



UNIVERSITI PUTRA MALAYSIA

***AN EVALUATION OF THE REPRODUCTIVE PERFORMANCE IN A
SHEEP BREEDING FARM***

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**AN EVALUATION OF THE REPRODUCTIVE PERFORMANCE
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A SHEEP BREEDING FARM**

**BY
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ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine and Animal Science in partial requirement of the course VDP 401 - Animal Industry Project.

AN EVALUATION OF THE REPRODUCTIVE PERFORMANCE

IN A SHEEP BREEDING FARM

by

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A study was carried out at the Gajah Mati Sheep Breeding Centre which had a population of 670 and 1640 sheep in 1987 and 1988 respectively.

The various breeds of sheep reared in this centre were local breed, crossbred, Dorset and Romney. In late 87, Suffolk, Border Leicester, Corriedale and CMLBLX breeds were introduced into the centre.

Evaluation of the reproductive performance of the various breeds found in this centre showed that each breed has their strong and weak points. However, the local breed showed a satisfactory reproductive performance with the best lambing percentage (90%), single birth (90.8%), lambing interval (300 days) and lamb / ewe / year (1.22) but local breeds showed lower birth weights (1.8kg), average daily weight gain (60gm) and weaning weight (8.7kg). In twin birth

and lambing percentage (83%), crossbred achievement is the best. The average daily weight gain (80gm), birth weight (2.2kg) and weaning weight (11.1kg) of crossbred is higher compared to the local breed, but the lamb mortality percentage (46%) of the crossbred is the highest. Dorset breeds performed satisfactory in term of weight (2.9kg), weaning weight (12.1kg) and average daily weight gain. However, the lambing percentage (34.3%) lambing interval (330 days) and lamb / ewe / year (1.07) are poor. Even though Romney showed a satisfactory twin birth percentage (20%) and birth weight (3.9%) but their lambing percentage (23%) is the lowest.

The reproductive problems of imported sheep as a whole include a low lambing percentage, high lamb mortality, long lambing interval and poor lamb / ewe / year. The reproductive performance of the local and crossbred can be considered better than the imported breeds.

ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Kedokteran Veterinar dan Sains Peternakan untuk memenuhi sebahagian daripada keperluan kursus VDP 401 - Projek Perindustrian Ternakan.

AN EVALUATION OF THE REPRODUCTIVE PERFORMANCE IN A SHEEP BREEDING FARM

oleh

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Satu kajian telah dijalankan di Pusat Pembiakan Bebiri Gajah Mati, Kedah dimana pusat ini mempunyai 670 ekor bebiri dalam tahun 1987 dan 1640 ekor dalam tahun 1988. Baka-baka bebiri yang terdapat di pusat ini ialah bebiri Tempatan, Kacukan, Dorset dan Romney. Pada akhir tahun 1987 bebiri baka Suffolk, Border Leicester, Corriedale dan CMLBX diperkenalkan di pusat ini.

Penilaian prestasi reproduksi terhadap baka-baka bebiri dipusat ini menunjukkan bahawa setiap baka mempunyai kelebihan dan kekurangan masing-masing. Walaubagaimanapun bebiri Tempatan adalah terbaik dari segi peratus kelahiran (90%), kelahiran tunggal (90.8%), jarak antara kelahiran (300 hari) dan bilangan anak / ibu / tahun (1.22), tetapi pencapaian yang rendah dari segi berat lahir (1.8kg), purata pertambahan berat harian (60gm) dan berat cerai susu (8.7kg). Baka kacukan pula terbaik dari segi kelahiran

kembar dan peratus kelahiran (83%) juga menggalakkan. Purata pertambahan berat harian (80gm), berat lahir (2.2kg), berat cerai susu (11.1kg) bagi baka Kacukan adalah lebih tinggi jika dibandingkan dengan baka Tempatan, tetapi peratus kematian anak, baka Kacukan (46%) adalah tertinggi sekali. Baka Dorset pula menunjukkan prestasi yang memuaskan dari segi berat lahir (2.9kg), berat cerai susu (12.1kg) dan purata pertambahan berat harian (80.3kg). Pencapaian baka Dorset adalah rendah dari segi peratus kelahiran (34.3%), jarak antara kelahiran yang panjang (330 hari) dan bilangan anak / ibu / tahun (1.07). Bagi baka Romney, walaupun menunjukkan peratus kelahiran kembar (20%) dan berat lahir (3.9kg) yang tinggi namun pencapaiannya dalam peratus kelahiran adalah yang terendah sekali (23%).

Secara keseluruhannya, masalah-masalah reproduksi bebiri import termasuk peratus kelahiran yang rendah, kematian anak yang tinggi, jarak antara kelahiran panjang dan anak / ibu / tahun yang tidak memuaskan. Pencapaian reproduksi bebiri Tempatan dan Kacukan adalah terbaik dibandingkan dengan baka import.

1.0 INTRODUCTION

The livestock industry in Malaysia is becoming increasingly important in recent years. Being free from any major animal disease is the main factor for creating a very favourable condition for livestock investment. The livestock industry's share of the Gross Domestic Product is about 3%. However its share in agriculture output is 15%. The output value of livestock and livestock products based on ex-farm prices of 1987 is estimated to be about 200.6 million ringgit (Ahmad Mustafa, 1988).

The poultry and swine sectors have progressed well into commercial enterprises while the ruminant sector still lags behind. The poultry sector contributes about 59% of the total value of output of livestock and the swine sector contributes about 31%. The ruminant sector, however contributes only about 10% of the total value of livestock product (Hadi, 1988). In the other words, the ruminant sector contributes only a small fraction to the livestock industry. Although the pig and poultry subsectors are well developed, they are still highly dependent on imported feed grains. Malaysia has spent billions of ringgit annually in food imports of which the livestock industry earned the biggest share. This is because about 85% of the feedstuffs have to be imported from overseas. Sheep production in Malaysia is of minor importance. Most of the local sheep are

kept by small holders in rural areas mainly in Kelantan, Pahang and Negeri Sembilan.

The productivity and reproductivity of local sheep is very low. Genetic improvement has been made by upgrading the local breeds. Some crossing of the local sheep with imported breed such as Dorset Horn, Poll Dorset, Wiltshire Horn and Border Leicester by the Veterinary Department of Malaysia were quite successful. Now, quite a number of various crossbred sheep has been produced. (Hadi, 1988)

In order to obtain further information on reproductive performance, a study on the Gajah Mati Sheep Breeding Centre was carried out.

The objectives of the study were:-

- To evaluate the reproductive performance and makes a comparative study of various breed in this farm.
- b) To study the effect of local environment condition to the reproductive performance of imported sheep.
- ✓ c) To study the breeding management or system of sheep in order to identify the problems.
- ✓ d) To make recommendations based on the constraints present.

2.0 LITERATURE REVIEW

Status of sheep in Malaysia

Malaysia has a climate which is characterised by high temperature, rainfall and humidity. The mean annual

temperature varies around 27c and the total annual rainfall exceeds 2000mm (2032 - 3048mm).

Based on the hytergraphs as outline by Hafez (1968) it seems that the Malaysian environment is not suitable for sheep. There appears to be no single breed of sheep which can adapt to both the hot and humid climate (Mason 1951).

The adaptation of various exotic sheep that have been imported into Malaysia is shown in Table 1.

Table 1 : Adaptation of Breeds of Sheep.

Breed	Principle uses	Feed Condition	Humidity	Temperature
Border Leicester	W,M	Ample	Humid	Cool to medium
Corriedale	W,M	Medium	Medium	Medium
Dorset Horn	W,M	Medium	Humid	Medium
Romney	W,M	Medium	Humid	Medium
Suffolk	M	Ample	Humid	Medium
Wiltshire	M	Ample	Humid	Medium

W - Wool

M - Milk

Adapted from : Mason I.L, A World Dictionary of Breeds, Types and Varieties of Livestock.

2.1 IMPORTATION OF SHEEP

The earliest crossbreeding programme to upgrade the local sheep took place in the early 50s in Mahang, Kelantan when imported Dorset Horn rams were used. In the late 70s,

Dorset and Wiltshire were imported by the Veterinary Department mainly for demonstration and training purposes. Some of the Dorset rams were distributed to farmers following a period of acclimatisation. About 90% of the imported animal were retained at the government farms in Kluang and Gajah Mati, Kedah (Hadi, 1988)

Table 2 shows sheep Importation Programme by Department of Veterinary Services (1987 - 1989).

Table 2 : Sheep Importation Programme in 1987 - 1989.

Year	1987		1988		1989	
Breed	Rams	Ewes	Rams	Ewes	Rams	Ewes
Polled Dorset	981	3229	250			
Suffolk	108	335	250			
Wiltshire	49	190				
Border Leicester Merino	103	539	250	9250		5000
Dorset Horn	11	26				
Border Leicester	52					
Corriedale	52					
Long Tail Sheep				500	400	4000
Malin			200	500	400	1000
Others					200	1000
Total	1356	4319	950	10250	1000	11000

Adapted from : Department of Veterinary Services.

2.2 SHEEP INTEGRATION STRATEGY

The Malaysian economy is generally dependent on agricultural export with rubber, oil palm and cocoa being the main export commodities. Emphasis towards crop cultivation has effectively reduced the level of animal protein production and increased importation of mutton and beef. Thus, efforts are needed to increase livestock productivity without effecting the crop production.

A more pragmatic approach is to integrate animal farming with plantation crop such as rubber and oil palm. Currently the animal that has great potential to be integrated with such plantation crops is sheep. The use of sheep as a 'biological weed control' agent has been shown to be effective, economical and safe. The integration of sheep will maximise the use of agricultural land and help to minimise the use of weedicides. In fact, the potential of sheep rearing in Malaysia is tremendous considering the fact that there are no less than one million hectares of rubber plantations which can concurrently support sheep production. If 20% of the land is utilized to support sheep at the rate of 2.5 heads per hectare, the total sheep population would be no less than 50,000 heads. The Rubber Research Institute of Malaysia (RRIM) has been investigating the feasibility of integrating sheep under rubber since 1975. Generally it has been shown that the sheep rearing under rubber is technically feasible (Tajuddin and Chong, 1988).

The LPP (Lembaga Pertubuhan Peladang) is now organising the Farmers Organisation throughout the country that are involved in sheep production. By Oct. 88 a total of 26 Farmers Organisation throughout Peninsular Malaysia have a total of about 3568 sheep. The main objective of LPP in the Fifth Malaysia Plan is to manage 50,000 sheep (Raya, 1988).

The progress of sheep farming especially under the integrated system will help to increase sheep population in Malaysia.

Table 3 shows the growth in the number of sheep in Malaysia and also the proportion of sheep reared under the plantation crops both in the public and private sectors.

Table 3: Sheep population in West Malaysia between 1965 and 1987

(000) and the proportions under plantations*

	1965	1980	1983	1984	1985	1986	1987**
Population (heads)	37	59	60	68	78	90	125
In Plantation (heads)	NA	NA	1	3	7	16	26
% sheep in plantation				4.4	8.9	17.3	20.6

* - Includes those in FELDA, FELCRA, RISDA, RRIM and Guthrie
 ** - 1987 sheep population - estimated figure
 NA - Not available

Adapted from : Department of Veterinary Services.

The experience at Guthrie revealed that the industry in Malaysia cannot be expanded rapidly due to major limitations in availability of suitable breeding ewes, availability and utilization of undergrowth, compatibility of sheep with oil palm, lack of suitable health and disease prevention and control methods, high cost of feeds such as palm kernal cake (PKC) and lack of market and market promotion in the consumption of lambs (Lee, et.al....1987).

2.3 TRAITS OF ECONOMIC IMPORTANCE

Traits of economic importance in sheep are those related to the cost of production of wool and meat.

In general, mutton is not as popular as pork and beef although it is preferred meat in some countries. Wool for use in the manufacture of clothing and other textiles is being replaced somewhat by various synthetic fibers, but there is still a good demand for it in many parts of the world (Carley, 1978).

2.4 DEVELOPMENT OF THE MUTTON INDUSTRY

Mutton (sheep and goat meat) is a high priced meat acceptable to all races in Malaysia. The total demand is estimated at 6740 tonnes. About 93% or 6240 tonnes of the total requirements are imported either as frozen meat or live sheep. This importation is valued at 23 million ringgit. Some factors like high demand for mutton, low local

mutton production, large importation of sheep meat and the availability of 3.1 million hectares of plantation for integrated sheep rearing show that there is a great potential towards development of the mutton industry. Now, the Department of Veterinary Services is applying the SPEED, MAGNITUDE, ADOPTION and ADAPTATION, RISK CAPITAL and HEAD - ON research strategies to develop the mutton industry. The development of the sheep industry will significantly increase mutton production and also will provide opportunity to diversify agriculture production. The participation of private plantation sector is essential in this strategies. (Ahmad Mustafa, 1988).

3.0 MATERIAL AND METHODS

An evaluation study was carried out at the sheep Breeding Center, Gajah Mati, Kedah.

The material involved are 1640 sheep of different breeds. They are Poll Dorset, Romney, Crossbred and Malin (local sheep) breeds.

In late 1987, Corriedale, Suffolk and Border Leicester were introduced into the farm. The latest breed introduced in October 88 was CML/BLX (Corriedale-merino-Border Leicester). Data on their reproductive performance, production parameters and mortality rates were collected from the available records, by a simple questionnaire, personal communication and personal observation of the farm.

About 20% of the total number of animals of various

breed were selected randomly from the records. Among the production parameters observed were birth weight, weaning weight and weekly weight gain.

With regard to the reproductive performance, data and information were obtained from birth records and mortality records.

The data collected was analysed and an evaluation study and comparison between breeds was carried out.

4.0 RESULTS AND DISCUSSION.

4.1 General Sheep Management

The semi intensive system was practised in this farm. One hundred acres of land was planted with various species of grass such as Bracharia decumben, Setaria kazangula, Paspalum konjugatum, panicum maximum, Bracharia humidicola and Pennisetum purpureum with 10 - 20% combination with sush as Centrocema pubescens, Stylosanthes spp., pueraria phaseoloides and Leucaena leucocephala.

The animals were grazed for about seven hours daily from 8am to 3pm. After grazing concentrates were given as supplementary feeds at a rate of about 200gm per animal daily.

Ratational grazing is practised with a stocking rate between 20 - 35 heads per hectare.

The pregnant ewes were separated and kept together in the lambing house. Grasses and concentrates were provided

regularly. After lambing the ewes were kept together with their lambs until four months of age.

Lambs were weaned at four months of age because of their low body weight.

4.2 BREEDING SYSTEM

Natural mating was carried out throughout the year. The ratio of male to female was 1 : 25 and they were kept together to breed for a period of two months or about three ovulation cycles. The sire harem method was practiced for heat detection and to give a reasonable idea of the number of ewes that were mated.

Various colour of crayon were used to identify and differentiate the different breed of rams. Ultra sound (Priction) were used for pregnancy diagnosis. The accuracy of pregnancy diagnosis is only 65% mainly due to the lack of workers experience.

A ratio of one ram to 50 ewes is recommended but a fit ram can handle many more especially where a ram and his mates are in separate enclosures. Many farmers are happy with one ram to 80 - 100 ewes ratio with paddock mating with the knowledge that a ram with a small mating group will often indulge in repeated mating whereas those with a high ewe pressure will spread his favours to equally good effect (Cooper and Thomas, 1982).

4.3 REPRODUCTION

Parameters observed to assess the reproductive performance included the lambing percentage, frequency of lambing per ewe per year, lambing interval, type of birth and mortality rate.

4.3(1) Lambing Percentage

Table 6 shows the lambing percentage of various breeds in 1986, 87 and 88, respectively.

The lambing percentage of local sheep in 1986, 1987 and 1988 were 96.25%, 80.2% and 96% respectively and were the highest in the group compared to crossbred that are 88.6%, 64.8% and 72.8% in 1986, 87 and 88 respectively.

④ Lambing percentage is an important criterion in evaluating the reproductive performance of a breed. A high percentage indicate that each ewe is able to produce an offspring each year. The performance of imported breeds such as Dorset and Romney suggested that they have to take some time before they can really show their full potential.④ The lambing percentage of Dorset and Romney did not improve on a year to year basis. The Romney was first introduced in this farm in 1986 where the lambing percentage was 53.6%. This high percentage was probably due to the importation of pregnant sheep.

It is obvious that the local breed performed well and the crossbred has successfully adapted to the local environment and their lambing percentage also falls within

acceptable levels.

4.3(2) Frequency of lambing per ewe per year (Lambing Index).

The average number of lambing per ewe per year was 1.13 for crossbred, 1.22 for local breed and 1.07 for Dorset. (Table 7). Lee et..al...(87) reported that a smallholder in Terengganu achieved a lambing index of 1.3, indicating that the performance at this centre is rather low. This is probably due to mismanagement and prolonged weaning period (4 months).

4.3(3) Lambing Interval

From lambing records of 50 ewes per breed, it was observed that the interlambing interval for the crossbred and local breed were 323 and 300 days respectively. Compared to 330 days for the Dorset (Table 8). The Local breed has the shortest lambing interval compared to other breeds. However, this interval is still considered to be long based on the acceptable lambing index of 249 - 260 days (Davendra, 1975).

The lambing interval is an important factor in determining the lamb crop. A longer interval will reflect a slow build up of stock numbers and this would affect farm performance. It is also strongly influenced by many factors such as weaning period, puberty level of ewe, repeat breeding and also adaptation problems of the imported sheep.

Table 4 : Lambing Percentage in 1986, 87 and 88

Breed	Year		
	1986	1987	1988
Local	96.3	80.2	96.0
Crossbred	88.6	64.8	42.8
Dorset	26.6	48.9	27.5
Romney	53.6	10.3	13.7

Table 5 : Frequency of lambing per ewe per year
(Lambing Index)

Breed	Lambing Index (days)
Local	1.22
Crossbred	1.13
Dorset	1.07

Table 6 : Average Lambing Interval

Breed	Lambing Interval (days)
Local	300
Crossbred	323
Dorset	330

4.3(4) Type of Birth

The average single and twin birth in 1986 were 93.5% and 6.5% for the local breed, 84.6% and 14.1% for the Crossbred, 86.2% and 13.8% for Dorset and 76.7% and 23.3% for Romney. (Table 7). In 1987, the average single and twin birth were 89.2% and 10.8% for the local breed, 88.7% and 14% for the crossbred, 93.4% and 6.6% for Dorset and 90% and 10% for Romney and in 1988 the average single and twin birth were 81.5% and 16% for the local breed, 80% and 18.5% for the crossbred, 94.5% and 5.5% for Dorset and 77% and 23% for Romney. (Table 7).

Romney showed the best performance in twin birth although it has a poor lambing percentage (below 20%). However, Crossbred shows the best type of birth compared to local and Dorset and the crossbred is able to maintain their performance from year to year. The occurrence of single birth is higher in local breed and in 1988 the percentage of twin birth is increased by 6% compared to 1987.

This indicates that the local breed has a high reproductive performance particularly in this type of birth parameter. The increase in the percentage of twin and triplet births resulted in an increased number of sheep available for sale or for selection purposes on the farm. The increase in twin lambing is influenced by an increase in the age of ewes and the number of heavy ewes.

Table 7 : Type of Birth in 1986, 87 and 1988.

	Birth	Single (%)	Twins (%)	Triplets (%)
Local	1986	93.2	6.5	
	1987	89.2	10.8	
	1988	81.5	16.0	
Crossbred	1986	84.6	14.1	1.3
	1987	85.7	14.3	
	1988	80.0	18.5	
Dorset	1986	86.2	13.8	
	1987	93.4	6.6	
	1988	94.5	5.5	
Romney	1986	76.7	23.3	
	1987	90.0	10.0	
	1988	77.0	23.0	

4.3(5) Mortality Rates

1. Lamb Mortality

Table 8 shows the percentage of lamb mortality of various breeds in 1986, 87 and 88. Lamb mortality in 1986 was highest in crossbred and in 1987, the lamb mortality percentage for the crossbred, Dorset and Romney were above 50%. The mortality percentage of local sheep was only 10.4%. The lamb mortality of imported breeds was reduced to about 20% in 1988. This is a good indication for rearing imported breeds in Malaysia. In 1988, the mortality percentage was lower than that in the previous year. It could be due to the success in adaptation by the imported breeds and improved management practices especially disease control, vaccination programmes and nutritional status. The main cause of lamb

mortality were heat stress, malnutrition, diarrhoea and septiceamia.

Overall, evaluation showed that the local breed has the best performance in lamb mortality percentage.

Figure 1, 2, 3 shows the lambing rates and mortality rates in 1986, 1987 and 1988, respectively.

Table 8: Lamb Mortality Percentage in 1986, 87 and 88

Breed	Year		
	1986	1987	1988
Crossbred	43.9	57.5	36.7
Local	13.4	10.4	1.4
Dorset	9.1	57.4	41.4
Romney	43.2	54.5	31.2

2. Adult mortality

The average mortality rates were 17.5% in 1987 and 10.2% in 1988. Pneumonia, septicemia, joudice and endoparasitism were the major causes of mortality in adult.

4.3(6) Birth Weight

Regardless of the type of birth either single or twins the average birth weight of various breed is shown in Table 9. The birth weight observed in this study were 1.8kg in local sheep, 2.2kg in crossbred, 2.9kg in Dorset and 3.9kg in Romney. Lowe (1968), showed that the birth weight was found to be 1.5kg in local sheep under rubber plantation and Wan Mohammad (1977) found that the birth weight of crossbred

**Figure 1 : Graph of lambing rates and mortality rates
in 1986**

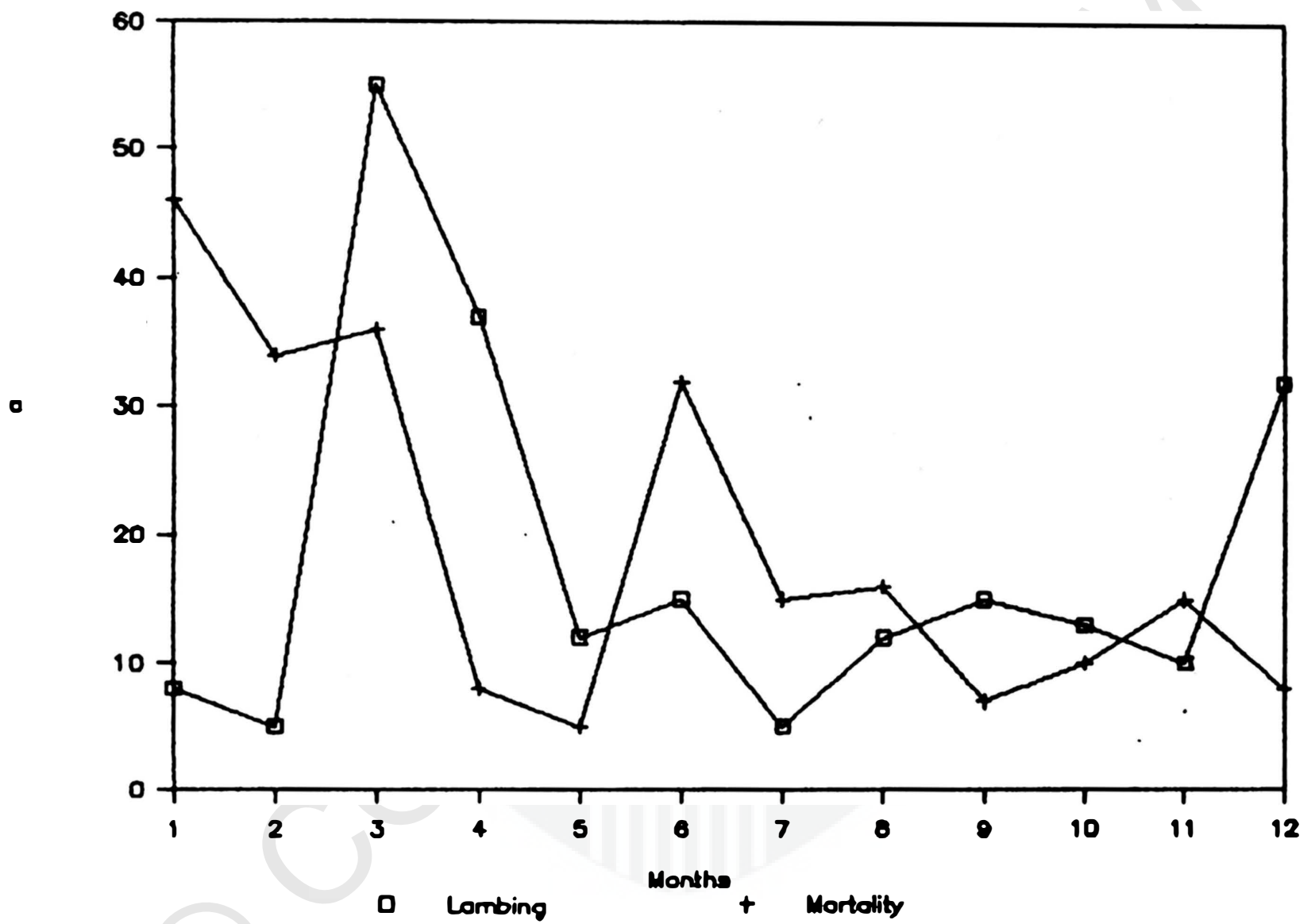
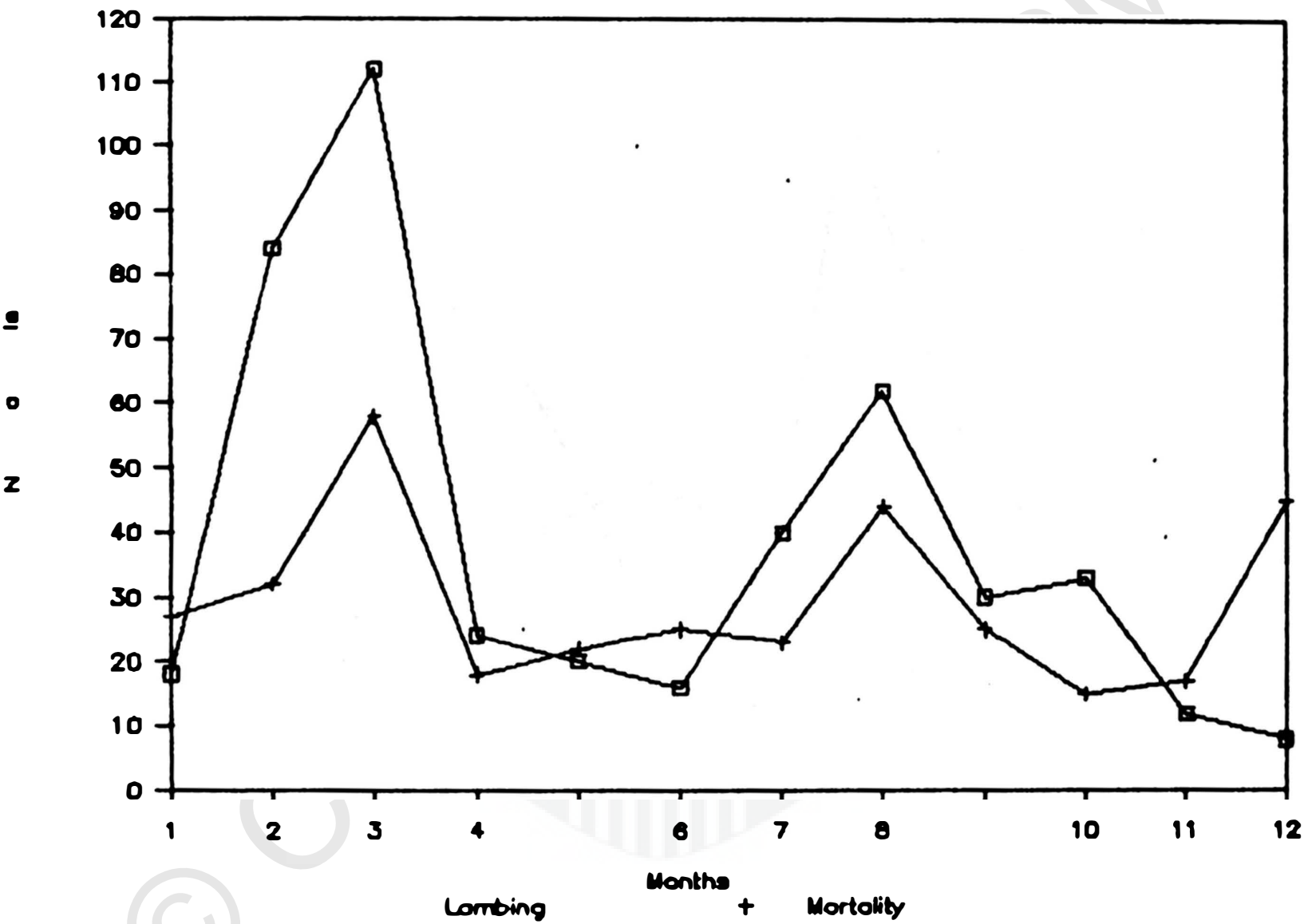
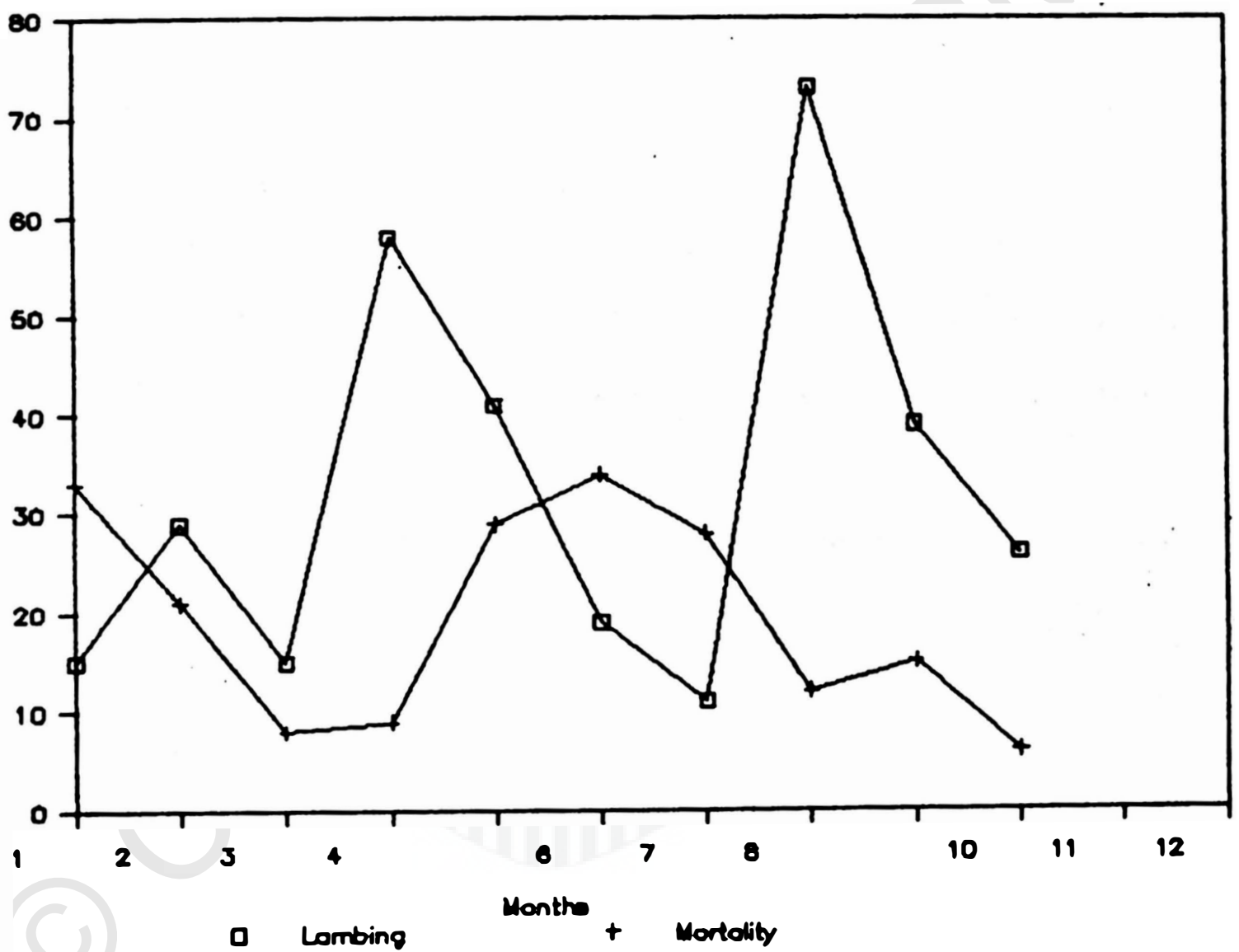


Figure 2 : Graph of lambing rates and mortality rates in 1987



**Figure 3 : Graph of lambing rates and mortality rates
in 1988**



lambs were in the range of 2.1 - 2.3kg.

Table 9: Average birth weight

Breed	Average birth weight (kg)	Range	Weight uniformity (%)
Local	1.8	0.7 3.5	24.5
Crossbred	2.2	0.8 - 3.7	24.2
Dorset	2.9	1.2 - 4.3	20.0
Romney	3.9	1.6 - 6.5	26.0

4.3(7) Weaning Weight

The average weaning weight were 9.3kg for local breed, 11.1kg for crossbred and 12.1kg for Dorset. (Table 10)

The local sheep showed a lower weaning weight compared to crossbred and Dorset breeds. However, for all breeds including the local and imported breeds the weaning weight were lower compared to the study done by Chopre and Archarya (1970) which reported a weight of 15kg. Coop and Hayman (1962) reported that the effect of the birth weight was significant for rate of gain from birth to weaning. The main cause of low weaning weight is poor daily gain. It could be due to poor nutrition, stress, unsuitable environment and the genetic potential of the breed itself.

The age of the ewe may have considerable influence on

the weaning weight of the lamb. Two years old ewes wean lambs that are from 5 - 10 pounds lighter than those from mature ewes. Production of ewes usually increase to four to five years of age. Carley (1978).

Table 10 : Average Weaning Weight.

Breed	Average Weaning weight (kg)	Range	Weight Uniformity (%)
Local	8.7	4.4 - 13.5	16.5
Crossbred	11.1	6.0 - 18.5	21.5
Dorset	12.1	6.5 - 20.5	22.0
Romney	NA		

NA : Not available

4.3(8) Weight gain

Daily weight gain for lamb below 2 months of age were good. (Table 11). Average daily gain (ADG) was 80 g/day in local sheep, 85.7 g/day in crossbred and 119 g/day in Dorset. The average daily gain until 2 months of age was higher than that observed by Lowe (1968) who found the average daily gain to be 70 g/day. Unfortunately the weight gain had clearly decreased after 2 months of age until weaning age. (4 months of age). The average daily gain in all breeds except for crossbred were below 50 g/day. (Table 12).

This probably cause the low average weaning weight. This could be due to an inadequate feed or lack of supplementary feeding. Furthermore the type, quality and the quantity of grass, the nursing ability of the ewes and the birth weight could possibly play an important role in lowering the growth rate.

The nutrition of ewes over the 6 - 8 weeks immediately prior to lambing is of critical importance because it influence birth weight, viability of lambs and milk yield. Nutritional requirements are high at about 2 - 3 weeks after lambing. (Cooper and Thomas, 1962).

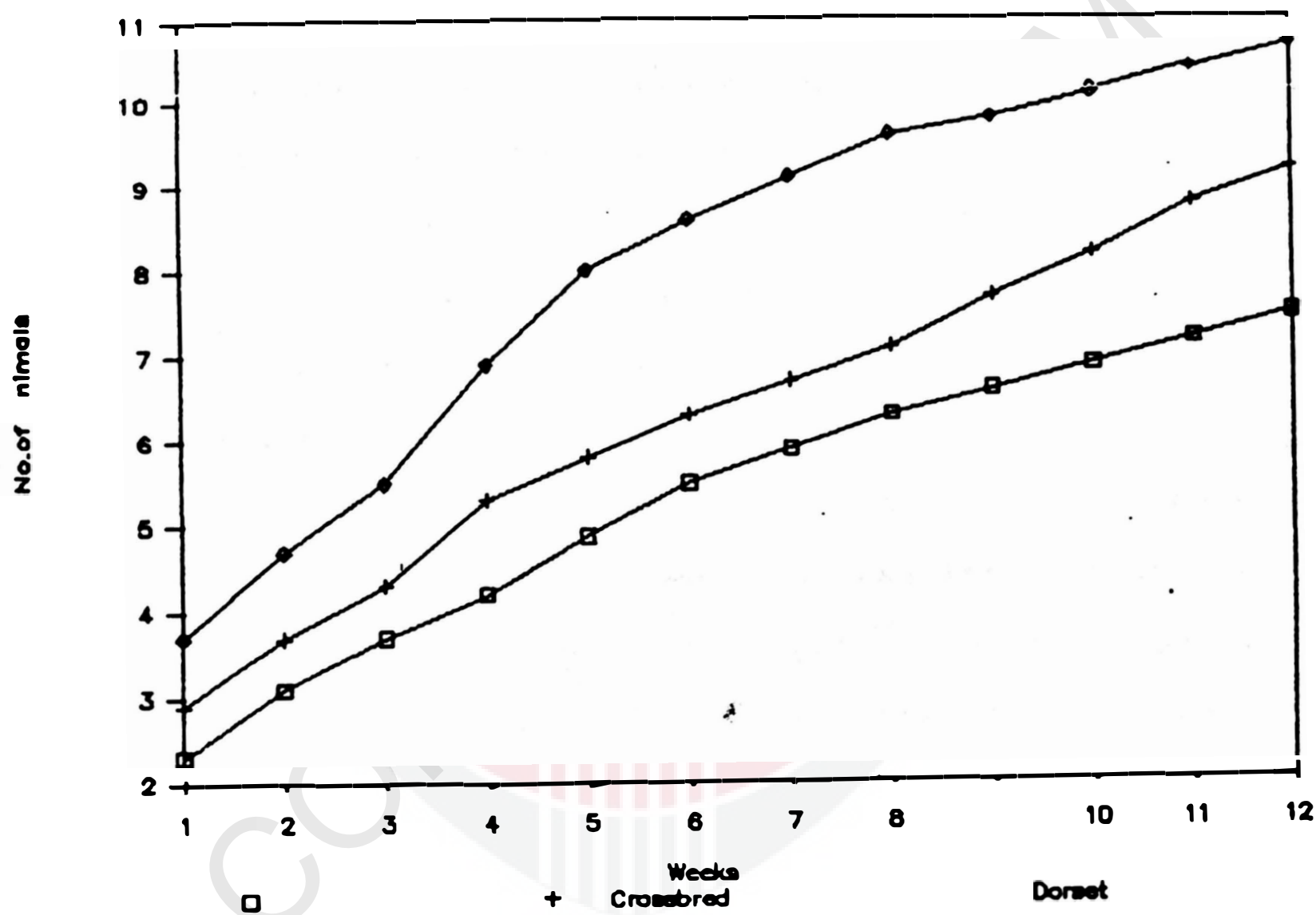
Table 11 : Average weekly and daily weight gain
(up to 2 months of age).

Breed	Average weight gain / week (gm)	Average weight gain / day (gm)
Local	570	81
Crossbred	600	85.7
Dorset	834	119

Table 12 : Average weekly and daily weight gain
(After 2 months of age to weaning)

Breed	Average weight gain / week	Average weight gain / day
Local	310	44
Cross		
Dorset	275	39

Figure 4 : AVERAGE WEEKLY WEIGHT GAIN



5.0 DISCUSSION

The evaluation of reproductive and production parameters of the breeds within this farm has revealed advantages and disadvantages of using the breeds under study.

The local breed has shown good performance in terms of lambing percentage, low lamb mortality, having a shorter lambing interval compared to other breeds and an acceptable lambing frequency but in terms of birth weight, weaning weight and average daily gain, the local breed is inferior compared to the crossbred and Dorset breed. This inferiority has been generally accepted but their better performance in terms of productive efficiency is encouraging and should be given attention.

However, in order to overcome this problem, crossbreeding has been practiced. The results show that the crossbred has an increased birth weight, weaning weight and average daily weight gain. The performance of the crossbred in terms of other parameters which include lambing percentage, lambing interval and type of birth is acceptable and comparable to the local breed. The advantage of rearing the crossbred is that it has a high percentage of twinnings and also triplet births. The high percentage of lamb mortality among the crossbred poses a problem and more efforts should be made to reduce the above problem.

The imported breeds which include the Dorset and Romney showed relatively poor reproductive performance. The major

problems among these two breeds include a low lambing percentage, a longer lambing interval and high lamb mortality. Nevertheless, they showed better birth weights, weaning weights and average daily gain (ADG) than the local and crossbred sheep.

6.0 CONCLUSION

The local breed and crossbreed showed the best reproductive performance. This is possibly due to various factors which include environmental adaptation and a high level of resistance against tropical disease. However, imported breeds at present are still not efficient. This is most probably due to their requiring a long period to acclimatise to tropical climate. Once adaptation is achieved, the imported breeds will be great advantage due to their superior in growth rates. Heat stress represents the major cause of high lamb mortality among the imported breeds. By reducing heat stress, the potential of imported breeds in Malaysia is increased.

It is clear that we should focus our attention toward the upgrading of the local and crossbred. By maximising our local sheep production and restricting importation of sheep for crossbreeding purpose only we will be able to reduce the national loss in foreign exchange involved in the importation of mutton.

7.0 RECOMMENDATION

The following breeding plan is recommended to improved sheep production.

1. All individuals in the flock should be identified by means of a tatoo, ear tag or some other means.
2. Some system of record keeping for all individuals in the flocks should be established. The performance of each lamb, ewe and ram should be recorded.
3. Ewes that have a poor record of fertility and other defects should be culled. Ewes with ewes lamb that rank highest on the basis of one of the indexes mentioned earlier should be replaced or those that are superior in body weight, mutton qualities and wool should be selected.
4. Where more than one ram is used in the flock, those rams whose offspring are below average for the desired traits should be culled.
5. In commercial lamb production, crossbreeding may be profitable. It would be best to cross with those breeds that are both known to be superior in fertility, performance, mutton type and high quality and quantity of wool. (Thomas, et.al...(1976)).

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