



UNIVERSITI PUTRA MALAYSIA

***AN EVALUATION OF DAIRY FARMING IN RANCANGAN DAGING
DAN PENUSU, AIR HITAM***

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UNIVERSITI PERTANIAN MALAYSIA

AN EVALUATION OF DAIRY FARMING IN
RANCANGAN DAGING DAN PENUSU,
AIR HITAM

by

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Segala pujian bagi Allah.,

Untuk Ibu yang telah pergi,

Untuk Abah yang dikasihi,

Untuk abang-abang dan kakak-kakak yang disayangi,

Untuk anak-anak buah yang dirindui,

Dan untuk seseorang yang dicintai,

Serta rakan-rakan seperjuangan,

Kelian membawa hidupku penuh erti

dan kemesraan yang dirasakan memberi

kebahagiaan padaku

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ABSTRACT

Rancangan Daging dan Penusu, Air Hitam is a government farm which directly involved in supplying cattle for various schemes to the smallholders. Problems encountered by this farm include inadequate feeding, breeding, high mortality and high treatment cases, low milk production, in general all this contribute to low production, high expenditure and, lastly low income.

An evaluation was conducted by comparing the animal management, animal performance and economic aspects with other studies and previous performance. Results showed that the management, in general, was good, except breeding and disease control which needed improvement.

Diarrhoea, debility were two major clinical conditions in calves while myiasis, debility and mastitis were in adult. Mortality in calf was high, mostly due to septicaemia, colibacillosis and respiratory infection and in adult it was mostly due to a disease condition, besides respiratory infection and unknown aetiology.

Analysis of reproductive performance showed improvement except in certain parameters like first service conception rate which drop to 20 percent in 1987. This is still below the farm target.

Generally milk production per lactation was lower than other studies. Average milk production ranged between 3.85 to 8.05 kg of milk per day, which was very low. The main factors that might contribute to this were feeding, breed and climate.

The cost to produce one kg of milk varies from year to year. The highest cost is in 1986 with \$1.32 and lowest with \$0.71 in 1987.

Expenditure was more than income and operating deficit was expected. However the farm was able to reduce the percentage of deficit and increased the percentage of income based on the operating deficit. The higher expenditure was mainly due to prices for supplies and materials beside personnel emolument which contributed 53.94 and 32.23 percent respectively.

ABSTRAK

Rancangan Daging dan Penusu merupakan ladang kerajaan yang terlibat secara langsung di dalam pembekalan lembu untuk berbagai sekim yang dilancarkan kepada penternak-penternak kecilan. Masalah-masalah yang terdapat di dalam ladang ini termasuklah masalah pembiakan, kadar kematian dan kes-kes rawatan yang tinggi, penghasilan susu yang rendah di mana kesemua ini secara keseluruhannya menyebabkan penghasilan yang rendah, perbelanjaan yang tinggi dan akhirnya pendapatan yang rendah.

Penilaian telah dilaksanakan melalui perbandingan pengurusan dan prestasi haiwan di samping aspek-aspek ekonomi dengan pendapatan kajian-kajian lain serta prestasi yang terdahulu. Secara keseluruhannya, keputusan menunjukkan pengurusan yang baik melainkan pemakanan, pembiakan dan pengawalan penyakit yang memerlukan perubahan.

Ceret-beret dan lemah-kurus merupakan dua keadaan klinikal yang utama bagi anak-anak lembu manakala bagi lembu dewasa ialah miasis, lemah-kurus dan 'mastitis'. Kematian yang tinggi keatas anak lembu adalah disebabkan oleh septisemia, kolibasilosis dan jangkitan pernafasan manakala bagi lembu dewasa, ianya disebabkan oleh bukan keadaan penyakit, jangkitan pernafasan dan etiologi yang tidak diketahui.

Penganalisaan ke atas prestasi pembiakan menunjukkan peningkatan kemajuan melainkan setengah parameter seperti kadar pengkonsipan servis pertama yang menurun ke 20 peratus di dalam tahun 1987. Ini masih merupakan kekurangan dari matlamat pencapaian ladang.

Secara keseluruhan, penghasilan susu untuk setiap laktasi adalah lebih rendah dari laporan kajian terdahulu. Purata pengeluaran susu sehari adalah di antara 3.85 hingga 8.05 kg. Faktor-faktor utama yang mungkin menyebabkan keadaan ini adalah pemakanan, baka ternakan dan cuaca.

Kos pengurusan untuk menghasilkan satu kg. susu berbeza dari tahun ke tahun. Kos yng tertinggi adalah \$1.32 pada tahun 1986 dan yang terendah ialah \$0.71 pada tahun 1987.

Perbelanjaan melebihi pendapatan dan defisit operasi telah dijangkakan, tetapi ladang ini telah berupaya mengurangkan peratus defisit dan meningkatkan peratus pendapatan berdasarkan kepada defisit operasi. Sebahagian besar perbelanjaan adalah untuk pembekalan dan barangan di samping emolumen kakitangan dengan purata 53.94 dan 32.23 peratus.

1.0 INTRODUCTION

According to the 1985 livestock census of Peninsular Malaysia, there were a total 98,162 dairy cattle in Malaysia (State of Veterinary Department, 1985). Ninety percent of the dairy cattle was in the hands of the smallholders. The remaining 10 percent of these dairy cattle were found in well-established government and university farm. Perak had the highest population with 27,979 followed by Selangor, Negeri Sembilan, Johor, Melaka, Pulau Pinang and Sebrang Prai.

Even though various breed such as Local Indian Dairy (LID), Friesian, Friesian-Sahiwal, Friesian-LID, Jersey and others are found in this country, approximately 71,580 heads or 70 percent was the indigenous LID (Sivarajasingam, 1981).

The major constraints for the rapid expansion of dairy cattle industry could be due lack in number of improved animals; the small cattle population; cattle keeping was discouraged by management in crop agricultural areas; cattle rearing was mainly carried out by smallholders. Attempts to improved cattle and introduce improved husbandry methods, among the thousands of farmers was a difficult and slow process.

Milk collecting centres (MCCs) were established by Division of Veterinary Service (DVS) in 1974 to become the operational base on all dairy developement. In 1975, a large number of Friesian-Sahiwal cross-breed animal from Australia and New Zealand was imported into the country by DVS to be distributed to the farmers to keep pace with the increasing demand for dairy animal and to reach the target of 20 percent self-sufficiency in milk production by 1990.

The objective of this study is to evaluate dairy farming in Rancangan Daging and Penusu, Air Hitam, one of the goverment farm which is directly involved in dairy development in Malaysia.

2.0 LITERATURE REVIEW

The Dairy industry in Malaysia is still in early stage of development (Osman, 1978), where by the progress and development of the dairy industry is slow compared to other agriculture enterprises (Flint et al, 1971). Milk production is on a scale far smaller that for commercial distribution (Thurasingham, 1964).

In 1972, the demand for milk was 71.54 million gallon equivalent of fresh liquid milk. The projected demand of milk for milk requirement in 1990 would be about 118 million gallon equivalent of liquid milk, an increase of 66 percent over the 1972 demand (Division of Veterinary, Ministry of Agriculture and Rural Development, 1975).

The type of dairy farming in Peninsular Malaysia is still essentially made up of small holding where husbandry has not attained the degree of sophistication found in temperate region (Sivarajasingam and Kassim, 1974). There are three major types of management; the smallholder/subsistence, the specialized farmer and large government farms (Leong, 1975).

2.1 ANIMAL MANAGEMENT

There are several ways of raising calves in a dairy farm. The calves of LID cows were allowed to suckle only during milking times and kept at other times on their own. For the calves of the machine milked temperate crosses, calves were removed from their dam at one to 3 days after birth and hand-fed till weaned (Leong, 1975). The calf-shed should have adequate ventilation, shelter, easily cleaned and cool during warm weather.

Feeding the calf with milk twice daily is recommended. The calves are usually fed on whole milk powder for 2 weeks and then skim milk powder till weaning. Calves have access to roughage and concentrate and, are also supplemented with cod-liver oil. Mineral supplement and water are available all the times. Colostrum must be given during the first 24 hours of live to ensure adequate absorption of antibodies (Leong, 1975)

The weaners are sent out to pasture to graze with rotational grazing system to provide reasonably good quality roughages. Protein supplement should be used to ensure a reasonable growth rate in the heifer. In Institut Haiwan, the calves are provided with concentrates at rate 0.8 kg per head daily. The concentrates contains 10.51 percent of the digestible crude protein. Shelter should be provided and convenient place for feeding and other routine work.

The heifer which have been served should be pregnancy tested at about 8 weeks after the date of first service. The pregnant heifer should be separated and managed differently by feeding exceptionally well so that its growth and its future milking capacity is not hampered. During the first calving the heifer should be watched closely and indoor calving should be practised (Leong, 1975).

In majority of tropical breeds, heat periods recurred on average at 21 to 24 days intervals and often of very short duration (Williamson and Pyne, 1959).

According to Mc Clure (1970), the fertility of the cows is low soon after parturation but increase rapidly and reaches its peak at about 60 days. Therefore if breeding is done at about 60 days after parturition chances of being successful in first is higher than others times.

Heat detection is extremely important for successful breeding and the best way for heat detection in milking cows is to check during morning and evening milking times (Leong, 1975).

Milking cows are kept indoor or outdoor and some smallholder kept their animal indoor and supplemented with cut grass and some grain. Whereas in the large government farm, the cows are grazed outdoor all the times, except when they are brought in for milking twice daily, when they get their concentrate while they are being milked or just before they are milked (Leong, 1975). Schein (1955) have shown that physiological stress caused by poor milking routine may result in as much as a 5 percent average decline in milk yield.

In tropics, it is important to avoid exposing the milking cows to excessive heat stress. Grazing should be done during the cooler part of the day and during the night. Adequate water supply should be provided during the day as Zebu cattle and their crosses drink very little at night but on hot day, water is consumed each hour throughout the day (Rollinson et al., 1955). The frequency of water intake increases with supplement feeding (concentrate) (Mac Lusky, 1959)

2.2 HERD HEALTH MANAGEMENT

The morbidity and mortality in calves from birth to 2 weeks is very high (Radosits and Acres, 1974). The highest incidence of disease occurred in the digestive tract (Radosits and Acres, 1974). The most common disease encountered in the Institut Haiwan and overseas dairy farm was the neonatal septicaemia complex which accounted for more than 50 percent of calf mortality. The various syndrome associated with neonatal septicaemia complex were diarrhoea pneumonia, navel infection and arthritis.

Internal parasitism such as nematode infection and coccidiosis, occurred occasionally in farms where routine anthelmintic treatment and good hygiene was not strict. Morexiella bovis, eye infection was very prevalent in young calves in Institut Haiwan (Leong, 1975). Cutaneous myiasis was very common in young calves which were artificially fed. Others less common diseases in calves included Leptospirosis, malnutrition, gingivitis and abscesses.

Routine procedures involved internal parasitism control. Young calves up to 3 months age wereare drenched with piperazine adipate (10/45 kg body weight). Calves about between 3 to 18 months old were drenched with phenothiazine every 2 months (Rajamanickam, 1972).

Tattooing for identification of calves soon after birth, dam's number in the right ear of the calf and than a week later the calf's own number was tattoo on the left ear.

Dehorning was usually done at an early age of 3 to 4 weeks old. Weighing of calf at regular interval was useful in determination of weight gain.

Calves between ages 3 to 6 months old should be vaccinated with Brucella Strain 19 vaccine to prevent brucellosis. Haemorrhagic septicaemia vaccination is usually carried out in calves 2 month old and then followed by yearly booster to maintain immunity.

Foot rot was a common problem especially in the tropics. Fusiformis is a common causal organism in domestic animal. The incidence varied between 40 to 90 percent but mortality is uncommon (Hall, 1979). Predisposing factors included overcrowding, interdigital skin trauma, optimal soil tempreture and the breed of animal (Monrad et al,1983).

Mastitis either subclinical or acute was another problem which affect the quality and quantity of milk produced. The causal organisms of mastitis were Streptococcus agalactiae, S. dysagalactiae, S. uberis and Corynebacterium spp. Predisposing factor included age, state of lactation, poor udder washing hygiene, faulty milking machine and method of milking, high milk producing animal, hereditary and trauma to the udder (Hall, 1979). Mastitis tended to occur in larger breeds of herds (Minnet, 1930). It

has been estimated that approximately 57.7 percent of dairy cows in Malaysia were affected by mastitis (Koh and Joseph, 1974).

2.3 MILK PRODUCTION.

Friesian cattle under Majuternak farm in Malaysia produced an average of 2114 litres of milk over 289 days lactation length, and 1819 litres over 324 days in 1982 and 1983 respectively (Sivasupramaniam et al., 1982, 1983). Studies by Amble and Jain (1965) in Indian Military farm showed that Friesian-Sahiwal especially the half-bred and five-eighths exceeded all other grades, and yielded 2000 to 3000 kg of milk over a period of 270 to 360 days of lactation length. Chaudhary et al (1977) reported that based on 1068 records on 300 days lactation, milk yield of 377 Friesian-Sahiwal cross-bred over 20 years (1954-1973) produced an average of 2323.59 ± 31.04 kg of milk.

2.4 REPRODUCTIVE PERFORMANCE

Age of the first service, in the temperate zone were at about 15 to 18 months of age, with temperate crosses or Zebu being at much later age. In Institut Haiwan, Kluang, age at first service average 23.91 ± 9.7 months for LID-Sahiwal and LID breed (Leong, 1975).

Friesian on the Majuternak farm had been reported by Sivasupramaniam et al (1982) to have first calving at the age of 891 days (29.7 months). The studies by Amble and Jain (1965) showed that Friesian-Sahiwal in Indian calved down at the age ranging from 960 to 1110 days (32 to 38 months). They stated that generally half-breds and five-eighths were younger at first calving than the others grades. In Institut Haiwan, Kluang the age at first calving for temperate cross was 31.30 ± 0.48 months and 49.64 ± 0.88 months for LID and LID-Sahiwal cross.

Nordin et al (1982) observed a mean of 2.40 service per conception of Friesian while Osman and Kassim (1983), reported it to be an average of 5.80. A service per conception of 2.7 in Friesian-Sahiwal was reported by Mohd. Ngah (1981) and 3.9 by Eusof et al (1981) in Malaysia. Studied on 350 Australian Friesian-Sahiwal in Queensland by Goodchild et al (1984) showed it to have an average service per conception of 1.9.

Goodchild et al (1984) reported the Australian Friesian-Sahiwal to have an average gestation period of 284 days.

Friesian in Iraq as shown by Juma (1968) had an average calf birth weight of 32.35 kg. In other studies on the birth weight, of 37 Friesian-Sahiwal calves born,

Leong (1975) noted an average of 23.15 ± 0.7 and for temperate crosses an average of 19.1 ± 0.4 up to 31.5 ± 1.1 kg.

Sivasupramaniam et al (1982,1983) observed an average calving interval in 42 Friesian to be 546 days in 1982, and 427 days in 1983 in 88 Friesian on the farm. Goodchild et al (1984) reported an average calving interval 376 days .

Days open in Friesian cow was reported to be average 166.7 ± 3.52 days in Iraq (Jabbar et al., 1983). In Ghana, Kabunga et al (1981) observed it to be an average 186 ± 90.6 , 128 ± 57.2 and 190.4 ± 92.6 days in the second, third and fourth lactation, respectively.

Leong (1975) reported that length of dry period in Institut Haiwan have an average 212.49 and 177.32 for first and second lactation, for temperate cross, respectively.

Calving to first service was reported to have an average 69.0 ± 3 days in the Universiti Pertanian Malaysia dairy herd and calving to conception averaged 149 ± 61 days (Jainudeen, 1974).

2.5 ECONOMIC ASPECTS

The cost of milk production depended on two components, fixed cost and variable cost. Atsu (1970) found that fixed cost, and total variable cost amounted to 42.1

percent, 57.9 percent, respectively. One important component of variable cost is the cost of feeding. The total cost for milk production was 59.6 for stall feeding and grazing and 69.5 percent for stall feeding alone (Davendra, 1977). With the rising cost of fertilizer, however, it was possible that the feed cost associated with grass was higher than above (Davendra, 1977).

According to the Sivarajasingam and Kassim (1974) the cost of milk varied from \$0.53 to \$1.06 per litre.

3.0 MATERIALS AND METHODS

An evaluation of dairy cattle farming in Rancangan Daging and Penusu (RDP), Air Hitam was made between 9 November to 13 December 1987. This farm is situated at Km. 12.8, Jalan Batu Pahat, Air Hitam, Kluang, Johor. The total area is about 912 hectares, and 741 hectares is planted with pasture. Current animal population is about 2250 heads and out of which 1110 are breeding animal.

An evaluation was based on the the actual observation and examination on the farm, getting data from records and personnel interviews. The data were analysed by using microcomputer, and propriety software program.

4.0 RESULTS AND DISCUSSION

4.1 FARM MANAGEMENT

RDP, Air Hitam is a government farm established under the Majuternak project being put under Department before of Veterinary Services (DVS) on 1982. The farming system in RDP could be considered as a intensive type for calves until heifer, colostrum cows group and heavy pregnant group and semi-intensive for lactating cows with rotational grazing and supplementation with concentrates.

The objectives of this farm were:

- a. to supply high quality cattle for various kind of schemes proposed by the DVS.
- b. as a place for imported cattle to be acclimatized in our country before distribution to smallholders.
- c. to provided training facilities for the inservice staff and university students.
- d. provide for research worker on dairying in Malaysia.

The target of 1987 was to supply 180 heifers, 400 male calves for the fattening scheme, cull 103 animals, 100 animals for beef male breeder, and produce 1.00 million litres of raw milk . Until September 1987 this farm only supplied 7 heifers whichwas only 3.89 percent of the target. The farm also managed to supply 260 animals for fattening

scheme, 108 male breeder and culled 157 animals. The target for 1987 were exceeded for the male breeder and culled animals (Table 1). Milk production for 1987 was 701.490 litres which was close to the target. (Table 2).

Table 1 : Farm production achievement from 1986 to 1987

Base on group of animal

Group	1986			1987		
	Total	Target	Ach.%	Total	Target	Ach.%
Fattening	330	250	132.00	260	400	65.00
Dairy	50	0	0	7	180	3.89
Male breeder	8	3	266.67	108	100	108.00
Milking cows	50	180	27.78	0	0	0.00
Culled	125	147	85.03	157	103	152.43

Table 2 : Total milk production from 1984 to Sept.`87

and their distribution.

Year	1984	1985	1986	Sept`87
Sales	525259	602205	707866	672923
Fed to calves	53040	87056	100078	28307
Spoilage	6556	1117	0	0
Adjustment	905	-941	225	260
Total	585760	690378	808169	701490

The farm management system is as shown in Appendix 1, where the animal transfer cycle is depicted. There were 4 units: Ampang, Sebrang, Cows Diary 1 (CD 1) and Kimbong. Ampang, Sebrang and CD 1 are diary units while Kimbong is the non pregnant, dry cows and heifer unit. Low producer cows which produce less than 2 kg of milk daily were

transferred to the CD 1, dried up and inseminated. Light pregnant animal were transferred to the Kimbong and after that the heavy pregnant animal will be sent back to the Sebrang and Ampang, based on the breed. Sebrang was also used as a youngstock centre. The system was designed like that for easy management, diseases prevention and uniformity.

4.1.1 ANIMAL MANAGEMENT

There was a slight difference in calf management where the calves were normally separated from the dam after birth while in Institut Haiwan, they allowed the calves to suckl for 3 days before separation (Leong, 1975). After 6 days the calves were transferred to the individual pens with a hay bedding or special plastic flooring. Calves were provided with adequate shelter in a cool well ventilated area. Calves were given milk twice daily to reduce the incidence of dietetic scouring. Milk and some roughages and concentrates were given until weaning at 3 months of age.

The management of the weaner to first service was also different. They would reared under an intensive system with stall-feeding, compared with rotational grazing in Institut Haiwan as reported by Leong (1975).

The management of the pregnant heifer to calving was the same as practised at Institut Haiwan but 'flushing' was not practised 2 weeks before the heifer was due to calve.

Indoor calving was practised for easy observation, and disease control, besides for easy calf management. 'Flushing' was not practised to minimise dystocia.

Breeding was done at about 60 days after parturition because the chances of being successful in first service was usually higher than other times (Mac Clure, 1970). But, there was a problem in breeding since the animal did not show estrus after 60 days of parturition although heat detection was carried out in early morning and during milking times as recommended by Leong (1975).

The pregnant cows were dried off at 8 months of pregnancy so that the dry period would be about 40 days. Cows which were not pregnant were dried off and infertility checks and other treatment were carried out.

Stripping of the colostrum twice daily for 5 days was important in order to prevent the mastitis occurrence. Bottle feeding was practised for easy management of the calves.

Generally the animal management was good and adequate.

4.1.2 HOUSING MANAGEMENT

Daily cleaning and chlorine application weekly were practiced to prevent of disease occurrence. Special cleaning system for milking machine was practiced as recommended by

the manufacture, Alfa-Laval. Calf pens were crowded, and poorly ventilated area, since some of the pens were made of wood and put in one place.

Table 3 : Animal floor space

Age group	Area (square feet)
1 day - 5 days	8
5 days - 3 months	15
weaner to yearling	25 - 30
yearling to heifers	30 - 35
calving pen	150
feeding space	2'-3'
milking cows	

Floor space for each group was adequate and this was based on the age of animal to prevent the overcrowding and stresses as shown in table 3. Other material for housing was mainly made from metal with concrete floor, corrugated iron (old) and aluminium (new) roof.

Generally housing system was appropriate and good except for the calf pen.

4.1.3 FEEDING MANAGEMENT

Since the basic feeding for this farm was grass (Bracharia decumben) with rotational grazing for milking

cows and concentrates supplementation based on the amount of milk produced. Concentrates were given based on the ratio 67% PKC, 25% maize and 25% soyabean for Sebrang unit and ratio 90% PKC, 9% maize and 1% salt for Ampang unit.

The concentrates were mixed on the farm and formulated by the nutritionist from Institut Haiwan, Kluang. Fodder was mainly Napier grass for stall-feeding. Mineral supplement and water were available all the times. Feed analysis for grass and concentrates were not available.

Table 4 : Quantity of feed to various groups
of animal

Age group	Quantity & type of feed
1 day - 5 days	3-5 litres of colostrum
5 days - 3 mths	5 litres of milk + grass (ad lib) + 0.5 kg. conc.
3 mths - yearling	grass (ad lib) + 0.5 kg conc.
Yearling to heifer	grass (ad lib) + 1 kg conc.
Pregnant	grass (ad lib) + 1-2 kg conc.
Colostrum	grass (ad lib) + conc (1 kg conc : 3 kg milk)
Milking	grass (rotational) + conc. (1 kg of conc : 3 kg of milk)

Table 4 show the quantity and type of feed given, based on the age group. Calves from birth till day 5 were given 3 to 5 litres of colostrum per day and this amounted 10.5 to 17 percent of body weight of the calf, which was

slightly higher than at UPM. Five days for colostrum was a bit too long since the absorption of the antibodies was very low after 36 hours of birth. Age group of 5 days to 3 months old were given 5 litres of milk and this was considered high at earlier age and adequate for the older calves.

The concentrates were given based on the milk produced. Rotational grazing areas were not enough since in one day about 10 hectares were used for 200 to 300 animals and the age of the pasture was about 4 to 5 weeks old. This required about 350 hectares of pasture for rotational grazing alone. So the remaining 1950 animals on the farm had to be supported with the remaining 391 hectares of grass which was considered adequate.

4.1.4 BREEDING MANAGEMENT

Artificial insemination (AI) were practised and natural breeding were used only if there was no conception after 3 inseminations by AI. AI was mainly used for breeding control, and for achieving the breeding policy to increase the Friesian-Sahiwal breed (Appendix 2).

The main problems associated with breeding is unavailability of semen of choice and stock of good quality semen.

4.1.5 MARKETING MANAGEMENT

Milk was sold to the Institut Haiwan Milking Collecting Centre while culled animals were sold to the butchers. Pregnant heifer and cows for Pawah Pedaging, male calf for fattening, and stud bulls were sold to the smallholders. There was no problem in marketting the products.

The market price of the product was considered low. However, the main objective of the farm was not to get high profit but to supply the various kind of animals for various schemes and provide the services to smallholders.

4.1.6 CULLING MANAGEMENT

Culling of animal in this farm was relatively high (Table 1) in 1987, the high percentage was due to high number of animals which should have been culled in 1986, culling were due to debility animal, low producer cows and repeat breeders. Culled animals were sold to butchers.

4.1.7 DISPOSAL MANAGEMENT

Waste disposal system was simple, the manure being drained to the low lying areas in the field. Spreading of manure as fertilizer was not practised due to prevent the outbreak of salmonellosis, which caused high mortality and severe diarrhoea. Carcasses were burned in the incinerator.

Generally the waste disposal was adequate but a manure pond or lagoon would be more appropriate.

4.1.8 DATA MANAGEMENT

Data management in this farm was very good. Since August 1987 a micro computer was used for data recording. This computer was supplied under German of Technical Cooperation and Department of Veterinary Service Data Bank. Data management involved information collected at unit level, like health events, milk yield, weight and so on.

The Daisy program which have features for weekly action list, monthly action list, performance analysis, also provided quick information about the animal needed to be culled or serviced and could also list individual performance as well as herd performance.

The benefit of the computerised recording (Daisy) included an early warning system for monitoring farm performance for production problem where immediate action could be taken before problem got out of hand; awareness of personnel to specific problem which helped in improved management and responsibility; the manager would have more time and could concentrate and be more efficient in decision making.

The data storage was well organised but there are certain aspects of management which cannot be solved by the Daisy program. Data associated with diseases event was not very well organised and did not use the specific terminology.

Overall data, recording management in this farm could be considered good and adequate.

4.1.9 OTHER MANAGEMENT

Other management involved storage, reward, social, communication and supervision system which were adequate and efficient.

All materials and drugs were stock for a certain duration and reordered regularly based on consumption . Feed stock were reordered every 2 to 3 weeks. Semen were kept in liquid nitrogen tank and proper managed.

Reward system also existed and currently they gave a certificate (Khidmat terpuji) to the worker. Selection was based on the motivation, cooperation, idea, hard-working of the farmer hand and etc.

The social system included clubs for games, 'khairat kematian' and camping beside barbeque at lake in RDP, Air Hitam.

Communication and supervision was direct, where the manager in the unit supervised the daily routine. The whole farm was looked after by the Superintendent or his assistant. Beside that this farm and other RDP farms were under the Field Director of the Department of Veterinary Service. Communication at farm level was direct and relationship between the manager and worker in the unit was close.

4.1.10 HEALTH

Table 5 : Calf treatment cases

Clinical disease	No. of cases 1987 (Jan-Sept)	
Diarrhoea	502	49.17
Debility	263	25.76
Skin infection	51	5.00
Myiasis/wound	49	4.80
Pyrexia	25	2.45
Respiratory infection	70	6.86
Bloat	4	0.39
Navel-ill	35	3.43
Oral infection	1	0.10
Eye infection	21	2.06
Total number of cases	1021	100.00

From January to September 1987, there are 1021 cases of the treatment in calves. (Table 5). The major clinical disease were diarrhoea which contributed 49.17 percent of calves followed by debility (25.76%), respiratory infection (6.86%), skin infection (5.00%), myiasis/wound (4.80%). Other clinical diseases were Navel-ill, pyrexia, eye infection, bloat and oral infection. Leong (1975) reported that in Institut Haiwan the main clinical diseases was neonatal septicaemia complex which account for more than 50 percent and showed the syndrome like diarrhoea, pneumonia, navel infection and arthritis. So, the incidence of the diarrhoea was considered in the same range.

Mortality in calf was mainly due to collibacillosis (16.67%), Septicaemia (34.21%), and respiratory infection (15.79%). (Table 6). Twenty-one percent of mortality were unknown cause. Septicaemia and collibacillosis were the major disease which contributed to the neonatal septicaemia complex. Neonatal septocaemia complex was due to the bad hay bedding while respiratory infection was associated with the lack of the ventilation. Some of the factors predisposing to diarrhoea were due to the excessive amount of colostrum, abrupt changing of the colostrum to milk replacer and bad hay and hygiene.

Table 6 : Calf mortality cases

Mortality causes	No. of cases 1987 (Jan-Sept)	
Collibacillosis	19	16.67
Septicaemia	39	34.21
Respiratory infection	18	15.79
Autolysed	1	0.88
Not determined	24	21.05
Debility	7	6.14
Accidents trauma	4	3.15
Bloat	1	0.88
Athritis	1	0.88
Total number of cases	114	100.00

Other causes of mortality in calf was due to debility, accidents trauma, bloat and arthritis. The incidence of the mortality in 1987 (Jan-Sept) were 114 cases.

There are 804 adult treatment cases from January to September 1987. (Table 7). The major clinical cases were debility (27.49%), myiasis/wound (26.87%), mastitis (23.76%). Others involved were metritis, pyrexia, dystocia, abortion and uterine prolapse.

Table 7 : Adult treatment cases

Clinical disease	No. of cases 1987 (Jan-Sept)	
Debility	221	27.49
Myiasis/wound	216	26.87
Dystocia	14	1.74
Retained placenta	60	7.46
Metritis	29	3.61
Mastitis	191	23.76
Lameness	26	3.23
Uterine prolapse	2	0.25
Abortion	12	1.49
Pyrexia	33	4.10
Total number of cases	804	100.00

Koh and Joseph (1974) estimated that 57.7 percent of dairy cows in Malaysia were affected with mastitis. At RDP, Air Hitam treatment cases, mastitis only contributed to 23.76 percent of cases treated. Foot rot was not a big problem in this farm which was only 3.23 percent of lameness. Hall (1979) reported that incidence of the foot rot was between 40 to 90 percent, which was very high compared with RDP farm.

Debility contributed to a major proportion of along cases treated in this farm. This might be associated with malnutrition and result of the debility in long run. Myiasis/wound was due to the trauma during grazing.

There were 52 of mortality cases in 1987 (Jan-Sept). (Table 8). Septicaemia constituted a proportion of death among adult. Many cases in this farm were autolysed and post-mortem diagnosis was not possible. Other causes were accident trauma, respiratory infection, nephritis and bloat.

Table 8 : Adult mortality cases

Mortality causes	No. of cases (Jan-Sept)	
Debility	1	1.92
Autolysed/unknown	10	19.23
Accidental/trauma	7	13.46
Septicaemia	17	32.69
Respiratory infection	7	13.46
Not determined	8	15.38
Nephritis	1	1.92
Bloat	1	1.92
Total number of cases	52	100.00

Certain action must be taken to reduce the number of mortality due to Septicaemia.

Herd health programme by the Veterinary officer and included a vaccination programme for salmonellosis, haemorrhagic septicaemia, brucellosis and foot and mouth disease, deworming, deticking, tuberculosiis testing, pregnancy diagnosis, infertility checks, fecal sampling, bleeding and Rapid Mastitis Test monthly.

4.2 ANIMAL PERFORMANCE

Figure 1 show the birth performance and mortality percentage from 1980 up to 1987 (Sept). Birth performance various from 64.2 to 95.5 percent and this was based on the number of the breeders.

Calf mortality in this farm ranged from 29.5% in 1983 to 11.5 percent in 1986. This was considered very high mortality. That could be associated with colostrum feeding and diarrhoea case which can cause dehydration and death.

Herd mortality was high and this was due to the high calf mortality, and adult mortality mainly due to septicaemia .

4.2.1 Milk Production And Lactation Length

Milk yield performance of Friesian-Sahiwal and temperate Cross at RDP, Air Hitam from first to tenth lactation are as tabulated in Table 9.

Table 9 : Total milk yield and lactation length
by lactation number

Lactation	Milk production (L)		Lactation Length (days)	
	F/S	Temp. Cross	F/S	Temp. Cross
1	333.9	367.9	77.2	139.8
2	492.4	871.3	82.2	110.5
3	527.4	1170.9	123.4	160.7
4	1439.0	1374.8	201.0	227.2
5		1362.6	215.0	181.0
6		2030.7		128.0
7		1390.3		228.8
8		1729.0		211.8
9		540.0		218.4
10		520.0		189.1

Milk production of Friesian-Sahiwal increased with lactation number from 333.9 up to 1439.0 liters at lactation four. Lactation length of the Friesian-Sahiwal also increased length lactation number of lactation from 77.2 to 215 days for the fifth lactation. The low milk production at earlier lactations were due to short lactation length. If the results were compared with with the work by Chaudhary et al (1977) Friesian-Sahiwal produced 2323.59 ± 31.04 kg. This

showed that the milk produced by RDP, Air Hitam was very low even at fourth lactation .

Milk production for temperate cross also increased with lactation number. The highest being lactation 6 with 2030.7 kg. After lactation 7, the milk production declined until 520 kg at lactation 10. Lactation length varried from 139.8 at lactation length 1 and 228.8 at lactation 7. Milk production for the temperate cross was better than Friesian-Sahiwal for this farm.

Figure 2 shows the average milk per cow per day based on the month. In 1986, this was relatively stable with a highest value 5.34 kg in January and lowest at February with 4.24 kg. In 1987 milk production ranges from highest at May with 8.05 kg and lowest at Jun with 3.10 kg. This was lower if compared with smallholder farm at UPM which produced on average 7.94 kg per day (Unpublised data).

4.2.2 REPRODUCTIVE PERFORMANCE

Table 10 shows the reproductive performance, based on the year of calving, between January 1985 up to December 1987.

Table 10 : Herd reproductive performance analysis.

year calving	Jan to Dec`85	Jan to Dec`86	Jan to Dec`87
No. calved	813	891	966
% of calved	82	91	75
Average of calving to 1st serve (days)	98	79	79
1st service concept. rate %	33	40	20
Average of calving to conception (days)	154	166	84
Days open average	182	143	134
No. serve/conception	1.7	1.8	1.4
Average dry period	243	193	152
Average calving interval	435	397	363
Age at 1st calving	35	35	35

Age at first calving at RDP dairy farm averaged 1150 days (38.3 months) compared with the report by Sivasupramaniam et al (1982) where age at first calving was found to be 891 days (29.7 months). Jainudeen (1974) showed that this was 33 ± 1.8 month (990 days) in UPM dairy herd. This was earlier than RDP dairy cattle.

Service per conception for 1985, 1986, 1987 averaged 1.7, 1.8, and 1.4 respectively. This service per conception was lower than that for Friesian-Sahiwal reported by Mohd Ngah (1981) which was 2.7, and by Eusof et al (1981) which was 3.9 in Malaysia.

Gestation period was found to be about 280 (± 10 days) and this was within the normal range of 284 days found in Australian Friesian-Sahiwal (Goodchild et al (1984).

Calving interval for 1985, 1986 and 1987 were 435, 397 and 363 days respectively. The calving interval for 1987 showed a tremendous improvement when compared with the previous years. In UPM herd, the average was 429 ($\pm$ 16 days) was reported by Jainudeen (1974).

Days open in 1985 was 242 days and this was reduced to 193 days in 1986, but in 1987 the days open was even shorter than previous years being only 152 days. This was shorter than that reported by Leong (1975) which showed an average 212.49 and 177.22 days for the first and second lactation for the Temperate cross. Although the dry period was getting better, it had not achieved its target of 56 days.

In 1985, calving to first service averaged 98, it was 79 days for 1986 and 1987 respectively, compared with the target for the farm of 65 days. The calving to first insemination were slightly longer when compared to the work done by Jainudeen (1974) which showed an average of 69 ± 3 days.

First service conception rate showed only 33 percent in 1985 and 40 percent in 1986, and drop to 20 percent in 1987 compared with target of RDP 55 percent. Low percent of conception was associated with inefficient of the heat detection technique, repeat breeder, method of insemination technique and management of the semen.

Calf birth weight in male Temperate Cross have an average 28.70 kg compared in female, 28.58 kg. In male of Friesian-Sahiwal have an average 22.04 kg compared with female 24.03 kg. Female Friesian-Sahiwal calves were found to be heavier than males calves. Comparison to Leong (1975) reported have an average of 23.15 ± 0.7 for Friesian-Sahiwal and 19.1 ± 0.4 up to 31.5 ± 5 for Temperate Cross, birth weight of both breed in the normal range (Table 11).

Table 11 ; Weight performance based on group of animal and daily weight gain

Parameters	Temperate Cross		Friesian-Sahiwal	
	Male	Female	Male	Female
Birth	28.70	28.58	22.04	24.03
Weaning	62.30	56.90	62.50	62.22
Fattening	108.22		97.33	
Heifer(cull)		<225		<225
Pawah Pedaging		340.00		428.00
Daily weight Gain				
Birth to wean	0.41	0.41	0.41	0.41
Weaning to adult	0.69	0.69	0.69	0.69

Note : Average daily gain for both sex of Temperate Cross and Friesian-Sahiwal.

4.3 ECONOMIC ASPECTS

Accounting system in these farm was administrated by one officer who was involved in administration and financial unit.

Table 12 : Milk sales management cost

Year	1984	1985	1986	Sept '87
Direct oper. expenditure (x 1000)	1449.5	1428.8	1481.1	875.5
Prop.of milk sales to total sales.	43.14%	60.39%	63.06%	55.03%
Prop. of oper. expen.to be borne by milk	625.3	862.8	934.1	480.7
Litre of milk sold (x 1000)	595.8	688.3	707.9	672.9
Ave. oper. cost per litre of milk prod. (\$)	1.05	1.25	1.32	0.71

Note: Milk sales price 1984			= \$0.814	
			1985 -1987 = \$0.770	

Table 12 show milk sales management cost based on the year. In 1986, the highest operating cost per litre of milk produce with \$1.32 compared with the current price of milk \$0.77 per kg. The lowest operating cost was in 1987 with \$0.71 compared with \$0.77 per kg of milk. Cost of milk production had been reduced and showed an improvement in management. If compared with the study by Sivarajasingam and Kassim (1974) showed that the cost to produce of one liter of milk varied from \$0.53 to \$1.06.

Table 13 : Statement of income and expenditure
from 1984 to Sept. 1987

Year	1984	1985	1986	Sept '87
Expenditure				
Personnel Emolument	420126	434664	448841	334944
Services & Utilities	49927	53278	52528	37310
Supplies	844656	868444	924776	632978
Maintenance & repair	52707	31082	32025	4736
Services & hospitality	58222	27029	24945	4023
Holding of cap. assets	23880	16320	0	1750
Total Expend.	1449518	1430817	1483115	1015741
Revenue				
Milk	347700	497746	582302	484380
Cattle	457771	321814	341047	384922
Others	507.3	4020	0	10832
Total Income	805978.3	823580	923349	880134
Operating deficit	-643539	-607237	-559766	-135607
% deficit	-44.40	-42.44	-37.74	-13.35
% income	55.60	57.56	62.26	86.65

Table 13 show the statement of income and expenditure from 1984 to September 1987. In the goverment farm, losses

were expected since the main objectives of the RDP were to provide to various scheme and services for smallholder. In 1986, there was higher expenditure (\$9923,349.00) compared with the income (\$923,349.00) which contribute the operating deficit with \$559,766.00 with percentage of income base on the operating deficit of 62.26 percent. In 1987, there was tremendous improvement with increases of the percentage of income to the 86.65 percent due to the big reduction of feed expenses.

The major expenditure were supplies and material which involved concentrates feed, calf starter, mineral block, salt fresh milk, fodder, medicine and disinfectant, fertilizer, seed and weedicides which contribute about 53.94 percent and 32.23 percent of personnel emolument.

Table 14 Cost of raising of animal from 1 day
to 38 months old

Group	Quantity /day (kg) (Q)	Total Qxdays	Cost \$/ unit(tan)	Total cost (\$)
<u>0-3 mths</u>				
<u>Feeding</u>				
Grass	0.5	45	20	0.90
Calf starter	0.5	45	460	20.70
Whole milk	4.0	120	0.80	96.00
CMR	0.8	48	2399	115.15
Salary				27.40
Sub-total cost				260.15
<u>3-6 mths</u>				
<u>Feeding</u>				
Grass	1.5	135	20	2.70
Calf starter	4.0	360	460	165.60
Salary				27.40
Sub-total cost				195.90
<u>6-38 mths</u>				
<u>Feeding</u>				
Grass	25	24000	20	480.00
PKC	3	2800	273	786.00
Maize	0.3	288	388	111.74
Salary				218.96
Sub-total cost				1596.70
Administration cost				118.11
Others (medicine, drug etc)				856.67
TOTAL				3029.57

Table 14 shows the cost of raising the calf from a day old up to 38 months old. Cost of raising animal from 0 to 38 months old was calculated to be about \$3029.57 for the subsidy scheme. Cost of raising for the fattening scheme was about \$456.15 compared with the income about \$335.00 per

head assuming that the price was \$3.35 per kg body weight and weight about 100 kg. So, losses were suspected.

So the efficiency of the government farm was associated with how to increase the income based on the compatible system where how much for the income goes in for each Ringgit invested. With the good management and planning the percentage of the income over expenditure will be increases.

For the good accounting system, herd projection were prepared to be used for the target for the next year. Preparation was based on the performance of the animal at the previous year like number of the breeding herd; number of lactating cows; number of pregnant animals; number of heifers; number of yearling; number of calves on milk replacer and whole milk and others. Expenditure and income could be estimated and planned to increase the profit can be achieved with good management.

5.0 CONCLUSION AND RECOMMENDATION

The overall dairy cattle farming in RDP, Air Hitam was suspectory good since it is as a goverment farm, however it is capable of reducing the operating deficit in running of the dairy cattle farm in order to provided various schemes and services .

Farm management was good and followed the guidelines for Large Scale Producer as recommended by the department of

Veterinary Services. Objectives of the farm were not fully met due to unavailability of animal for various scheme based on the demand from the smallholders. Herd projection must include the projected demand of animals from smallholder of various schemes, so that the number can be produced.

The main problem associated with the animal management was feeding where unavailability of enough grazing area and inadequate feeding production.

Semen of choice must be imported with sufficient quantity and kept in the good condition. Since the service per conception rate was very low, improvement for the insemination techniques and semen keeping management must be carried out. Inservice training for the staffs should also be done from time to time to improve the overall performance in AI.

Culling was also very high. This was due to disease condition and poor feeding condition. Special treatment must be carried to reduce the number of culled animal by providing strict disease control programme, hygiene and feeding with enough good quality. Analysis of the grass and concentrates should be done at regular interval so that crude protein level of the feed can be accessed.

Since the mortality was very high in calf, colostrum feeding must be practised with enough amount of colostrum in order to reduce cases. The area should be well ventilated,

bedding should be change weekly, so that it will help in reducing the cases of respiratory infection and diarrhoea.

The terminology use in the describing a clinical disease was very general. The specific term must be used in the record.

Collibacillosis, septicaemia and respiratory infection were the common constituted the major proportion of the calf mortality while respiratory infection was the major causes in adult.

Diarrhoea and debility were common clinical cases in calf while in adult the major causes were myiasis/wound, debility and mastitis.

Mastitis could be reduce with strict hygiene during milking time and correct vaccum level of the milking machine.

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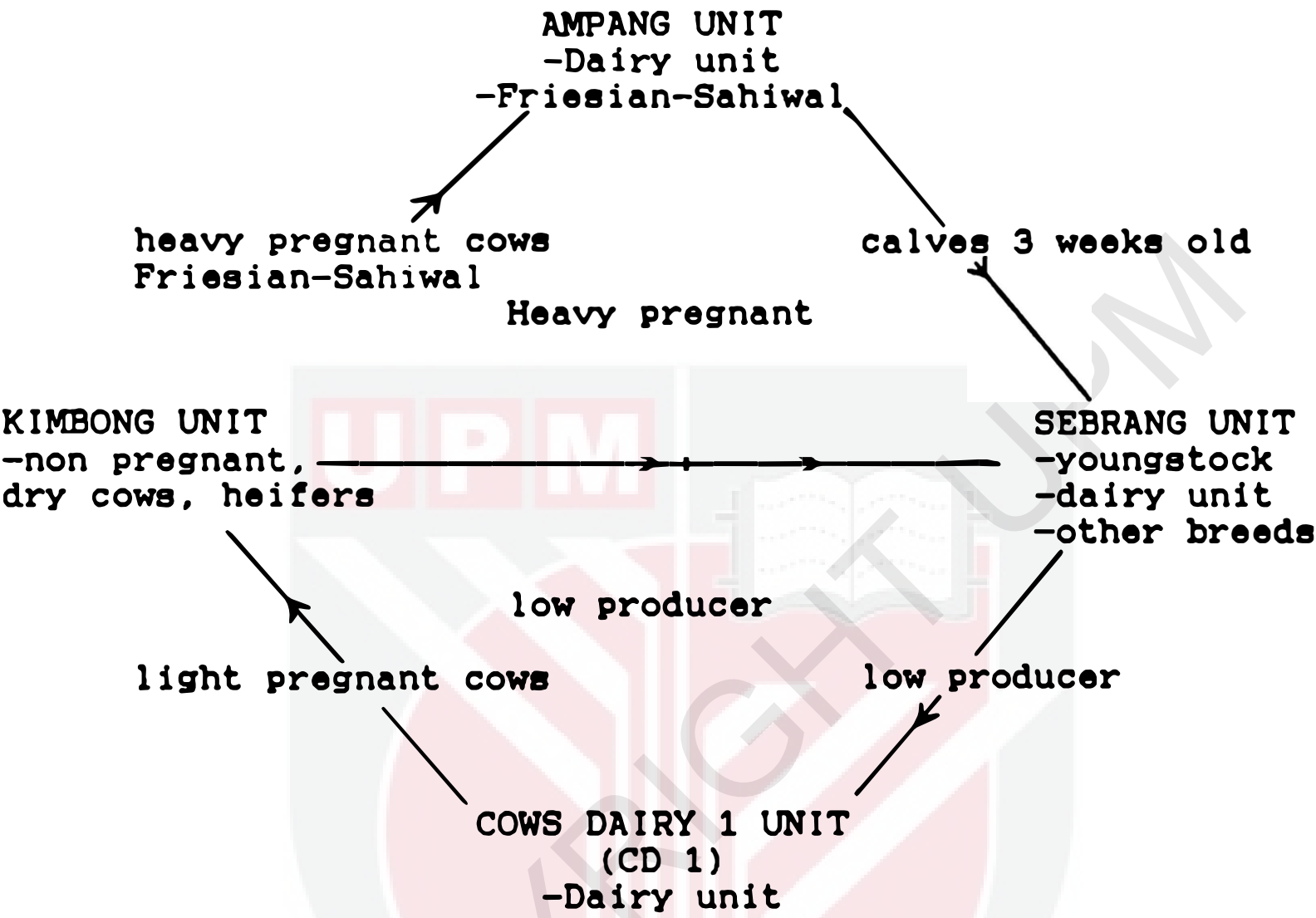
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Appendix 1

MANAGEMENT SYSTEM (ANIMAL TRANSFER CYCLE)



Appendix 2MARKET PRICE OF PRODUCTS

Item	Price (\$/kg)
Milk	0.72
Culled cows	3.35
Cows for Pawah Pedaging	3.35
Pregnant heifer	1000/head
Male calf (6-9 mths)	3.35
Culled stunted heifer	3.35
Culled bull	3.35
Stud bull	5.50

Appendix 3BREEDING POLICY

Dam	Breed
LID	Friesian
LID/Fr	Br/Fr, AFS (Fr/S)
Fr/S	Br/Fr, AFS (Fr/S)
Others	Br/Fr, AFS, AMZ

Note : LID -Local Indian Dairy
 Fr -Friesian
 AFS -Australian Friesian-Sahiwal
 AMZ -Australian Milking Zebu
 S -Shindi
 Br -Brahman

FIGURE 1: MORTALITY & BIRTH PERFORMANCE

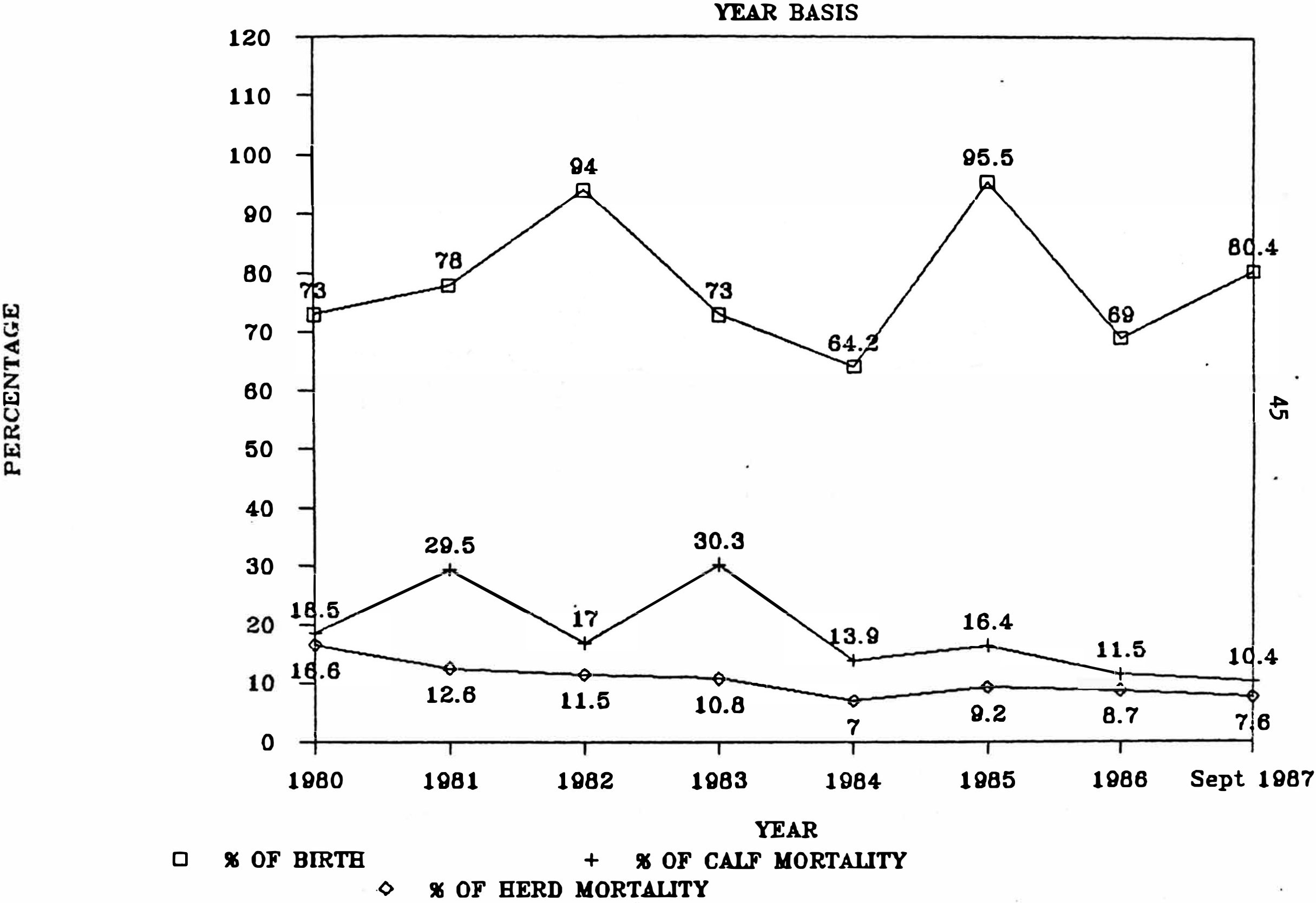


FIGURE 2 : AVE. MILK PROD. (KG/COW/DAY)

