

PRODUCTIVITY OF FRIESIAN AND THEIR OFFSPRINGS RESULTED
FROM OUTBREEDING WITH IMPORTED SEMEN

Die Productivitat von friesischen Vieh und von der Nachkommenschaft die hervorgeht aus der Befruchtung mit importierten friesischen Samen

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INTRODUCTION

Dairy cattle in Indonesia are mostly Friesian and Friesian grades resulted from crossing with local cattle. Netherlands is the origin of the animals, and only some are from Denmark. Milk productivity of dairy cattle in Indonesia is low. Some efforts is to use frozen semen from selected dairy bulls in artificial insemination started in 1972 (Sitorus 1975). Hopefully, this effort increases the productivity of the Friesian cattle.

MATERIALS AND METHODS

The study evaluates the pure Friesian and their offsprings resulted from outbreeding with imported dairy Friesian semen. Observations were made and data were collected directly from dairy farmers.

Milk yields were measured by monthly 24 - hour milk production samples, and lactation yields converted into 305-day and twice milking a day production.

This study was conducted in low land and high land areas. In low land areas the study was conducted in Bogor (250 m above sea level) and in Cianjur 1300 m above sea level (highland I) and in Lembang - Pangalengan (1247 to 1420 m above sea level) (highland II). To compare the productivity of local Friesian and their offsprings resulted from outbreeding with imported Friesian semen, samples only taken from highland areas.

RESULTS AND DISCUSSION

Lactation milk yield

Lactation milk yield of local pure Friesian is presented in Table 1. Results indicate that productivity of Friesian in highland areas is higher than that of the lowland. Meanwhile, between highland I and highland II, the productivity is different. The sata show

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that in the highland II it is higher than that of the highland I. In this study milk persistency is higher in the highland compared to that of the low land.

Table 1. Lactation milk yield (305-day, twice milking a day) of pure Friesian

Areas	Number of animals observed (head)	Lactation milk yield (kg)	Standar deviation (kg)
Low land	230	1811	486
Highland: I	126	2309	501
II	255	3098	721

The differences of lactation milk yield in those areas might not caused by differences in genetic make up, because the low land areas are located near the highland areas, and the dairy cattle in low land are usually the offsprings of dairy cattle in the highland areas.

Nutrition does not cause any differences in milk production between the lowland and the highland areas I (Cianjur and its vicinity), although the equality of feeds fed to cattle in the lowland is a bit better than that fed in the highland areas I (Sitorus *et al.* 1980). The differences of lactation milk yield in those areas perhaps are caused by differences in environmental temperature. Temperature of the lowland areas, in this study ranging from 21° to 31° C. Meanwhile, the highland areas I (Cianjur and its vicinity) and the highland areas II (Lembang-Pangalengan) are with temperature ranging from 17° to 26° C and 11° to 25° C respectively. Atmadilaga (1959) reports that Friesian cattle are well adapted in locations with altitudes of 790 to 1200 m in Indonesia.

In this study lactation yield of Friesian cattle in the highland areas I is different to the highland II, that caused by differences in environmental temperature, and forage supplies. In the highland II (Lembang-Pangalengan), forage are better than those of the highland areas I (Cianjur and its vicinity).

Results indicate that milk productivity is better in the highland areas. Therefore, in Indonesia, Friesian cattle is better developed in highland areas, particularly in the areas having enough forage supplies.

Lactation milk yield of the first generation offspring resulted from outbreeding between imported frozen semen with local Friesian are presented in Table 2.

Results show that utilization of imported Friesian semen from selected bulls increases milk production. The same results have been reported by Subandriyo & Sitorus (1979). In this study, age at first calving is almost equal between local Friesian and their first generation offsprings. The average of cows' age at the first

calving of those breeds is about 31 months. Calving interval fo lo cal Friesian and the first generation offsprings of imported semen bred with local Friesian is 446 days abd 458 days respectively. Me-anwhile, their lactation periods are 368 and 385 days respectively (ibid). Sitorus & Subandriyo (1979) report that the superiority of the offspring of imported semen and local Friesian is higher than that in their native countries.

Table 2. Lactation milk yield (305-day, twice milking a day) of local Friesian and the first generation offsprings of imported frozen semen bred with local Friesian

	Number of animals observed (head)	Lactation milk yield (kg)	Standard deviation (kg)
Local Friesian	185	2951	784
The first generation offspring of imported frozen semen bred with local Friesian	127	3446	871

Heritability

Heritability coefficient of lactation milk yield and peak production of daily milk yield from 10 bulls analyzed applying the half sib method (Becker 1967) is 0.38 and 0.37 respectively. In other areas of Indonesia, Suhartati et al. (1979) report that the heritability coefficient of milk production is 0.32.

The differences of the heritability coefficient are supposed to be due to differences in location and environmental factors, particularly differences in environmental temperature. Environmental temperature of location in this study is cooler, because it is lo-cated at higher altitude (more than 1200 m above sea level).

SUMMARY

Most of dairy cattle in Indonesia are Friesian and Friesian grades. Their population and milk productivity are low. Milk productivity of Friesian cattle in the highland areas ranging from 2309 to 3098 kg per lactation, but in the low land it is 1811 kg per lac-tation. Efforts have been made by the Indonesian government to im-prove their productivity by inseminating imported Friesian semen of selected bulls show an increasing in milk yield per lactation (2951 kg vs 1446 kg). In this study the heritability of milk yield per lactation is 0.38, and the heritability of peak production of daily milk yield is 0.37.

ZUSAMMENFASSUNG

Der grössere Teil des Milchviehs in Indonesien ist friesisch oder von friesischer Herkunft. Ihre Population und ihre Milchproduktivität sind niedrig. Die Milchproduktion von friesischen Vieh im Hochlande beträgt von 2309 bis 3098 K.G. pro Lactation und nur 1811 K.G. pro Lactation im Tieflande. Um die Milchproduktion zu steigern durch Verbesserung der genetischen Leibesbeschaffenheit, ist das Vieh inseminiert mit importierten Samen. Dieser Versuch hat eine erste Generation Kühe hervorgebracht, die 3446 K.G. Milch pro Lactation produzieren können (im Vergleich mit einer Milchproduktion von 2951 K.G. für örtlichen Vieh). In dieser Studie ist die Vererbung von Milchproduktion pro Lactation 0.38 und für die maximale tägliche Milchgabe 0.37.

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