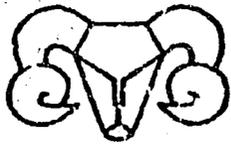
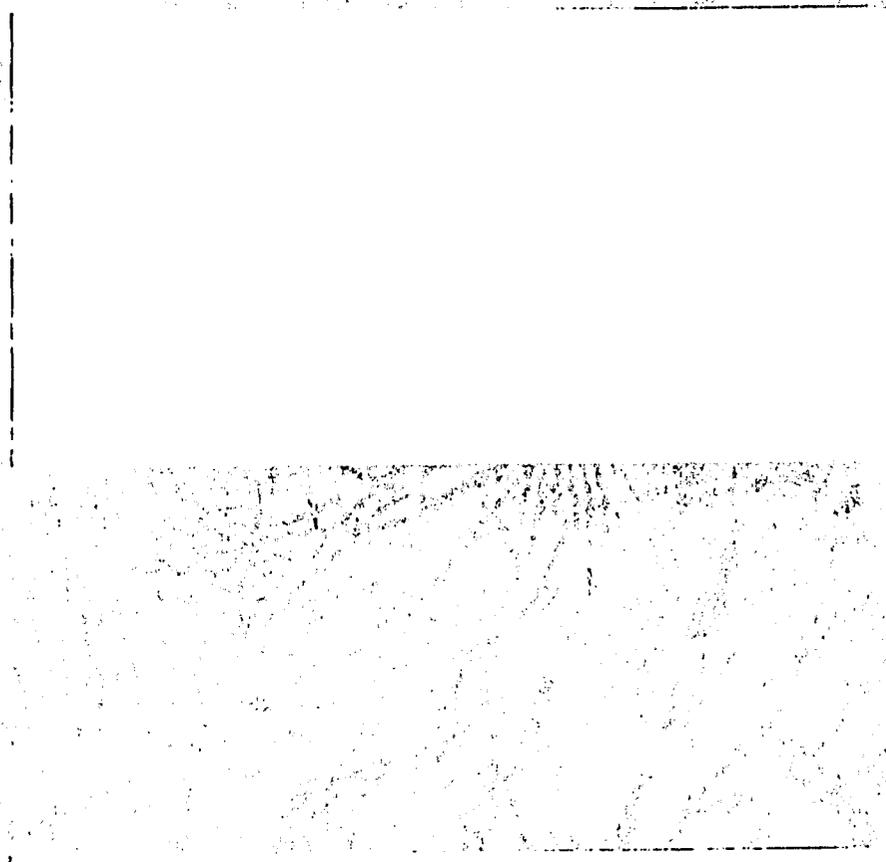
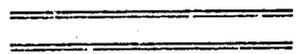


PN ABS-569

902/4



Small Ruminant - CRSP



SUB-BALAI PENELITIAN TERNAK, SUNGAI PUTIH
BALAI PENELITIAN TERNAK
PUSAT PENELITIAN DAN PENGEMBANGAN PETERNAKAN

Level of Adoption of ORP Promoted
Technologies by Non-ORP Farmers

Elianor Sembiring, Setel Karokaro
and Agus Muljadi N.

Working Paper No. 157
May 1994

Winrock International, Morrilton, AK, USA

1

LEVEL OF ADOPTION OF ORP PROMOTED TECHNOLOGIES
BY NON-ORP FARMERS

Elianor Sembiring, Setel Karokaro and Agus Muljadi N.

ABSTRACT

The Research Institute for Animal Production in Sei Putih in collaboration with SR-CRSP has conducted development research project (ORP) on sheep through sharing-out animals to farmers since 1988. The results show that ORP farmers have adopted introduced technologies. However, socioeconomic aspects and impacts of the technologies to the surrounding farmers (non-ORP) need to be identified. This research was carried out by survey of 41 Non-ORP farmers in 4 villages of Deli Serdang and 2 villages of Labuhan Batu, North Sumatra in order to determine whether farmers follow ORP promoted technologies: breeding practices, feeding concentrate ration, good design of sheep barn, and using anthelmintic. The results show that the best way to transfer new sheep raising technology to Non-ORP farmers is "learning by doing". The potential of the adoption of introduced technologies by Non-ORP farmers looks promising. Level of adoption of ORP technologies by Non-ORP farmers in Deli Serdang is higher than those farmers of Labuhan Batu. More detailed analysis is recommended to investigate levels of adoption of ORP promoted technologies and economic feasibility of adopting new technologies. An additional survey is needed to collect data on performance variables.

LEVEL ADOPSI TEKNOLOGI ORP OLEH PETERNAK DOMBA NON-ORP

ABSTRAK

Sub Balai Penelitian Ternak Sungai Putih bekerjasama dengan SR-CRSP telah melakukan penelitian "on farm" (ORP) sejak tahun 1988 dengan menggaduhkan ternak domba secara bergulir dan introduksi teknologi breeding, pemberian pakan konsentrat, kandang dan obat cacing. Ternyata teknologi ini banyak diadopsi petani. Penelitian dilakukan untuk mengetahui bagaimana dampak teknologi tersebut terhadap petani yang tidak mengikuti ORP. Dilakukan survey terhadap 41 responden Non-ORP di 4 desa di Kabupaten Deli Serdang dan 2 desa di Kabupaten Labuhan Batu, Sumatera Utara. Hasil penelitian menunjukkan bahwa "learning by doing" merupakan cara terbaik dalam penyampaian teknologi, adopsi teknologi oleh petani Non-ORP cukup potensial, petani Deli Serdang menunjukkan adopsi yang lebih baik dari petani Labuhan Batu. Penelitian lanjutan dengan analisis ekonometrik sangat dianjurkan terutama kaitannya antara adopsi teknologi dengan kinerja biologis ternak domba serta manfaat ekonomisnya.

**LEVEL OF ADOPTION OF ORP PROMOTED TECHNOLOGY
BY NON-ORP FARMERS**

Elianor Sembiring*, Setel Karokaro* and Agus Muljadi N.**

INTRODUCTION

The Northern Growth Triangle Trade Agreement provides the North Sumatera provincial government an opportunity to increase small ruminant exports to Malaysia, Thailand, and other countries and therefore, increase areas income. However, farmers face many problems in increasing small ruminant production. Limited capital, skill, knowledge, and access to information contribute to low levels of adoption of new technologies.

Farmers need time to adopt technology. The degree of success of a new technology depends on how technology is transferred, the method of transfer and the recipient of the technology. Thahar et al (1992) pointed out that the best way to transfer technology of livestock farming to traditional farmers was "learning by doing". Farmers are usually willing to adopt the new technology if they see it applied successfully by other farmers. On the contrary, if the technology is complicated, difficult to be applied, and costly, its adoption will almost impossible. Therefore, the key to the success of a new technology is to teach a few selected farmers the application of the new technology. As other farmers see the benefits from the experimenting farmers, they too can be assured of the advantage of the new technology. In addition, Ludgate et al (1990) said that linkage between research and extension should be strengthened. Both parties should have same perception in terms of what, when, why, and how the technology should be transferred to the end users.

The Research Station for Animal Production in Sei Putih (SBPT) in collaboration with SR-CRSP has conducted development research project (ORP) on sheep through sharing-out animals with revolving fund system, to farmers since 1988. The results show that ORP farmers have adopted introduced technologies as indicated by increasing number of sheep owned by farmers as well as the number of farmers participating the project. However, socioeconomic aspects and impacts of the new technology on the surrounding farmers (non-ORP) need to be identified.

* Agricultural Economists, The Research Station for
Animal Production, Sei Putih

** Agricultural Economist, SR-CRSP/Central Research Institute
for Animal Science, Bogor

METHODOLOGY

This study used a survey to interview 41 respondents chosen randomly among Non-ORP farmers. Research locations were 4 villages in Deli Serdang and 2 villages in Labuhan Batu, North Sumatra. Distribution of farmers and number of respondents by village is presented in Table 1.

Table 1. Number of ORP farmers and Non-ORP farmers (respondents)

Name of Village	District	ORP Farmers	Non-ORP (respondent)
Pulau Gambar	Deli Serdang	6	8
Pulau Tagor	Deli Serdang	6	4
Jaharun A	Deli Serdang	3	4
Galang Suka	Deli Serdang	6	8
KNPI	Labuhan Batu	10	7
Membang Muda	Labuhan Batu	3	9
Total		34	41

Technologies introduced consist of breeding practices, feeding concentrate ration, animal housing, and using anthelmintic.

Data were analyzed and presented in tabular form.

RESULTS AND DISCUSSION

Sources of Information

Farmers receive information on livestock farming from several sources (Table 2). The neighbors of farmers in the same village play an important role in transferring information to respondents in Deli Serdang and Labuhan Batu accounting for 62 % and 53 %, respectively. Extension workers and field staff account for another 18 and 20 % for these locations. It was interesting, that Non-ORP farmers in both location have their own ideas to apply technology, 12 % in Deli Serdang, and 10 % in Labuhan Batu.

Table 2 also shows that only 8 % and 10 % of farmers in Deli Serdang and Labuhan Batu, respectively, receive information from other sources such as television, newspapers, and magazines. It indicates that these sources are not popular among farmers. They are too costly or provide too little useful information for farmers.

Table 2. Sources of Information by Location

Sources of Information	Location (% respondent)	
	Deli Serdang (n=25)	Labuhan Batu (n=16)
Farmers' neighbor:		
a. in the same village	53	48
b. out of the village	9	12
Field Staff	18	20
Own idea	12	10
Others*)	8	10
Total	100	100

*including television, newspaper, magazine

Obviously, communication among farmers is the most effective way of transferring information. Learning by doing seems to be more powerful for flows of information from farmers to farmers rather than existing from formal information institutions. Extension workers however, perform a very important task of introducing new technology to farmers who are willing to experiment the new technology.

Adoption of Breeding Practices

Respondents were asked about breeding practices, such as inbreeding and ram rotation to determine their knowledge of breeding management.

Table 2. Farmers Perception on Breeding Practices by Location

Knowledge of Respondent	Location (% respondents)	
	Deli Serdang (n=25)	Labuhan Batu (n=16)
Does not know inbreeding	36	57
Know inbreeding but does not practice it	24	26
Practice ram rotation	40	27
Total	100	100

Table 2 shows that the majority of Non-ORP farmers in Labuhan Batu (57%) and 36 % of farmers in Deli Serdang do not know the effect of inbreeding on the productivity of sheep. Some farmers know the negative impact of inbreeding (24% in Deli Serdang, and 26 % in Labuhan Batu, respectively), but they do not apply the practice of ram rotation on their farm. They feel that loaning young rams to others for breeding is a loss. Ram rotation has been practiced by 40 % and 27 % farmers of Deli Serdang and Labuhan Batu, respectively.

Farmers in Deli Serdang are much more knowledgeable than farmers in Labuhan Batu. This is not surprising since it locates very close to SBPT, the numbers of ORP farmers from Deli Serdang are higher, and receive much more intensive guidance than farmers in Labuhan Batu. In other words, the opportunity of learning by doing is greater in Deli Serdang than Labuhan Batu.

Additional Feeding

The majority of farmers in both areas give additional feedings to their sheep (Table 4).

Table 4. Number of Farmers Adopting Additional Feeding Practices

Feeding practices (additional feeding)	Location (% respondents)	
	Deli Serdang (n=25)	Labuhan Batu (n=16)
Rice bran/salt	37	32
Legumes*	30	25
No additional feeding	33	43
Total	100	100

* Gliricidia and Leucaena

Table 4 shows that most of farmers in both locations give additional feeding materials, either rice bran, salt or legumes. Farmers know that additional feeding 3 to 5 times a week can reduce mortality, particularly during lactation, and young animals gain more weight.

The number of farmers who do not give additional feeding to their sheep are 33 % and 43 % in Deli Serdang and Labuhan Batu, respectively. They believe that grazing sheep for about 4 hours a day is enough for sheep to be healthy.

Deli Serdang farmers have better feeding practices than the farmers of Labuhan Batu. This is not surprising because research

has been conducted in Deli Serdang for quite a long time. Farmers in this location have had more opportunity for "learning by doing" than farmers who live in Labuhan Batu.

Adoption of Animal Housing

Good designs of barns have been introduced to ORP farmers in the villages since 1988. There has been great transfer of introduced technology to Non-ORP farmers in the surrounding areas as shown in Table 5.

Most farmers in both areas have provided barns for their sheep; 95 % and 93 % of farmers in Deli Serdang and Labuhan Batu, respectively. In addition, 85 % and 73 % of farmers in Deli Serdang and Labuhan Batu use a good design of animal housing. The different adoption between two locations is probably affected by allocation of time in food crop activities where farmers in Labuhan Batu are consuming more time than those farmers of Deli Serdang. Therefore farmers in Labuhan Batu do not have enough time to build new barns.

Only 5 % farmers in Deli Serdang and 7 % in Labuhan Batu do not provide a barn for their sheep. They either cannot afford a barn or do not have time to construct one. However, they wish to build new and good design of sheep barns as recommended by the project.

Table 5. Level of Adoption of Animal Housing Technology

Items	Location (% respondents)	
	Deli Serdang (n=25)	Labuhan Batu (n=16)
Provide barn:		
- know good design	85	73
- do not know	10	20
Provide no barn	5	7
Total	100	100

Adoption of Anthelmintic

Table 6 shows that in both locations, most farmers have been given anthelmintic regularly (65 % and 63 % of farmers in Deli Serdang and Labuhan Batu, respectively). The farmers who occasionally gave anthelmintic to their animals, but not regularly, are 35 % and 30 % in Deli Serdang and Labuhan Batu, respectively. Only 10 % and 7 % of respondents in the locations, respectively, never gave anthelmintic to their sheep.

The level of adoption of using anthelmintic to kill worms in sheep is most likely affected by the launching of the animal health delivery network program of SBPT/SR-CRSP in 1992. This program draws more farmers to use anthelmintics. Misniwaty et al (1993) reported that 75 % of farmers in research locations regularly use anthelmintic for their animals. Farmers believe that using anthelmintic increases the growth rate of sheep, and the sheep look fatter, healthier and cleaner.

Table 6. Distribution of Farmers Using Anthelmintic by Location

Give anthelmintic	Location (% Respondents)	
	Deli Serdang (n=25)	Labuhan Batu (n=16)
Give regularly	65	63
Give but not regularly	35	30
Never give	10	17
Total	100	100

The reasons why farmers do not use anthelmintic regularly are: (1) it is difficult to get; (2) smaller packages are not available and they cannot afford the one-liter package; and (3) they remain skeptical about the effect of treatment.

CONCLUSIONS AND RECOMMENDATIONS

1. The best way to transfer new sheep raising technology to Non-ORP farmers is "learning by doing".
2. The potential of the adoption of introduced technologies such as breeding practices, additional feeding, better design of sheep barn, and using anthelmintic by Non-ORP farmers looks promising.
3. The level of adoption of ORP technologies by Non-ORP farmers in Deli Serdang is higher than the farmers in Labuhan Batu. The shorter distance to SBPT/SR-CRSP significantly affects the higher level of adoption in Deli Serdang.
4. More detailed analysis using learning curve and econometric model, such as relating the adoption of technologies to gains in animal productivity (weight gain or mortality rate), is recommended to investigate the level of adoption of ORP promoted technologies and the economic feasibility of adopting new technologies. An additional survey is needed to collect data on performance variables.

REFERENCES

- Ludgate, P.T. and E. Sembiring. 1990. Effective Communication Encourages Integrated Production research: The Role of Research/Extension Linkages. Integrated Tree Cropping and Small Ruminant Production Systems. Proceedings of Workshop on Research Methodologies. Medan, North Sumatra, September 9-14, 1990.
- Misniwaty, A. and I.Kartamulia. 1993. Evaluation of Anthelmintic Distribution by the Animal Health Delivery Network in Galang and its Vicinity. Working Paper No. 147 SR-CRSP/SBPT Sei Putih, Medan.
- Thahar, A., T. Murtisari, E.Juarini, Ridwan and T. Chaniago. 1992. Profile of Sheep farmers and Biological Profile of Sheep Reared Traditionally at the Area with Rubber Plantation and Irrigated "Sawah". Proceeding Pengolahan dan Hasil-hasil Penelitian, September 1992. Balai Penelitian Ternak, Ciawi-Bogor.