 shows that of all dairy cattle farms (1002) 53% use a larvicide to fight the larvae of the South American blow fly (*Cochliomyia hominivorax*). These larvae are also called screw worm, and the fly and its larvae are found all over Suriname. This fly lays eggs around open wounds, out of which screw-like larvae develop that can feed themselves with live tissue and wound fluids.

Fighting these larvae is done by preventing and treating wound infections, for which the larvae are removed from the wound and the wound is also treated with a spray (Matabicheiras Aerosol, also called “smearax”). (Bastiaansen, 1995)

Parasite control (against internal and external parasites) is given at 35% of the farms. Administration of vitamins and minerals and of antibiotics is practiced on respectively 37% and 26% of the farms.

It is striking that only on 7% of the farms injections of the udder is practiced to fight mastitis (udder infection), while the occurrence of mastitis on milk farms is generally accepted. This udder infection is also an important cause of the bad microbiological quality of the milk.

2.2 Beef cattle

The areas where beef cattle farms are concentrated are in the Districts of Wanica, Commewijne and Saramacca.

Table 2.6 Areas of concentration and animals per farm

DISTRICT	Farms	Animals for slaughter	Animals/farm
		Number of animals	
PARAMARIBO	80	500	6.25
WANICA	470	3200	6.81
NICKERIE	73	3852	52.77
CORONIE	27	257	9.52
SARAMACCA	140	2408	17.20
COMMEWIJNE	196	7956	40.59
MAROWIJNE	2	10	5.00
PARA	21	327	15.57
TOTAAL COASTAL PLAIN	1,009	18,510	18.34

These districts comprise 79.9% of the beef cattle farms and 73.3% of all animals for slaughter in Suriname. From the data can further be concluded that Wanica does have the largest number of beef cattle farms, but that the average number of animals present per farm is 6.8. In Commewijne the average is 40.6 animals, however, we should not forget that this gap (of one average 5 – 10 animals per farm to more than 40) could be the result of some large farms (having 300 – 5000 animals) that are located in that district. The animals for slaughter population on farms in Saramacca is on average 17.2. In Saramacca as well there are several medium-sized farms with 100 – 250 animals.

The general picture of the farms in the districts and Paramaribo is that the majority of the farms keep 5 – 10 animals for slaughter. If the farms have small pastures (< 2 ha), especially small groups of bulls – in most cases purchased from other farms – are held in stables. In case of larger pastures (8 – 10 ha) the animals for slaughter are kept in general on unimproved pastures. Fallow land that has been like that for a longer period is also used for this.

The beef cattle farms are in general family farms, in which the meat production is most important. In the case of fattening the animals in stables, the manure is also sold, especially to horticulture farms.

Table 2.7 Registered slaughters of cattle, including water buffaloes

		2005	2006	2007	2008	2009
Number	Par'bo/ Halal slaughterhouses	2,710	0	0	0	0
	Nickerie	105	105	78	137	91
	Coronie	7	5	9	7	4
	Surebeef	4,674	7,133	7,882	9,085	9,621
	Para	147	154	178	189	310
	Commewijne	0	0	0	0	27
	Home slaughters	4	1,302	572	389	669
	Total	7,647	8,699	8,719	9,807	10,722
	Trend (1980=100)	94.50	107.50	107.75	121.19	132.50
Slaughter weight (kg)	Par'bo/ Halal slaughterhouses	426,842	0	0	0	0
	Nickerie	9,810	9,810	8,775	8,350	9,735
	Coronie	617	437	899	460	294
	Surebeef	876,858	1,331,689	1,449,367	1,618,150	1,702,688
	Para	23,469	27,177	29,230	29,936	54,870
	Commewijne	0	0	0	0	4,779
	Home slaughters (*)	600	240,870	105,181	69,285	118,413
	Total	1,338,196	1,609,983	1,593,452	1,726,181	1,890,779
	Trend (1980=100)	114.17	137.36	135.94	147.27	161.31
Average weight (kg)	Rural	175.00	185.08	182.76	176.02	176.35
	Trend	120.81	127.77	126.17	121.51	121.74
Distribution (by weight)	Par'bo/ Halal slaughterhouses	31.9%	0.0%	0.0%	0.0%	0.0%
	Nickerie	0.7%	0.7%	0.6%	0.5%	0.5%
	Coronie	0.1%	0.0%	0.1%	0.0%	0.0%
	Surebeef	65.5%	89.2%	90.9%	93.7%	90.1%
	Para	1.8%	1.8%	1.9%	1.7%	2.9%
	Commewijne	0.0%	0.0%	0.0%	0.0%	0.3%
	Home slaughters	0.0%	8.3%	6.6%	4.0%	6.3%

Table 2.7 shows that the number of slaughtered animals is experiencing a steady growth since 2005. In 2009 40% more animals were slaughtered than in 2005.

The average weight per carcass remained in 2009 almost similar to 2004 after a remarkable increase to 185 kg in 2006.

Geregistreerde slachtingen en gemiddeld karkasgewicht Runderen

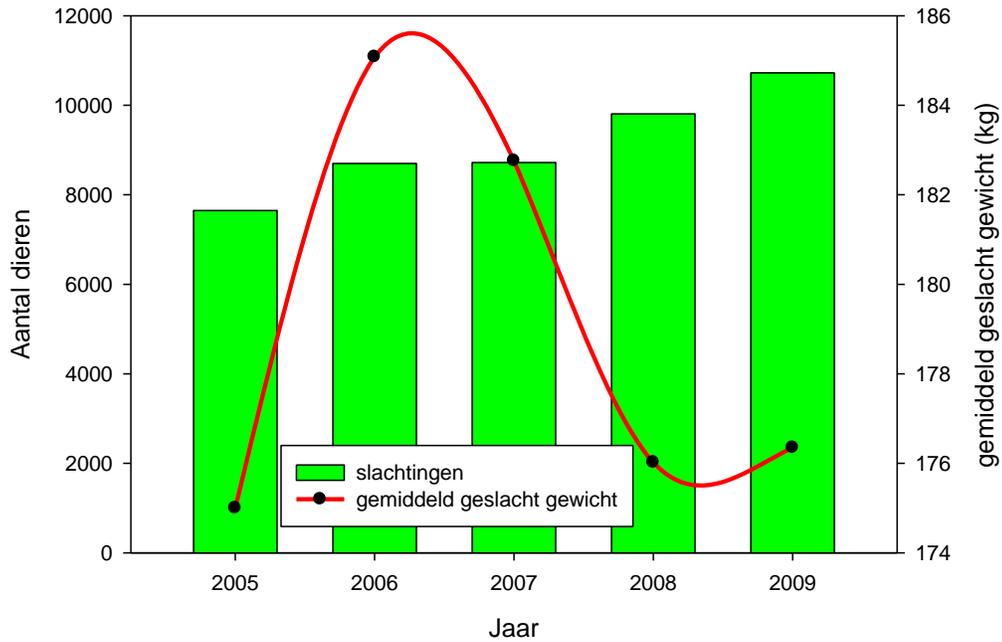


Fig 2.4 Slaughters and average carcass weight cattle

Herd composition of cattle for slaughter

Veestapel opbouw slachtrunderen

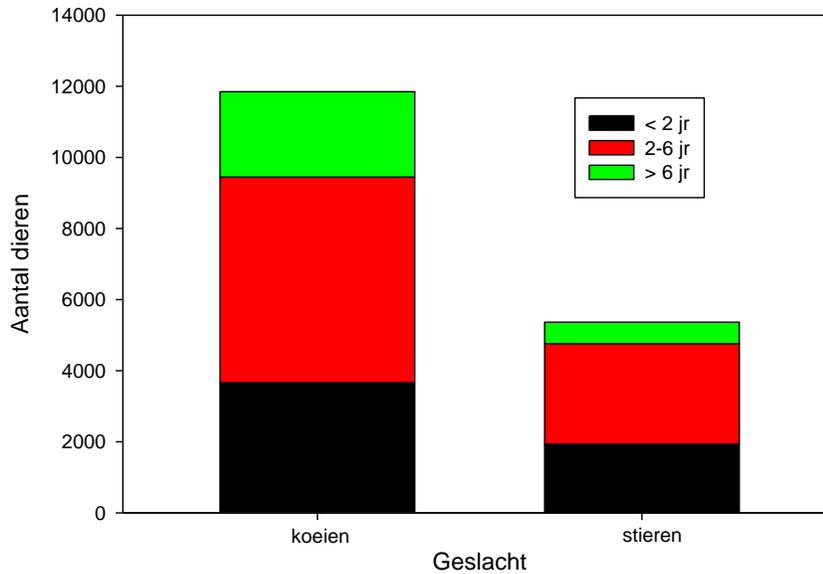


Fig. 2.5 Herd composition of cattle for slaughter

The herd composition of cattle for slaughter as shown in the diagram in fig. 2.5 is striking, it is very clear that there are less male animals than female animals. This, however, can be easily explained as the most important product of this agricultural activity is the production of meat, and as for the maintenance of the herd less male animals are required, these are slaughtered in larger numbers than the female animals.

According to below tables, which show the expansion and losses over the year 2008, it appears that a total of 589 animals were reported as being the total mortality and other losses. This is 18% of the expansion through births and purchases.

Compared to the 41% loss through mortality and other causes for dairy cattle, this percentage of 18 appears to be reasonable.

However, it should be stated that the general mortality of cattle for slaughter can be estimated to be higher than for dairy cattle, as the monitoring of births on farms for animals for slaughter is notoriously bad, because of the extensive production systems. The figures obtained from the count paint a completely different picture.

As total purchases is reported 825 male animals and 720 female animals, which is a total 1545 animals. This is in sharp contrast to the registered slaughters which amount to a total of 9807. The reporting of sold animals during the census is only 16% of the realization over the year 2008. Again the fear that the data of the census will be used for taxation purposes must have been the reason for this gross “underreporting”.

In addition, for the interior 2 farms with animals for slaughter were included with a total of 3 animals.

Table 2.8 Expansion and losses of male cattle for slaughter

DISTRICT	TOTAL						
	EXPANSION		SALES/LOSSES				
	BIRT HS	CHA SED/ GIFT	SOL D	M1	M2	EC/G	OL
PARAMARIBO	50		50				
WANICA	243	157	159	31	32	24	12
NICKERIE	102	23	40	47	8	4	6
CORONIE	21	3	4	3	1	2	2
SARAMACCA	154	55	127	28	22	4	20
COMMEWIJNE	782	139	443	87	28	7	7
MAROWIJNE	1						
PARA	13	7	2	2			
TOTAL COASTAL PLAIN	1,366	384	825	198	91	41	47

Table 2.9 Expansion and losses of female cattle for slaughter

DISTRICT	TOTAL							
	EXPANSION				SALES/LOSSES			
	BIRT HS	POK CHA SED/	SOL D	M1	M2	EC/G	OL	
PARAMARIBO	40			10				
WANICA	153	108	82	16	46	2	25	
NICKERIE	90	2	10	23	6	0	2	
CORONIE	26	5	4	3	2	1	1	
SARAMACCA	127	24	61	9	10	2	1	
COMMEWIJNE	676	245	554	59	37		3	
MAROWIJNE	2							
PARA	17	4	9					
TOTAL COASTAL PLAIN	1,131	388	720	120	101	5	32	

Gender ratio of slaughter cattle

One given that is used to determine the growth or decline of a herd is the gender ratio of the slaughtered cattle. A reasonable proportion with possibilities for growth would be 55% bulls to 45% cows slaughtered.

In the following diagram this gender ratio is shown for the year 2009 and the 2 first quarters of 2010 of slaughtered animals by the largest cattle slaughterhouse in Suriname.

It is clear that from the first quarter of 2009, when the gender ratio was % of bulls and % of cows, afterwards, with the exception of quarter 2009/4, more cows were slaughtered than bulls. This is an indication that the national herd is suffering loss at slaughter.

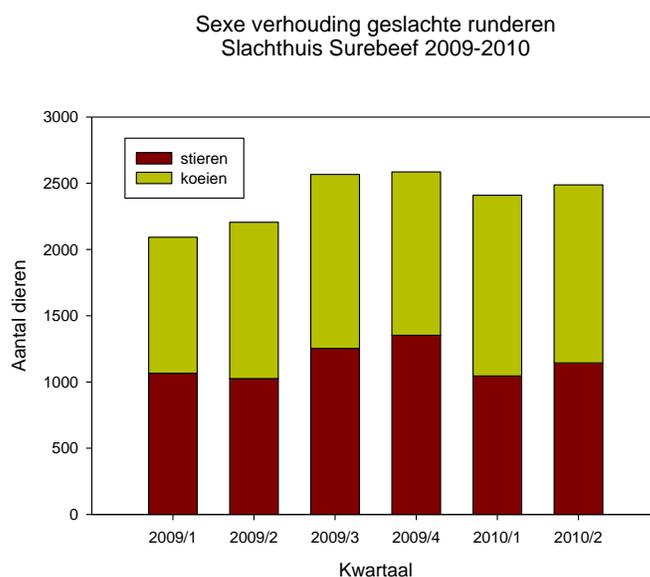


Fig. 2.6 Gender ratio of cattle slaughtered by Surebeef NV

Table 2.10 (numbers and gender ratios cattle slaughters)

	Bulls	Cows	Total	% bulls	% cows
2009/1	1066	1027	2093	0.51	0.49
2009/2	1026	1180	2206	0.47	0.53
2009/3	1254	1313	2567	0.49	0.51
2009/4	1352	1234	2586	0.52	0.48
2010/1	1045	1365	2410	0.43	0.57
2010/2	1144	1344	2488	0.46	0.54

Veterinary care for animals for slaughter

Table 2.11 Veterinary care for animals for slaughter

DISTRICT	MAINLY ANIMALS FOR SLAUGHTER								
	1	2	3	4	5	6	7	8	9
PARAMARIBO		30			50	10	40	10	10
WANICA	8	78		3	272	8	178	15	156
NICKERIE	2	19	1	1	10	2	6	1	18
CORONIE		2			2		1	1	1
SARAMACCA	3	12	2	2	59	5	14	5	38
COMMEWIJNE	7	52	5	5	82	7	52	20	58
MAROWIJNE		1			1		1		1
PARA	1	4			8	1	13	2	13
TOTAL COASTAL PLAIN	21	198	8	11	484	33	305	54	295

TYPE OF VETERINARY CARE:

- 1= ARTIFICIAL INSEMINATION
- 2= ANTIBIOTICS
- 3= CASTRATION
- 4= HORMONES
- 5= LARVICIDE
- 6= MASTITIS INJECTION
- 7= PARASITE CONTROL
- 8= VACCINATION
- 9= VITAMINS AND MINERALS

Of the total of 1009 farms with animals for slaughter Matabicheiras Aerosol is used on 48 % of the farms against screwworm larvae.

30 % of the farms uses parasite control against internal and external parasites; and 29 % of the farms apply vitamins and minerals. On 20 % of the farms antibiotics is used to fight infections.

In comparison to dairy cattle, less veterinary care is given to cattle for slaughter. This can be explained by the often more extensive production systems that are used for cattle for slaughter.

3. Pigs

The pig sector in Suriname is relatively smaller in terms of breeders (155 farms) and inferior to the the subsectors Poultry and Beef and Dairy cattle.

The local production usually exceeds the demand for pork within the country. The demand for pork ham, shoulder and loins, for processing by the hotel and restaurant sector, was in the second half of the year in most cases more than the local supply, so that the large buyers were required to import processed meats and meat parts. The import of these products flood the local market, so that the local breeders or producers cannot sell their animals or produce leading to a decrease of the farm gate price and adverse effects for the local breeders. This trend occurred in production year 2008. In production year 2009 the local production was able to meet the demand for the whole year. Salt pork tail is still being imported.

In the years 2000 the local production of pork experienced a lot of problems from high feed prices, poor quality and imbalanced feed and inferior breeding races having as a result a poor growth and carcass quality. Meat quality was not an issue, having as a result low farm gate prices. Despite this a peak production year occurred in 2005 (24,500 Pigs), but only against the lowest farm gate price (SRD2.75/kg). With the arrival of VARROSS, the largest slaughterhouse for pigs, more attention is paid to payment for quality lean meat and classification of the carcass. The local production remained stable, more in particular around 22,000 Pigs. What did change is the average slaughter weight, which increased from 65 kg (in 2000) to 70 kg (in 2009). This is the result of the fact that breeders introduced breeding simultaneously with improved feed composition, a contribution of a new feed company LNB SURIMIX and shorter growth periods of the piglets.

In the first half of the year 2008 a problem was found on one of the largest pig farms, more in particular, piglet mortality resulting in a decreased production of fattening hogs in the second half of the year. This was solved through import.

Most piggeries and number of pigs are concentrated in the areas around Paramaribo, where livestock feed companies and the slaughterhouse VARROSS are located.

The pig farmers urgently need support in view of the increasing feed prices (80% of the costs), labor problems with regard to piglet production and growth, as well as disease prevention (veterinary care) and the allotment of agricultural areas.

Further guidance is required for breeding (through artificial insemination). Most breeders are aware that they have to breed races that have a good feed intake and fast growth.

That is why TOPIGS lines are bred a lot, in which TOPIGS 40 sows are bred for a good litter size and milk production. A terminal boar is in most cases a TEMPO or TYBOR boar for fast growth and good meat quality.

In 2009 a higher slaughter weight was achieved than in previous years.

Table 3.1 Registered slaughtered pigs

		2005	2006	2007	2008	2009
Number	Par'bo (VSP/VARROS)	25,213	23,501	22,914	22,300	24,232
	Nickerie	224	224	382	482	477
	Coronie	148	134	149	139	144
	Home slaughters (h)	1	20	20	20	0
	Total	25,586	23,879	23,465	22,941	24,853
	Trend (1980=100)	172.66	161.14	158.34	154.81	167.71
Slaughter weight (kg)	Par'bo (VSP/VARROS)	1,749,845	1,645,070	1,583,031	1,520,535	1,726,587
	Nickerie	9,485	9,485	16,905	22,945	24,840
	Coronie	6,546	6,194	5,630	5,983	7,802
	Home slaughters (*)	50	1,400	1,382	1,382	0
	Total	1,765,926	1,662,149	1,606,948	1,550,845	1,759,229
	Trend (1980=100)	153.28	144.27	139.48	134.61	152.70
Average weight (kg)	Rural	69.02	69.61	68.48	67.60	70.79
	Trend	88.78	89.53	88.09	86.95	91.05
Distribution (by weight)	Par'bo (VSP/VARROS)	99.1%	99.0%	98.5%	97.4%	97.6%
	Nickerie	0.5%	0.6%	1.0%	1.5%	1.4%
	Coronie	0.4%	0.4%	0.3%	1.0%	1.0%
	Home slaughters	0.0%	0.1%	0.2%	0.1%	0.0%

Veestapel opbouw varkens

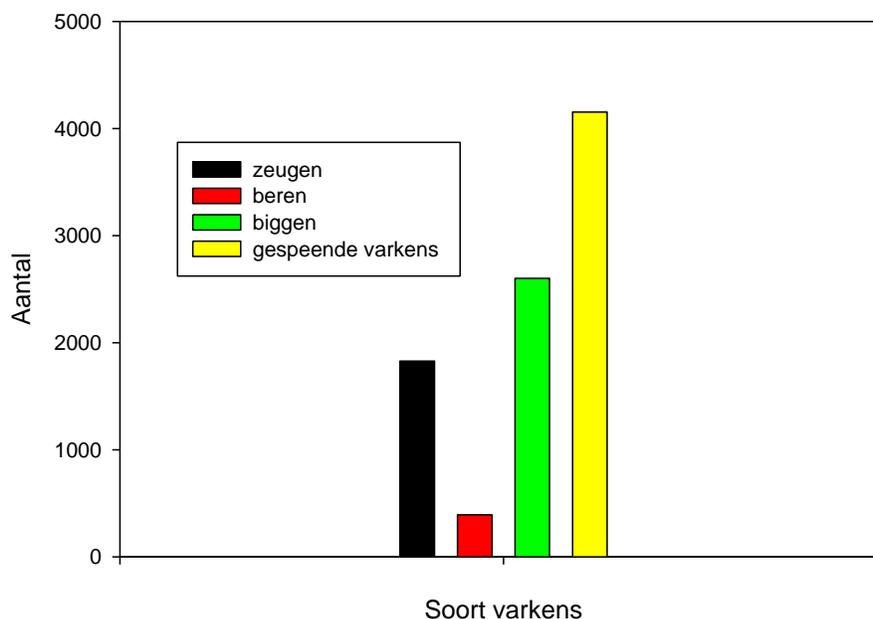


Fig. 3.1 Herd composition of pigs

The composition of the pig herd as can be seen in fig. 3.1 gives reason for several comments.

What is most striking is the number of boars compared to the number of sows. This ratio is one boar to 5 sows. In the Districts of Coronie, Commewijne, Para and Nickerie that have low numbers of animals per farm, each farm will have its own boar.

The introduction of artificial insemination of pigs in these districts can reduce this form of inefficiency.

Also for this animal species we see that the number of piglets (2601) and weaned pigs (4154) is not in proportion to the number of sows (1828). There are on average 1.4 piglets per sow and 2.3 fattening pigs on the farms. These numbers are implausibly low. Again a significant “underreporting” can be expected here, as it is not possible, with these averages to slaughter a national production of 22941 animals for the year 2008.

Table 3.2 Stocking rate per district

DISTRICT	Farms	Pigs	
		Number of animals	Animals/ farm
PARAMARIBO	0	0	0.00
WANICA	54	3354	62.11
NICKERIE	18	575	31.94
CORONIE	51	626	12.27
SARAMACCA	5	3753	750.60
COMMEWIJNE	11	157	14.27
MAROWIJNE	0	0	0.00
PARA	16	510	31.88
TOTAAL COASTAL PLAIN	155	8,975	57.90

From Table 3.2 is clear that the largest piggeries are located in the District of Saramacca and the smallest in the District of Coronie.

If we compare this to the registered slaughters per district of the largest pig slaughterhouse in Paramaribo we obtain the same picture. See Table 3.3

Table 3.3 Registered slaughters per district

	Number of farms	Number of animals	% of total number of animals	Life weight	Slaughtered weight	% carcass dressing
Wanica	61	17,598	0.73	1,483,506	1,241,155	83.6
Saramacca	10	5,921	0.24	536,154	433,352	80.8
Para	8	409	0.02	34,975	29,575	84.6
Coronie	14	294	0.01	23,034	18,718	81.3
Nickerie	1	10	0.00	988	835	84.5

In Wanica 288 animals are slaughtered on average per farm, while in Saramacca 592 animals are slaughtered per farm. The larger farms in Saramacca have more animals per farm and supply on average also 2x as much animals as the farms in Wanica.

The maintenance percentage of the animals of Saramacca is almost 3% lower than of animals from the District of Wanica. This % increases as the animals have a higher life weight. So it is possible that on average animals supplied from Saramacca have a slightly lower weight.

The discrepancy between the number of farms per district according to the data of the census and the registered slaughters in the Districts of Wanica and Saramacca is the result of the fact that a number a smaller breeders did not meet the criteria for piggery, however, they did supply pigs for slaughter to the largest pig slaughterhouse in the country.

According to the census 54 animals had been reported of households that did not meet the minimum criteria. In Saramacca this number was 6 animals. Along the whole coastal plain and Paramaribo this number reached a total of 135 animals.

Of the 11 piggeries in Commewijne no animal is supplied for slaughter to the slaughterhouse in Paramaribo.

In Commewijne there is no pig slaughterhouse, so it can be fittingly assumed that all animals there are slaughtered at the farm or in a household.

Veterinary care for pigs

Table 3.4 Veterinary care for pigs

DISTRICT	PIGS								
	1	2	3	4	5	6	7	8	9
PARAMARIBO									
WANICA	4	26	13	3	30		24	11	27
NICKERIE	3	7	1	2	5		6	4	11
CORONIE		13	2	1	1		4	8	16
SARAMACCA	1	4	2	1	3		3	2	1
COMMEWIJNE	2	7	4	2	7		5	3	7
MAROWIJNE									
PARA		4	2		6		3	2	5
TOTAL COASTAL PLAIN	10	61	24	9	52		45	30	67

TYPE OF VETERINARY CARE:

- 1= ARTIFICIAL INSEMINATION
- 2= ANTIBIOTICS
- 3= CASTRATION
- 4= HORMONES
- 5= LARVICIDE
- 6= MASTITIS INJECTION
- 7= PARASITE CONTROL
- 8= VACCINATION
- 9= VITAMINS AND MINERALS

The veterinary care for pigs concentrates around the application of vitamins and minerals and antibiotics, respectively at 43 % and 39 % of the farms that breed pigs. In addition, parasite control and “smearex” is used on 29% and 33% of the farms.

It is remarkable that only on 24 of the 155 farms is listed that castration is practiced, while in Suriname this is a very general measure to counteract an undesirable boar scent in the meat of pigs for slaughter.

4. Poultry

Within the poultry sector a distinction is made between large breeders and individuals that keep poultry especially for their own use. Large breeders can especially be found in the Lelydorp Area and in Kwatta. On large farms commercial laying hens and chicken for slaughter are used as well as commercial feed, while on the smaller farms and especially the so-called backyard farms Surinamese house poultry, known as *osofowru*, is used. A phenomenon well-known in Suriname is the ring system, in which an investor has several people employed that make their location and labor available, and the investor supplies the chicks, the feed and medicines. After raising the animals, they are picked up and the farmer is paid based on the number of live animals or their weight.

Within the sector there are: farms producing breeders, farms producing egg-laying chicken and chicken for slaughter, feed companies, slaughterhouses and processing companies.

The local production of chicken and eggs experiences competition from import. In the period between 2003-2008 appeared that local production increased from 29 % to 36% of the market and the goal is to achieve 50%. It is interesting to know that prior to 1992 no chicken or eggs were being imported.

Because the feed components, that constitute 75% of the costs for producing a full-grown chicken, is being imported for 90%, is feed the most expensive component for chicken breeding. There are local products that could be used when making feed, but currently this is not the case. Furthermore, as a result of the small population of our country, the scale at which is produced is very unfavorable.. This means that the actors within the sector should work closely together instead of compete with each other. A chain approach would offer a solution for many of the problems that now occur in the sector.

Veestapel opbouw pluimvee

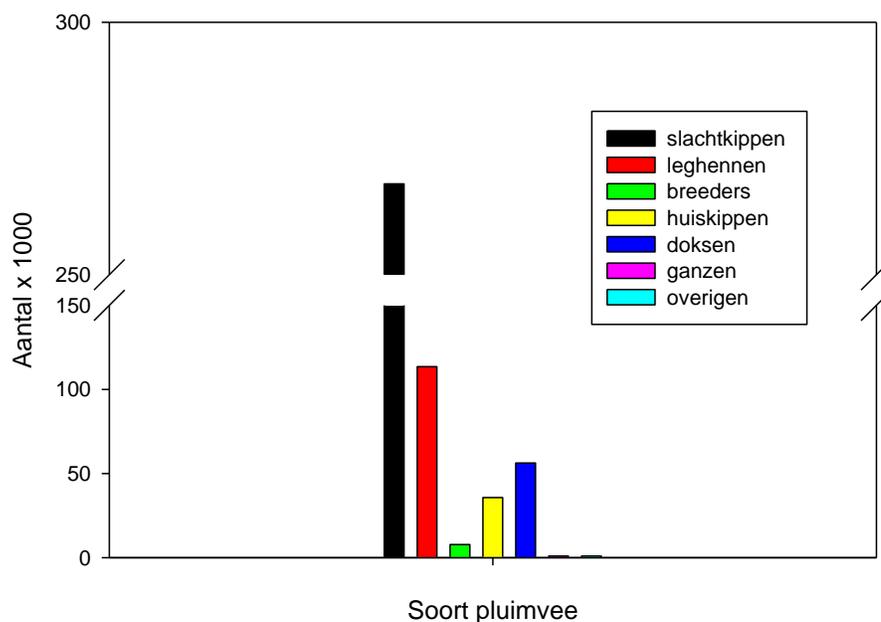


Fig. 4.1 Composition of the poultry stock

Figure 4.1 clearly shows the large numbers of chicken for slaughter in comparison to the numbers of other poultry species. As expected the egg-laying chicken are a good runner up in numbers. Both of these poultry types are based on commercial species, and the largest part is bred on large farms with an intensive management system.

It is striking that the number of duck is larger than the number of backyard chicken. Most ducks are found in the District of Nickerie.

Table 4.1 Animal population per farm

DISTRICT	Poultry		
	Farms	Number of animals	Animals/farm
PARAMARIBO	220	9640	43,82
WANICA	1105	315942	285.92
NICKERIE	972	44823	46.11
CORONIE	111	6623	59.67
SARAMACCA	420	61734	146.99
COMMEWIJNE	501	17770	35.47
MAROWIJNE	191	8549	44.76
PARA	109	18725	171.79
TOTAAL COASTAL PLAIN	3,629	483,806	133.32

When comparing the average animal density for poultry it is clear that Wanica houses 30% of the poultry farms with 65% of the total number of chicken. Wanica also houses the largest farms with on average the largest number of animals. In the Districts of Para and Saramacca there are also large poultry farms present.

In addition to the above number of 483,806 animals, there are yet another 75,069 chicken and 37,283 ducks included of households that did not meet the criteria to be included as a farm. In the interior yet another 410 farms were counted with a total of 7,522 animals. This makes poultry farming the only animal husbandry activity of any significance in the interior. This brings the total of poultry farms for the whole of Suriname to 4039 with a total of 491,328 animals.

This number, however, does not reflect reality. The production of poultry meat per year indicates that the real number of animals should be much higher.

An alternative manner to determine the size of the poultry stock is as follows: In 2009 7,357 ton of poultry meat was produced. Assuming an average slaughter weight of 1.5 kg per chicken, that amounts to 4,900,000 chicken. This number is produced over 6 fattening rounds of 8 weeks each. At any moment of the year, there are around 977,000 chicken for slaughter present in Suriname. The number of commercial egg-laying chickens was 160,000. Added to that were 52,000 ducks and 42,000 backyard chicken, according to the agricultural census.

The poultry stock of chicken for slaughter, egg-laying chicken and barnyard chicken and ducks is around approximately 1,075,000 animals.

If we deduct from the numbers of the Agricultural Statistics Department (total production over 2008) the number of egg-laying chicken, and distribute the remainder over 6 fattening rounds, we arrive at $160,000 + 852,000 = 1,012,000$ animals present at any moment. This is close to the size of the above approximation.

Market for poultry products

According to the agricultural census of 2008 228,071 chicken for slaughter were bought in 3 months in 2008. This is a total number of 912,284 animals for the whole year of 2008. With an average slaughter weight of 1.5 kg per animal, the poultry production over 2008 would only be 1,400 ton.

Reports of brooders and import data of slaughter chicks over the year 2008 show a chicken meat production of 8,325 ton.

A total egg production of 350,000 pieces over 3 months of the year 2008 was reported. This amounts to a total egg consumption egg production of 1,400,000 pieces.

The calculation of the number of consumption eggs on the basis of data from the brooders and import data of egg-laying chicks amounts to around 40,000,000 pieces.

Here again it looks as if the reported sales of livestock products was consciously underreported by the livestock keepers.

Table 4.2 Production of poultry and consumption eggs 2006-2009

	2006	2007	2008	2009
Poultry (ton)	5864	7343	8325	7357
Eggs (x10000 pcs.)	3463	4291	4047	4676

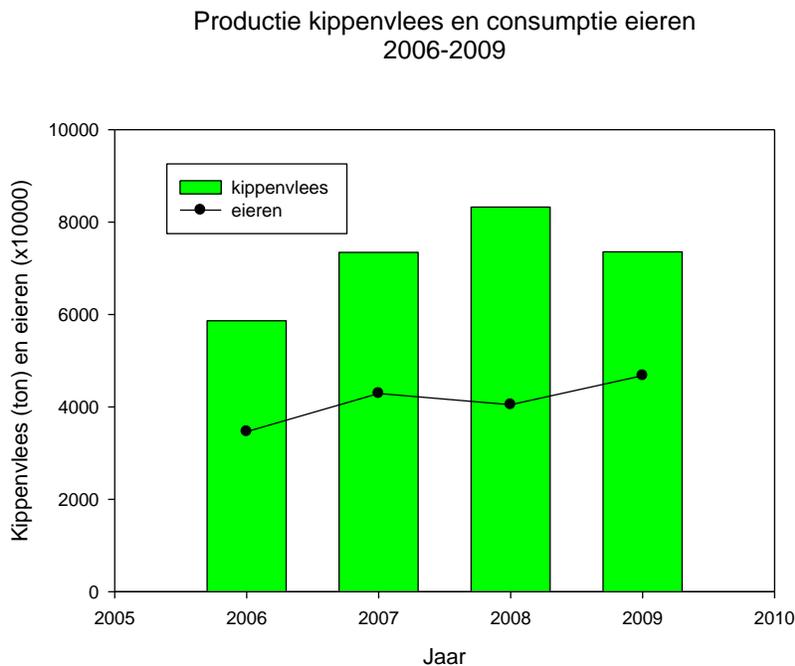


Fig. 4.2 Production of poultry and consumption eggs

The local production of chicken meat and consumption eggs can be seen in table 4.2 and diagram 4.2.

It can be seen that both the production of chicken meat and the production of consumption eggs shows a rising trend. Only the year 2009 shows a decline in the production of chicken meat. Probably because of a deterioration of the competitive position of local producers as compared with cheaper import products.

Veterinary care for poultry

Table 4.3 Veterinary care for poultry

DISTRICT	POULTRY								
	1	2	3	4	5	6	7	8	9
PARAMARIBO		30			10		10	10	60
WANICA		233		6	16		45	43	348
NICKERIE		380		25	10		27	15	422
CORONIE		10					1		18
SARAMACCA		80		23	22		23	30	88
COMMEWIJNE		94		25	23		31	35	90
MAROWIJNE		11		2					21
PARA		17			1		7		61
TOTAL COASTAL PLAIN		855		81	82		144	133	1,108

TYPE OF VETERINARY CARE:

- 1= ARTIFICIAL INSEMINATION
- 2= ANTIBIOTICS
- 3= CASTRATION
- 4= HORMONES
- 5= LARVICIDE
- 6= MASTITIS INJECTION
- 7= PARASITE CONTROL
- 8= VACCINATION
- 9= VITAMINS AND MINERALS

Of the total of 3629 farms in the coastal plain in 31% of the cases vitamins and minerals were administered. Then the administration of antibiotics follows on 24% of the farms.

It is striking that parasite control and vaccination (both necessary actions in the poultry sector) only takes place on 4% of the farms.

It should be noted that vaccinations are used against several poultry diseases already in the brooding stage, and this may not be known to the breeder.

5. Small ruminants

The farming of small ruminants in Suriname is practiced only on a modest scale. The number of farms is not very large and the number of animals per farm is low (less than 10 animals on average).

Most of the farms with sheep and/or goats are located in the Districts of Wanica, Coronie and Nickerie.

There is only one farm with a large number of animals located in the interior.

In Suriname sheep and goat are kept exclusively for the meat. These animals are not milked, thus there is no processing of milk of these animals involved.

In general, there are only a few animals on a farm and specialization in the farming of small ruminants is very rare.

Small ruminants often are one of the types of animals present on the farm, combinations with cattle, pigs or poultry and the cultivation of vegetables are widespread.

Small ruminants mostly form only a small part of the earnings and generally get little attention from the management.

In most cases on the smaller farms, the animals are grazed in a small pasture or roped (tethered) alongside the road.

At night, the animals are brought inside in a more or less adequate shed in the vicinity of the home, in particular to guard them against theft and attacks from wild dogs.

On a few larger farms, there are well-built barns, adapted to this animal species, and the feeding of these animals is often supplemented with sharps or fodder for dairy cattle.

The animals often represent the savings for unexpected expenses or are used to satisfy the need for meat at big parties, such as weddings.

In general, the animals are bought from the farmers by wholesale buyers, whether or not employed by one or more slaughterhouses, who then also make arrangements for transport to the slaughterhouse.

Most of the animals for slaughter are not taken to the slaughterhouse, but are slaughtered at home. No meat inspection thus takes place.

Sale is mostly on the foot, sometimes on the basis of the weight of the carcass.

The current prices are approximately SRD 12.50 per kg of live weight, or approximately SRD 25 per kg of live weight.

Every year, approximately 17 tons of mutton and goat meat are sold on the local market through the slaughterhouses. There are no exports.

In spite of the high prices for mutton and goat, this type of farming has not taken off.

The most important reasons for this are: Technical problems with the farming of especially sheep under Suriname's humid, warm climate conditions. In particular intestinal parasites are significant in this.

Small ruminants need significantly more care than cattle, and on many farms, such extra care is not provided, resulting in high mortality among these animals.

The farmers have great need for training and education.

Table 5.1 Registered slaughtered sheep and goats

		2005	2006	2007	2008	2009
Number	Par'bo/ Halal slaughterhouses	1377	0	0	0	0
	Nickerie	7	7	4	8	25
	Coronie	3	0	2	0	3
	Argema/surebeef	389	1504	1,327	1,353	1,495
	Para	37	30	24	46	42
	Commewijne	0	0	0	0	6
	Home slaughters (h)	0	32	0	0	24
	Total	1,813	1,573	1,357	1,407	1,595
	Trend (1980=100)	177.6	154.2	132.9	135.6	156.2
Slaughter weight (kg)	Par'bo/ Halal slaughterhouses	6885	0	0	0	0
	Nickerie	55	55	35	45	255
	Coronie	41	0	40	0	25
	Argema/surebeef	4402	14588	12,435	12,966	15,349
	Para	185	285	226	441	428
	Commewijne	0	0	0	0	61
	Home slaughters (*)	0	304	0	0	245
	Total	11,568	15,232	12,736	13,452	16,363
	Trend (1980=100)	163.1	215	180	187.1	231.4
Average weight (kg)	Rural	6.6	9.5	9.4	9.6	10.3
	Trend	95.3	137.2	135.7	138.0	148.1
Distribution (by weight)	Par'bo/ Halal slaughterhouses	57.80%	0.00%	0%	0.00%	0.00%
	Nickerie	0.60%	0.36%	0.27%	0.33%	1.56%
	Coronie	0.30%	0.00%	0.31%	0.00%	0.15%
	Argema/surebeef	37%	96%	97.60%	96.39%	93.80%
	Para	1.60%	1.87%	1.70%	3.28%	2.62%
	Commewijne	0%	0%	0%	0.00%	0.37%
	Home slaughters	0%	2%	0%	0.00%	1.50%

An increase of the average slaughter weight, together with an increase of the animals offered for slaughter indicates that the subsector is experiencing a rising trend. However, the potential of this sector is much bigger and the work will have to continue.

Slachtingen schapen en geiten
2005-2009

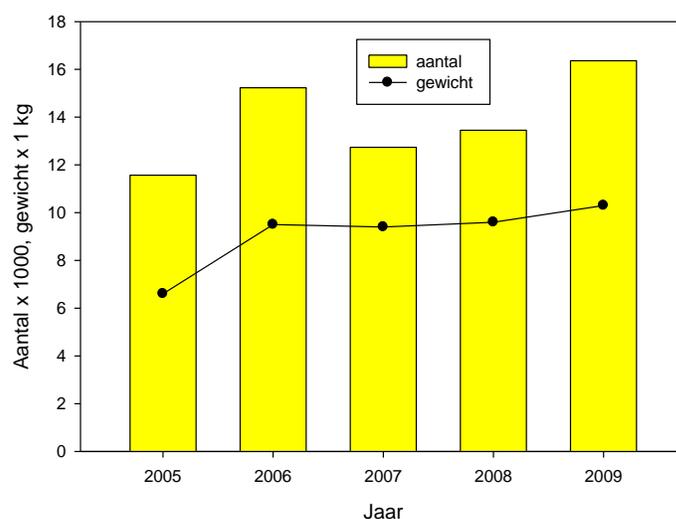


Fig 5.1 Slaughters of sheep and goats, numbers and gender weight

Table 5.2 NUMBER OF ANIMALS ACCORDING TO GENDER, TYPE, MALE ANIMAL AND AGE GROUP PER DISTRICT ON THE BASELINE DAY

DISTRICT	FEMALE			MALE						TOTAL FEMALE	TOTAL MALE
				CASTRATED			BREEDING ANIMAL				
	<0.5	0.5-1	> 1	<0.5	0.5-1	> 1	<0.5	0.5-1	> 1		
PARAMARIBO	10	80	190				40	90	60	280	190
WANICA	274	359	781	15	4	17	147	151	421	1,414	755
NICKERIE	138	221	364	2	9	13	59	59	194	723	336
CORONIE	14	12	54			5	4	1	26	80	36
SARAMACCA	55	106	149			1	26	32	68	310	127
COMMEWIJNE	59	110	223		1		43	53	71	392	168
MAROWIJNE	6	5	9	1	1	2	2	3	5	20	14
PARA	19	18	60				9	9	10	97	28
TOTAL COASTAL PLAIN	575	911	1,830	18	15	38	330	398	855	3,316	1,654

The table shows that the total number of sheep consists of 67% female and 3% male sheep. Of the female sheep about 55% is older than 1 year. For male sheep this is 54%. The largest part of the male sheep is not castrated.

In addition to the reported numbers, 1190 sheep were included in the census of households that do not meet the minimum criteria to be called a farm. This number is 24% of sheep on the farms. One can conclude that a significant part of the sheep stock is held by households with only a few animals.

Veestapel opbouw schapen

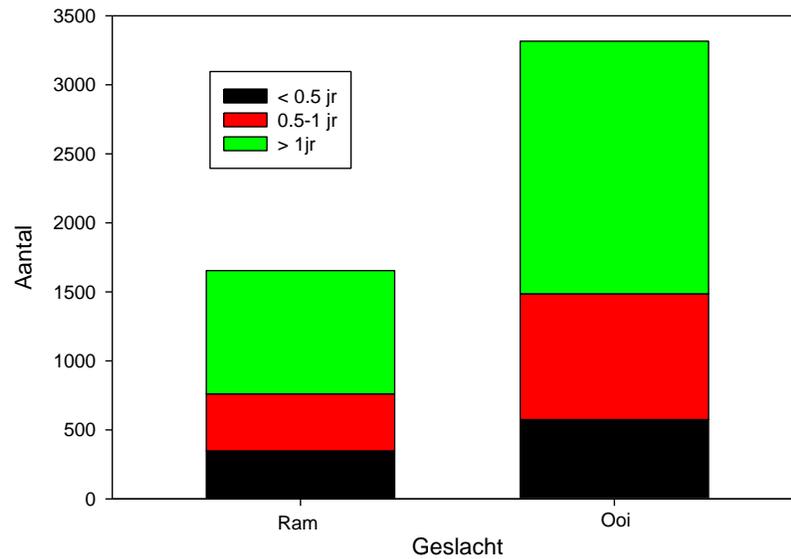


Fig. 5.2 Herd composition of sheep

The above table shows a very lopsided composition of the sheep herd. Based on the number of ewes, 2 juvenile animals on average of <0.5 years and 0.5-1 years have to be present. On a number of 1830 ewes there should be 3660 animals under 1 year of age (male and female animals). According to the data provided there are only 3,274. This could point at a relatively high mortality of juvenile animals. According to the data of table Sale and Losses 485 animals were included under the headings mortality and other. This fits in reasonably with the calculated shortage of 386 animals that should in fact be present on the farms.

Another aspect that is striking, is the relatively large number of male animals older than 1 year.

For every 30 ewes one ram is required assuming 100% natural servicing, as is still the case in Suriname. Assuming 1830 ewes older than 1 year, and thus able to reproduce, in principle 61 breeding rams would be required. This number can be doubled because of replacement and selection. That there are much more adult rams is due to the fact that the farms are very small, on average only 3.2 ewes per farm, where there are on average 1.5 rams (each farm its own ram). Part of the adult rams will not be used as breeding animal, but stay to long on the farm because their growth is stunted, so that many animals do not have a sufficient weight before their first year.

The foregoing entails that the scarce pasture and feed are used by less productive animals.

It should be noted that also for the small ruminants the number of animals reported most likely does not reflect reality. The total number reported of 4,970 animals in reality should be closer to 9,000 animals. The number of reported animals indeed corresponds to the general assumption that the data of the census are around 50% of the actual figures.

For the interior no farms were reported having sheep or goats. There is, however, one company in the Upper Coesewijne area that does own a significant number number of animals (>250 animals).

Because of the sample method used for the census in the interior, this company has remained out of side.

Other farms in the interior with sheep and goats are not known. The most important reasons for this are: unfamiliarity with the breeding, problems with the care, especially with sheep and goats people are not used to the consumption of sheep and goat meat. It is not a part of the normal eating pattern.

It should be indicated that especially in the District of Marowijne, there is increasing interest in the breeding of small ruminants.

The reason for this is the fact that sheep and goat meat in French Guyana appear to be an attractive option.

Table 5.3 Number of sheep according to expansion, sales/losses per district in 2008

DISTRICT	EXPANSION AND SALES/LOSSES						
	EXPANSION		SALES/LOSSES				
	BIRTHS	PURCHASED/GIFT	SOLD	M1	M2	OC/G	OL
PARAMARIBO	120	50	10	10		20	20
WANICA	582	140	1,669	102	79	44	36
NICKERIE	231	50	50	48	22	25	26
CORONIE	25	9	1	7	4	2	5
SARAMACCA	73	17	11	38	13	13	13
COMMEWIJNE	162	71	109	27	22	6	8
MAROWIJNE	8	2			1		
PARA	28		17	4		1	
TOTAL COASTAL PLAIN	1,229	339	1,867	236	141	111	108

EXPANSION=EXPANSION BIRTHS=BIRTHS
PURCHASED/GIFT= PURCHASED/GIFT

SALES/LOSSES: SOLD=SOLD
M1=DIED< 3MNTHS
M2=DIED≥ 3MNTHS
OC/G=OWN CONSUMPTION/GIFT
OL=OTHER LOSS

Table 5.4 Animal population per farm

DISTRICT	Sheep
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	Farms	Number of animals	Animals/farm
PARAMARIBO	70	470	6.71
WANICA	266	2169	8.15
NICKERIE	111	1059	9.54
CORONIE	14	116	8.29
SARAMACCA	46	437	9.50
COMMEWIJNE	46	560	12.17
MAROWIJNE	5	34	6.80
PARA	12	125	10.42
TOTAL COASTAL PLAIN	570	4970	8.72

Most sheep are found in the District of Wanica, more in particular 44% of the total number of sheep in the coastal plain and Paramaribo. This number of 2,169 animals is divided over 266 farms having an average of 8.2 animals per farm.

Nickerie is then the district with most sheep, more in particular 27% of the total. This number of 1059 animals is divided over 111 farms having an average of 9.5 animals per farm.

The largest number of sheep per farm are found in the District of Commewijne with on average 12.2 pieces.

Veterinary care for sheep

Table 5.5 Veterinary care for ruminants

DISTRICT	SHEEP								
	1	2	3	4	5	6	7	8	9
PARAMARIBO					10				
WANICA		53		2	144	4	89	8	92
NICKERIE	1	28	1	2	19	2	6	3	24
CORONIE		4					1	1	3
SARAMACCA	3	11	2	2	15	3	3	2	9
COMMEWIJNE	4	17	4	6	18	5	15	5	16
MAROWIJNE		1			1				1
PARA		1			8		6		8
TOTAL COASTAL PLAIN	8	115	7	12	215	14	120	19	153

TYPE OF VETERINARY CARE:

- 1= ARTIFICIAL INSEMINATION
- 2= ANTIBIOTICS
- 3= CASTRATION
- 4= HORMONES
- 5= LARVICIDE
- 6= MASTITIS INJECTION
- 7= PARASITE CONTROL
- 8= VACCINATION
- 9= VITAMINS AND MINERALS

The veterinary care for sheep concentrates around the application of Smearx against the larvae of the screw worm fly which is administered at 38 % of the farms. Like the veterinary care for large ruminants the administration of vitamins and minerals, parasite control and administration of antibiotics by respectively 27 %, 21 % and 20 % next to the use of larvicide are the most prevalent actions on farms with sheep.

A figure that makes a person wonder is the fact that 8 farms indicate to use artificial insemination. This is a technique that for as far as known is not applied in Suriname.

Goats

Herd composition of goats

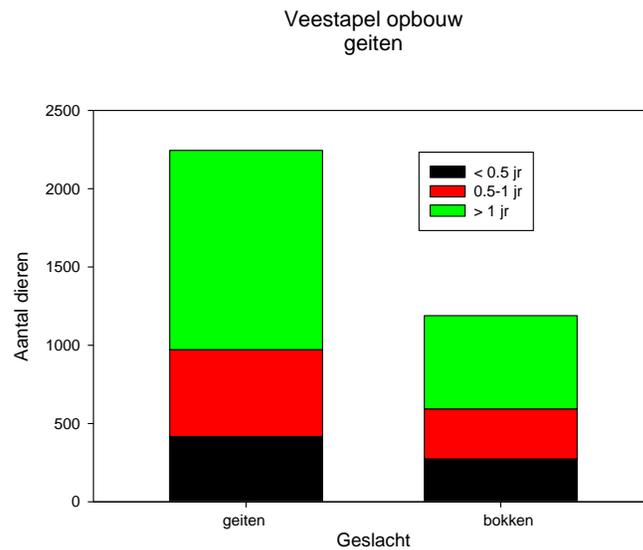


Fig 5.3 Herd composition of goats

As for sheep a lopsided composition of the herd can be concluded also for the goats.

From the below table appears that according to the census the goat herd consists for 65% of female animals and 35 % male animals.

In addition to the reported numbers (a total of 3434), 1385 goats were included in the census of households that do not meet the minimum criteria to be called a farm. This is 40% of the total number of farms with goats.

One can conclude like with the sheep that a significant part of the goat stock is held by households with only a few animals.

The total number of animals counted during the census of 4819 is not a reflection of the actual number of animals in the coastal plain and Paramaribo. This should be, like for the sheep, around 9000 animals. The number of animals indicated is again around 50% of the actual number.

Table 5.6 Number of goats according to gender, type, male animal and age group per district on the baseline day

DISTRICT	GENDER, TYPE MALE GOATS AND AGE GROUP										
	FEMALE			MALE						TOTAL FEMALE	TOTAL MALE
				CASTRATED			BREEDING ANIMAL				
	<0.5	0.5-1	> 1	<0.5	0.5-1	> 1	<0.5	0.5-1	> 1		
PARAMARIBO			30					10	10	30	20
WANICA	205	218	562	9	4	13	129	121	314	985	590
NICKERIE	74	124	277	4	1	13	29	70	116	475	233
CORONIE	1		2		2					3	2
SARAMACCA	32	86	104	4		3	14	24	38	222	83
COMMEWIJNE	65	108	252	4	3		70	77	70	425	224
MAROWIJNE	19	7	14	2			3	3	8	40	16
PARA	21	12	32				6	4	11	65	21
TOTAL COASTAL PLAIN	417	555	1.273	23	10	29	251	309	567	2,245	1,189

Table 5.7 Number of goats according to expansion, sales/losses per district in 2008

DISTRICT	EXPANSION AND SALES/LOSSES						
	EXPANSION		SALES/LOSSES				
	BIRTHS	PURCHASED/GIFT	SOLD	M1	M2	OC/G	OL
PARAMARIBO	20						
WANICA	440	118	1,571	75	31	32	7
NICKERIE	178	32	43	34	16	30	15
CORONIE							
SARAMACCA	53	11	17	11	31	0	2,210
COMMEWIJNE	180	50	78	50	24	10	1
MAROWIJNE	5						
PARA	16		10	2			3
TOTAL COASTAL PLAIN	892	211	1,719	172	102	72	2,236

EXPANSION=EXPANSION BIRTHS=BIRTHS
PURCHASED/GIFT= PURCHASED/GIFT

SALES/LOSSES: SOLD=SOLD
M1=DIED< 3MNTHS
M2=DIED≥ 3MNTHS
OC/G=OWN CONSUMPTION/GIFT
OL=OTHER LOSS

The table shows that the largest expansion of goats takes place through births (almost 81%). Most losses occur as a result of 'Other loss' and more in particular by 52% of the total. Also for goats it appears that the losses from mortality and "other" (dogs, snakes) are larger than the sales and own consumption. The losses are even 2.3 times bigger than the expansion and constitute 73% of the total number of animals reported by the farms having goats. It should not be surprising that with such numbers a herd will not grow.

Table 5.8 Animal numbers and density per district

	Goats
--	-------

DISTRICT	Farms	Number of animals	Animals/ farm
PARAMARIBO	10	50	5.00
WANICA	261	1575	6.03
NICKERIE	71	708	9.97
CORONIE	1	5	5.00
SARAMACCA	37	305	8.24
COMMEWIJNE	65	649	9.98
MAROWIJNE	6	56	9.33
PARA	11	86	7.82
TOTAL COASTAL PLAIN	462	3434	7.43

The above table shows that the largest farms with goats are located in the districts of Nickerie, Commewijne and Marowijne, while the largest number of farms and number of animals occurs in the District of Wanica.

Nickerie and Commewijne also have the largest sheep farms and we could say that in these districts the breeding of small ruminants makes up an important part of the livestock farming.

The largest number of farms and of animals for both types of small ruminants occur, however, in the District of Wanica.

Veterinary care for goats

Table 5.9 Veterinary care for goats

DISTRICT	GOATS								
	1	2	3	4	5	6	7	8	9
PARAMARIBO		30			50	10	40	10	10
WANICA	8	78		3	272	8	178	15	156
NICKERIE	2	19	1	1	10	2	6	1	18
CORONIE		2			2		1	1	1
SARAMACCA	3	12	2	2	59	5	14	5	38
COMMEWIJNE	7	52	5	5	82	7	52	20	58
MAROWIJNE		1			1		1		1
PARA	1	4			8	1	13	2	13
TOTAL COASTAL PLAIN	21	198	8	11	484	33	305	54	295

TYPE OF VETERINARY CARE: 1= ARTIFICIAL INSEMINATION

2= ANTIBIOTICS

3= CASTRATION

4= HORMONES

5= LARVICIDE

6= MASTITIS INJECTION

7= PARASITE CONTROL

8= VACCINATION

9= VITAMINS AND MINERALS

Larvicides are used on all goat farms. Parasite control is practiced on 66% of the farms, and the administration of vitamins and minerals and of antibiotics on respectively 56% and 43% of the farms that keep goats.

We again see that AI is applied on 5% of the farms, which is considered to be very unlikely. Although in general, it is assumed that goats are more resilient animals than sheep, the veterinary care for goats is clearly more significant.

If we make a comparison between the veterinary care of all types of ruminants, we end up with a picture as is shown in Table 5.10.

Table 5.10 Veterinary care for ruminants

	dairy cattle	animals for slaughter	sheep	goats
Artificial insemination	8	2	1	5
Larvicide	53	48	38	100
Parasite control	35	30	21	66
Vitamins and minerals	37	29	27	56
Antibiotics	26	20	20	43

As can be expected artificial insemination is applied to a large part of the farms with dairy cattle and to a lesser extent for animals for slaughter. Surprisingly, it was reported that sheep and goats are also artificially inseminated, while that is not the case.

Smearex is generally used against infestations of the larvae of the screw worm fly, which poses a real problem to the livestock keepers in Suriname.

One would expect parasite control (especially against intestinal parasites “worms”) on 100% of the livestock farms, however, the numbers do not meet our expectation.

The administration of vitamins and minerals is a must for livestock farms having a poor quality pasture and supplemental feed. High percentages should be expected here as well.

On an average of 1 out of 5 livestock farms with ruminants, antibiotics are being used, which can be considered completely reasonable.

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