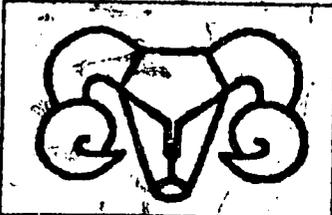
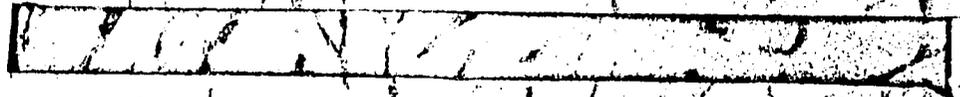
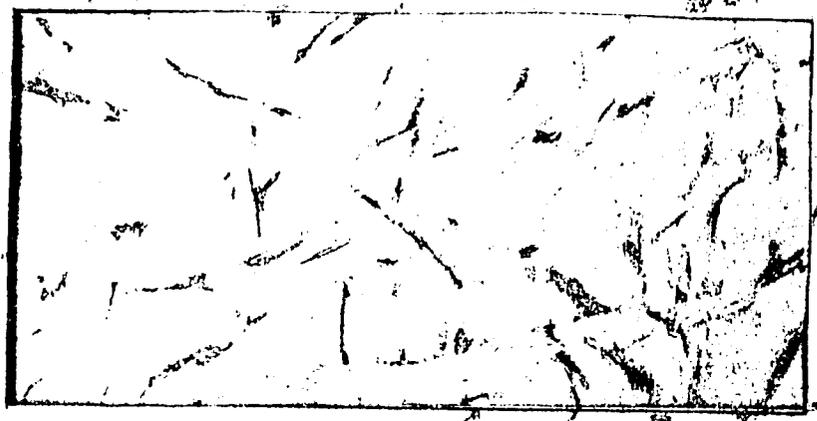


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SMALL RUMINANT CRSP



SUB-BALAI PENELITIAN TERNAK, SUNGEI PUTIH
BALAI PENELITIAN TERNAK ✓
PUSAT PENELITIAN DAN PENGEMBANGAN PETERNAKAN

**PROGRESS REPORT OF OUTREACH PROJECT:
MEMBANG MUDA, NORTH SUMATRA**

Edited by:
Sibylle Scholz

Working Paper No. 132, February 1992

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INTRODUCTION

In June 1991, the SR-CRSP, Sei Putih, was approached by Puslitbun to investigate a possible new project in Membang Muda near Rantau Parapat, about 200 km east of Sei Putih. Ibu Tuti from Puslitbun, Dr. Gatenby and Dr. Scholz traveled to the site and visited several PIR villages, looking at the plantation and forage availability and speaking to the farmers.

During the PI meeting in July 1991 a budget of US\$ 2000 was provided by Dr. Pond for use in the outreach project in Membang Muda (OPMM).

OBJECTIVE OF OUTREACH PROJECT

The general objective of a SR-CRSP outreach project is to provide opportunity for on-farm research to test technology packages. In the particular case of OPMM, integration of sheep under rubber for small farmers is researched with respect to breeds, nutrition, forage and economics.

Although an outreach project has existed since 1988 in Sungei Putih, these are farmers who don't own rubber plantations, and the sheep graze under rubber in an "informal" way. This means that research activities by the CRSP are restricted to breeding and nutrition with no formal opportunity to test forage species or to make sensible economic evaluations.

In September 1991, the Small Ruminant Collaborative Research Support Program started the new outreach project in conjunction with PTP III, an Indonesian semi-private rubber estate, as well as Puslitbun, the Rubber Research Institute and SBPT the Livestock Research Institute both at Sungei Putih.

Indonesia has many PTPs from I to XXXI, which are large commercial estates but because they are partially owned by the Indonesian

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Government, they are also responsible to carry out certain government policies. PTP III in Membang Muda, near Rantau Parapat, North Sumatra, is responsible for administering credit for and give extension services to about 700 smallholder rubber farmers. These farmers are part of Indonesia's resettlement scheme.

This new project has two characteristics we consider desirable. First, it is directed towards smallholder rubber producers, and, second a semi-private rubber estate is backing it through extension services.

In Indonesia, 80% of rubber is produced by smallholder. Rubber is a principal source of income for 8 million Indonesians. The current project is located within the major estate area of North Sumatra where Nucleus Estates of Smallholder (NES) are attached to PTPs. The spread of technology which integrates sheep and rubber production is fostered by a government mandate that the PTPs spend a certain percentage of their profits (1.25%) as aid to diversify and increase income in the NES.

Great care has been taken to involve PTP III in a manner which facilitates their eventual aid packages to other NES. Because previous experience with outreach projects has shown that the key to successful sheep rearing is in providing extension services, a PTP III employee was trained at the Livestock Research Institute in Sungei Putih as extension agent. Training of additional extension personnel is planned as PTP III will expand this aid package. Additionally, PTP III has the responsibility to provide credit for the building of the barns. The Livestock Research Institute and the Rubber Research Institute provided the initial sheep (72) to the farmers. Twelve farmers received 4 ewes and 1 ram each, and have to pay back 4 animals within 2 years. These paid back animals will then go to new farmers. The payback scheme, coupled with PTP III's credit system and extension service makes this a useful and self contained aid package which can be expanded in small and easily manageable units.

PROGRESS

The village was chosen in cooperation with PTP III. It is Gunung Lonceng where the farmers received 2 ha of rubber in 1986 when the plantation was 6 years old and the trees ready to tap. Diversification of income is crucial in this village because at present there is serious and widespread "overtapping". Overtapping, while providing good income now, will result in a shortening of the lifetime of the trees. Exactly how much shorter the usual cycle of 25 years of a rubber tree will be is not known but it can be as much as half. Given the heavy capital investment of replanting - US\$ 1300 per hectare until a plantation matures

for tapping - even a small reduction in the lifetime is serious. It is hoped that the introduction of sheep will provide the necessary incentive for farmers to reduce overtapping. The farmers will have an alternative to devote their productive activities to, and the reduced income from tapping will be supplemented by rearing sheep.

(1) Socioeconomic Survey

In order to get a general feeling for the farmers' situation in Gunung Lonceng a survey was conducted in October to collect socioeconomic data. The survey is reported in Working Paper No. 128.

The survey revealed, that these farmers are literate, which means that technology transfer is likely to happen more efficiently than if they were not literate (Jenck, 1973, and Priyanti et al. 1989, Kusnadi, 1984). Family size seems to be sufficiently large to ensure enough labor available for increasing livestock activities. Most farmers do have experience with livestock, some of these farmers presently own goats and chickens, but no large ruminants.

Household expenditure patterns for the 12 farmers surveyed show that the single largest expenditure is on rice. Bennett's law states that the "starchy staple ratio" declines as household income increases but Périssé demonstrated, that there exists considerable substitution within the starchy staple category before the relative importance of starchy staples declines in the total diet (see Timmer et al., 1983). In Indonesia, the two main starchy staples are cassava and rice; cassava is considered inferior. In this village considerable substitution between cassava and rice has taken place, but the starchy staple food ratio is still above 1 at 1.34. With an increase in livestock owned by households, it is expected that the starchy staple food ratio declines and that protein consumption increases.

A major problem in this area is overtapping, which reduces the lifetime of a plantation by as much as half. Data collection on hours spent for various activities in the plantation showed no correlation between either extent of overtapping or income.

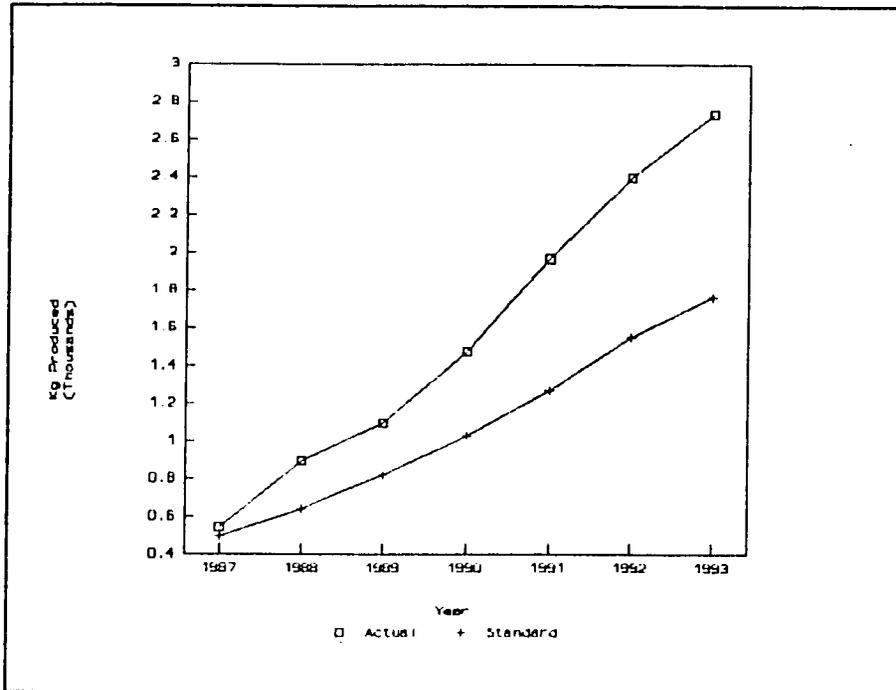
(2) Extent of Overtapping

A preliminary analysis on kg produced per year per farmer revealed that, when measured against a standard, overtapping has been increasing every year since 1986. In 1991, these farmers tapped 50 per cent more kg of latex than standard. At this rate, the plantation is expected to cease production within 5 years. Graph 1 shows the average actual and standard kg produced per year in Gunung Lonceng. The rate of overtapping is increasing and the seriousness of this situation cannot be overemphasized. All of the 12 farmers engage in overtapping, although as Graph 2 illustrates,

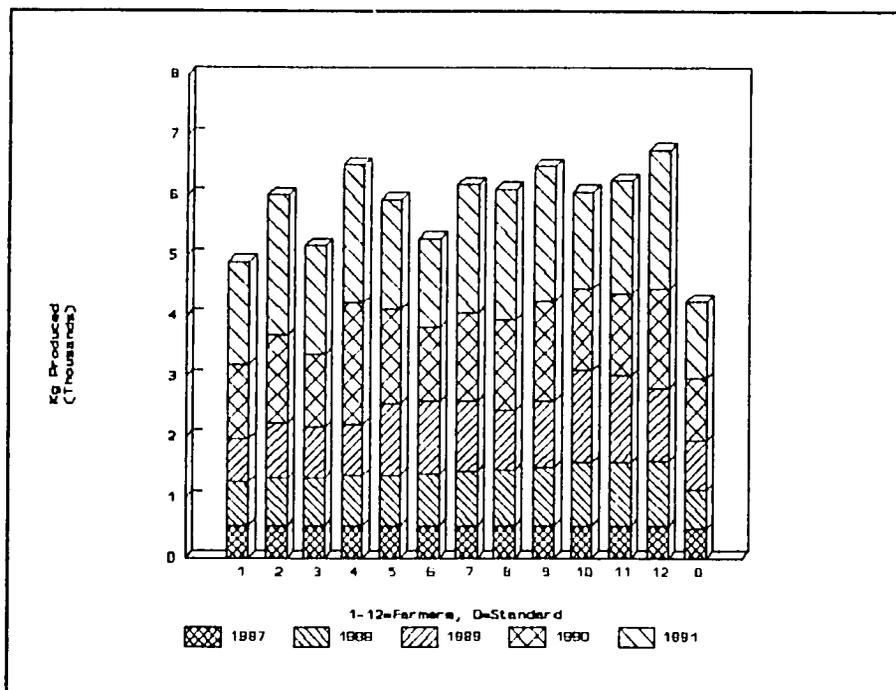
some do so more than others.

Graph 2 shows the individual farmers, with the last observation representing the standard. This graph clearly illustrates the widening gap between actual and standard production.

Graph 1: Average Actual and Standard Kg of Latex Produced per Year



Graph 2: Kg of Latex Produced per Farmer per Year and Standard



In order to evaluate the potential for diversification of income from sheep, marginal revenue (MR) between actual and standard was calculated and income from sheep was estimated summarized in Table 1.

Table 1: Marginal Revenue of Production and Income from Sheep

Year	Kg produced/year		%	MR	Y sheep
	actual	standard	overtap		
1987	542	495	9.49	70500	
1988	896	639	40.22	385500	
1989	1093	819	33.46	411000	
1990	1472	1026	43.47	669000	
1991	1968	1269	55.08	1048500	
1992	2399	1548	55.00*	1277100	240000
1993	2734	1764	55.00*	1455300	360000
1994					480000

*assumed

These calculations make clear that diversifying income with sheep alone is not sufficient to compensate these farmers' income which, in 1991 was over Rp. 1,000,000 more than standard. By 1994, when average flock size per farmer is expected to be 20 with 8 ewes, the yearly income from sheep sales is below Rp. 500,000. This kind of income could accommodate a rate of overlapping of 25 to 35 per cent but not the current 55 per cent.

(3) Carrying Capacity

Joint research between Puslitbun and SBPT evaluated the quantity and quality of forage available in the plantation owned by the Gunung Lonceng farmers. They estimate, that this plantation, which was planted in 1982, can carry 48 animals per two hectares. The measurements were taken during the wet season, which means the canopy is closer than during the dry season. An important implication of these findings is that more income might be generated from sheep than we previously assumed. We assumed a stable flock size of 20 per farmer.

(4) Barn Construction and Delivery of Sheep

Dr. Gatenby accompanied the October visit to discuss the barn construction with the farmers. She returned with Simangmunsong, the extension person from PTP III who was trained at SBPT for the following 4 weeks under the guidance of Dr. Gatenby and Jeplin, the CRSP extension person.

In November the sheep were delivered and with the help of Pak Simon and Pak Sugung, nutrition at SBPT, 1200 Gliricidia sticks were planted, many in erosion prone zones. Each farmer also

received a mineral block.

Dr. Gatenby returned with a team in December and reported that some sheep did not look well. Time was spent to discuss proper nutrition and general care of sheep.

During the January visit, body condition scores and weights were recorded and an improvement over December was found with an average body condition score of 3.24. The sheep looked healthy and clean and were given rice bran as supplements. By January, 14 lambs were born.

(5) Fecal Parasite Egg Counts

During the January visit we were asked by PTP III Administration to extend some technical assistance to one of their tapper villages, called Afdeling I, who had received sheep through a PTP III project in 1988. A visit there revealed severe inbreeding, animals which looked emaciated and barns which were inadequate. We agreed to upgrade the flocks by lending rams from Gunung Lonceng, but in general our involvement shall remain minimal with the exception of extension personnel.

During the February visit, we collected and analyzed fecal samples for intestinal parasites, both in Afdeling I and Gunung Lonceng with 63 observations each. This data was used in Working Paper No. 130, which investigates the economic efficacy of anthelmintic treatment.

A preliminary analysis of returns to health care investment in sheep showed large benefits for parasite control. In terms of ewe productivity a decline in lamb mortality rates and an increase in kg of lambs weaned can increase total revenue over the lifetime of a ewe by as much as Rp. 42,000 under village conditions which is an increase of 29 percent. Given that parasite treatment costs as little as Rp. 4,200 for the ewe's lifetime, this seems a good investment.

In terms of the value of a total flock, parasite treatment showed satisfactory returns to investment. The value of an animal increases by 12 % even assuming maximum cost of treatment.

Such strong results suggest that making parasite treatment available to farmers on a non-subsidized, free market basis, is viable. The fast improvements in animal condition from just one treatment suggests, that farmers are likely to be willing to invest in parasite control given good information on the problem.

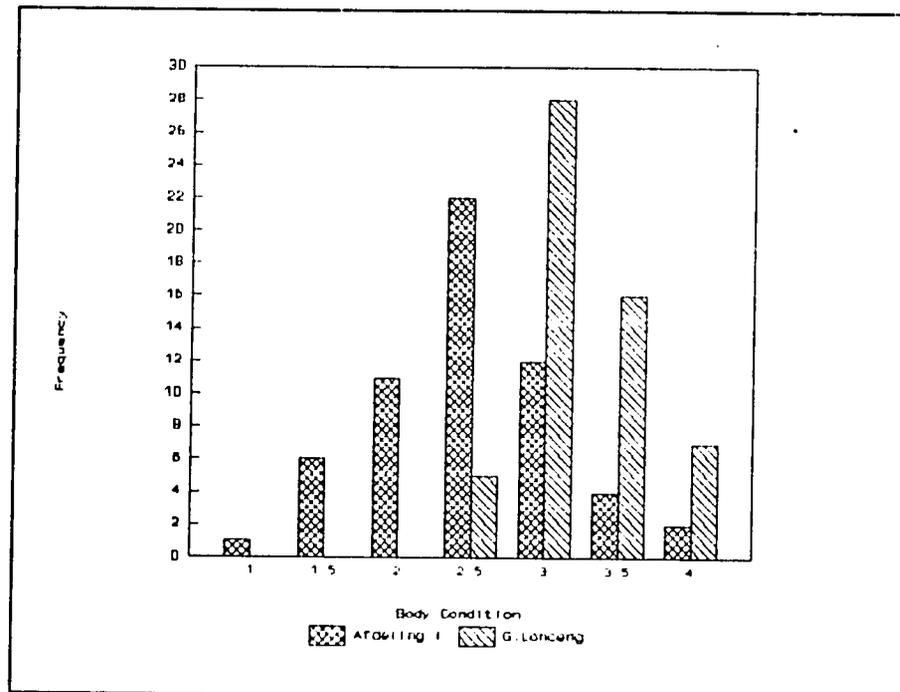
(6) Importance of Extension

Extension work provides the link between research results and the farmer and this link cannot be stressed enough. The benefits from

good communication between research, extension and farmers are evident in the difference of sheep performance between Gunung Lonceng and Afdeling I.

A comparison of body condition scores illustrated in Graph 4 reveals, that technical assistance greatly improves management skills and the performance of a flock. An overall better body condition score implies better ewe productivity and a higher value of the total flock

Graph 4: Frequency of Body Condition in Afdeling I and G.Lonceng



In the Mambang Muda outreach project great care has been taken to differentiate between technical assistance that conveys information about research results which are subject to market forces and those that are not. For instance, anthelmintics are bought by the farmers at free market prices. The extension part conveys the information about the importance of this, where it is available and how it should be used. The same holds true for mineral blocks and supplements.

To further strengthen the link between research and extension, regular visits with the regional DINAS Peternakan in Rantau Parapat have occurred every month. This effort has produced some favorable results. In one instance we were able to obtain 3 doses of Rintal free of charge. Additionally, DINAS Peternakan in Rantau

Parapat is learning to cater to the needs of extension to sheep.

SUGGESTED WORKPLAN UNTIL SEPTEMBER 1992

The monthly visits by the SR-CRSP extension person should continue. He should supervise the extension person employed by PTP III. Further training for PTP III sheep extension personnel is recommended, especially if the project in Membang Muda expands. Additionally, contact with DINAS Peternakan in Rantau Parapat must continue.

(1) Nutrition and Forage

At present, the G. Lonceng farmers are willing to provide rice bran as supplements. However, the impression during the February visit was that rice bran is fed ad lib and probably too much is offered to make economic sense.

Forage availability must be properly evaluated to give recommendations of flock growth performance. The possibility of introducing new forage species should be considered. Research with respect to the current practice of weed control in the plantation should reveal the economics of biological weed control.

(2) Breeding

Several different rams are in Gunung Lonceng. H1, Garut, Fat-tail, Thin-tail and Local Sumatra. Performance data is collected which will have to be analyzed.

(3) Health Aspects

Parasite control is perhaps the most important aspect in health management of sheep. Currently the Gunung Lonceng farmers are willing to buy anthelmintic and grazing management has been discussed with the farmers to further control of parasites. A fecal egg count in 6 months might help to establish if this system works.

The Afdeling I sheep were given Rintal in February free of charge and the farmers were told about grazing management. They were also told that in the future they will have to pay for Rintal. Periodic checks by SR-CRSP extension should provide incentive to PTP III extension to provide technical assistance to Afdeling I. A survey in 6 months might help to establish if this system works.

(4) Socioeconomic

A large commercial sheep farm is reported to exist in Rantau Parapat. contact and strong ties should be developed with this

agribusiness enterprise.

Using Working Paper 129, a fattening scheme for small farmers should be worked out which should help the nutrition section to make precise recommendations to farmers. These results should be intensely discussed with the farmers.

A survey in July or August should reveal the general progress of these farmers. This must include the issue of overtapping.

CONCLUSION

The general high momentum of the project can be maintained through the SR-CRSP extension person who proved to be excellent.

With respect to research, there now exists an opportunity to test forage species on-farm and this development could lead to important technology recommendations. These trials can also be seen as forerunners to commercial forage planting which might make commercial sheep farms under rubber viable. At present they are not.

An excellent relationship with the director of PTP III in Membang Muda exists and the cooperation to perform our work could not be better. This greatly contributes to the success of the project.

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