

3. Department of Lands and Survey. Report for the year ended 31st March 1981, Wellington N.Z. 1982.
4. Northfield. Report of the Inquiry into the acquisition and occupancy of agricultural land. Chairman Lord Northfield, HMSO Cmnd 7599, July 1979, London. 1979.
5. Pyne, Gould and Guinness Limited. Annual Report for 1981, Christchurch, N.Z. 1982.
6. Rural Banking and Finance Corporation of New Zealand. Report for the year ending 31st March 1975, Wellington, N.Z. 1975.
7. Rural Banking and Finance Corporation of New Zealand. Report for the year ended 31st March 1980, Wellington, N.Z. 1980.
8. Russell, D. Financing that first farm, *Dairy Exporter*, October 1982, N.Z. 1982.
9. Stratton, R. *Joint ventures in farming*. Sponsored by the Country Landowners Association, London. 1981.
10. Woodford, K. B. An evaluation of Farm Ownership Savings Schemes, Department of Farm Management and Rural Valuation, Lincoln College, N.Z. 1981.

Livestock Component Farming Systems Research in Java—The Case for Work with Women

R. J. Petheram* & Edi Basuno

Farming Systems Programme,
Institute for Livestock Research,
Box 123, Bogor, Indonesia

(Received: 18 February, 1985)

SUMMARY

Close farmer contact is a vital element in livestock component farming systems research in Java. Slow progress so far in livestock development may be partly associated with practical difficulties in achieving the degree of farmer contact needed in livestock research, while working mainly with male stock-rearers. Most men rearers in Java spend most daylight hours working away from home and their stock, and feel too busy to become involved in trials of new livestock technology.

The advantages of involving women in village livestock research include ease of communication during daylight working hours, interest amongst women (and some training) in nutrition, health and reproduction, and the ability of women to manage animals in farm trials requiring constant supervision. In some villages women are already involved in group activities, which can form a ready basis for the communication of ideas on livestock improvement.

The potential for improving productivity of Javanese livestock has been demonstrated under research station conditions, yet little improvement in village livestock production has been achieved. One approach to increasing progress in livestock development could be to promote research which involves women rearers or the wives of rearers. This may require special efforts to encourage women scientists to work in villages.

* Present address: c/o. C.S.I.R.O., Pastoral Research Station, PB Armidale, NSW 2350, Australia.

INTRODUCTION

Traditionally, agricultural research has been discipline—or commodity—oriented, while farming systems research attempts to take a whole-farm approach.⁵ Component farming systems research emphasises commodities (e.g. a crop or livestock species) but within a systems context.^{6,15}

At the centre for Livestock Research (Bogor, Indonesia), farming systems research aims to improve the welfare of farming families, through increasing their livestock production. In addition, improved methods in livestock rearing should raise the efficiency of use of feed and other resources, just as improved rice production has increased efficiency of soil and water use in numerous villages in Java.

Farming systems research (FSR) starts with a careful selection of sites, representative of important land or socio-economic units.⁹ Description of these sites is the next phase, followed by the identification of constraints and then the testing of ideas for alleviating constraints.^{11,17} A procedure for 'livestock component' FSR is summarised in Table 1.

In essence, livestock component FSR attempts to work with farmers to define their problems, and then to seek possible solutions and to test these on farmers' animals. By definition, the process cannot work without close contact between scientists and farmers.¹³ This farmer contact starts during initial survey and interviews, which provide information on the

TABLE 1
A Procedure for 'Livestock Component' FSR

1. SELECT REPRESENTATIVE SITES
2. STUDY EXISTING FARMING SYSTEMS
 - A. Rapid appraisal surveys
 - B. Monitor productivity and management
 - C. Studies focussed on constraints
3. ESTABLISH CLOSE FARMER CONTACT
4. IDENTIFY FARMER PROBLEMS/CONSTRAINTS
 - Prepare site agro-economic profile
5. SEEK ADVICE/IDEAS FROM SPECIALISTS
6. TEST IDEAS FOR OVERCOMING MAIN CONSTRAINTS
 - A. On farmers' animals
 - B. On research stations
7. MODIFY IDEAS/NEW TECHNOLOGY ON FARMS
8. TRANSFER TESTED TECHNOLOGY TO EXTENSION AGENCIES

TABLE 2
Importance of Close Farmer Contact in Research on Livestock Farming Systems in Java

<i>Characteristics of stock enterprise</i>	<i>Repercussions for research</i>	<i>Possible remedies</i>
Livestock are considered to be of secondary importance to crops by most farmers.	Generating farmer interest in livestock improvement requires special effort, particularly where farmers see major cropping problems as their priorities.	Provide strong incentives for involvement, in terms of obvious farmer benefits and enjoyment.
Livestock represent a valuable family investment in capital, time and experience, often involving years of personal tending by family members.	Stock farmers are reluctant to let their animals be handled and used by strangers for strange new purposes, especially where unknown risks are involved.	Establish credibility amongst farmers. Form farmer groups as means of communication and building mutual trust.
A large proportion of stock rearers do not own the stock they rear (up to 70 per cent of rearers in some areas).	Stock sharers may not have the right to authorise use of stock in trials or in monitoring production, or even the collection of blood and faeces.	Start with more willing groups but try to involve others too. Some groups may take years to contact.
A main reason for keeping livestock is to provide security for the family, through sales in times of financial difficulty.	Many rearers regard stock as a part-time enterprise, without potential to provide substantial family income.	Clearly demonstrate potential for higher production and income, before seeking extensive farmer involvement.
The real value of stock to families which have reared them for many years is often difficult to determine (compared to valuation of crops).	Stock farmers may be reluctant to become involved in anything which they feel may involve risk of loss of family assets with uncertain levels of compensation.	Offer farmers firm and generous terms for compensation for loss of animals or production through trials.
Veterinary help, credit facilities, farmer training and other services for livestock farming are not available in most villages.	Livestock enterprises appear less attractive and more risky than crops in absence of credit, health, marketing and other livestock services.	Provide back-up services in animal health, supply of materials, and even credit and markets if appropriate.

(continued)

TABLE 2—*contd.*

<i>Characteristics of stock enterprise</i>	<i>Repercussions for research</i>	<i>Possible remedies</i>
Running of livestock trials may depend on daily (even 3 times daily) management operations being properly carried out with reasonable consistency between farms, often for many months.	Farmer understanding of trials and his commitment to responsibilities is often more important than in the case of crop farm trials.	Use good extension methods to explain theory, practice and likely benefits of new ideas for trial. Women may be more receptive than men to trials on stock.
Many livestock rearers own little or no land. The family head is very busy and entirely committed to labouring the whole day to support his family.	Although he rears livestock the family head feels he has no time to attend meetings or to commit to the extra time involved in farm trials.	Build night meeting places. Work with stock rearers' wives. Women may have more time at home with stock, or to commit to work with animals and trials.

types of farmers (target groups) to be included later in the research process.¹ During the monitoring stage, farmer contact is strengthened, with possible formation of farmer groups, and later the screening of ideas by farmers for trials on their animals.

The special needs for close farmer contact in livestock component FSR arise from a number of socio-economic characteristics of livestock enterprises in Java.⁸ Some of these are listed in Table 2, with possible repercussions for research and suggested measures to improve farmer contact.

LIMITED SUCCESS OF LIVESTOCK COMPONENT FSR TO DATE

Analysis of past failures in farm trials with livestock in Java confirms the need for establishing close contact with farmers early in the research process. One trial with cattle rearers failed to demonstrate increased growth rates on simple feed supplements—probably because farmers in the control group fed their animals extra rations of rice-bran, so as not to be outdone by others. Farmer motivation and commitment to the trial were minimal.¹⁰ Another trial, in a village which FSR workers had never

worked in previously, nearly failed because farmers demanded money on several occasions during the trial. In addition, variation between farmers was much higher than planned, because differences in type of stock-ownership were not known when the trial was designed. Both these problems could only have been avoided by longer and closer involvement with farmers prior to the trial.⁷

Various 'extension' techniques have been adopted in attempting to establish closer farmer co-operation in livestock FSR. The most successful of these has been the formation of 'farmer groups'. These groups meet to discuss problems and results of production monitoring, visit research stations and other villages, and members share scales and tools for building livestock pens.

Although farmer groups have provided a valuable link between farmers and scientists, so far progress in testing ideas for increasing livestock production has been slow, when the high potential for livestock improvement is considered.² A major reason for this slow progress appears to be that men stock-rearers are generally so busy earning a living (on other work) that they cannot join groups or attend meetings. Many men who do join groups are away from their stock too much of the time to become effectively involved in trials of new technology. Landless rearers tend to be the busiest, and the least able to participate in group activities.¹⁶ The only possible time for meeting is late in the evenings, when it is often raining and almost dark. The groups are also a biased sample of rearers because few 'sharers' of stock join them. Thus, the poorest rearers, i.e. the landless and the sharers, tend to be least well represented in farmer groups, although they are in the majority in many villages.

THE CASE FOR WOMEN IN LIVESTOCK COMPONENT FSR

So far, livestock component FSR has involved mainly men, and farmer group members have all been male family-heads. A few widows have taken part in monitoring and farm trials, but tradition and their family responsibilities in the late evenings have prevented female membership of farmer groups. In addition, most FSR programme staff are men, which has made any work with women's groups difficult, or impossible in some areas. Yet the potential advantages of involving women in livestock FSR (especially with poultry, rabbits and small ruminants) are numerous.

TABLE 3
Comparison of Men and Women as Participants in Livestock FSR

<i>Men</i>	<i>Women</i>
Most are extremely busy during day, working to support their family.	Women also busy but mostly around house caring for children, cleaning and cooking for family.
Not available for contact or meetings in mornings or early afternoons.	Usually keen on contact between household chores in mornings or afternoons. Short meetings are welcomed except early and late in day.
Not available for work with stock except very early mornings or late evenings.	Available for supervising stock work or treatments at most times of day.
Adult rearers have little formal education or training. Have little knowledge of health and nutrition or reproduction.	Have virtually no formal education, but in many areas women receive training in health, nutrition and reproductive physiology, which is very relevant to training needs in livestock improvement.
Have little experience of group participation because of lack of time and opportunity.	Many have experience of group activities, and belong to women's groups such as, 'Family Welfare Education', 'Women Farmer Groups'.
Available to take on off-farm opportunities for work to increase family income. Men often take temporary labouring jobs which keep them away from home for long periods.	Tied to house and child minding, so almost always available to manage small stock or farm trials. Sometimes women take temporary work, like harvesting rice, if other members can look after house.

Table 3 lists some of the advantages which women may have over men in respect of co-operation in the FSR process, in villages in West Java. In short, the potential for developing the high level of farmer contact needed in livestock component FSR seems much greater with women than is the case with men rearers.

Studies of the current role of family members in rearing small ruminants show wide variation between villages and households, but that wives generally play a major (if secondary) role in feeding, herding and cleaning small ruminants.^{12,14} They are even more active in tending household chickens and ducks, but seldom involved with large ruminants.² Women play a minor role in making decisions about stock sales and purchases, yet are often responsible for security and day-to-day

management, because of their presence around the house while husbands are away working.

POSSIBLE DIFFICULTIES OF INVOLVING WOMEN IN COMPONENT FSR

Despite the obvious advantages of involving women in efforts to find and test methods of improving livestock, this opportunity remains almost unexplored so far. The main reasons for its neglect are the relative newness of FSR activities with livestock, the paucity of women scientists working in FSR programmes and difficulties associated with male dominance in village society. An emphasis in research on the larger livestock species (with which women are less closely associated) may also have contributed to the omission of women from research programmes.

Many women in Java play a large part in rearing family livestock. Indoubtedly their influence in improving family welfare through livestock could be much higher, with appropriate training and back-up services. However, in FSR the immediate aim of involving women would be to facilitate more rapid testing of new technology than has been possible with only male rearers. An obstacle in some villages may be to obtain the approval of male leaders and family heads to begin work with women and women's groups on livestock. If tackled carefully, though, this may not be a serious problem, as many women are already involved in groups. One approach would be to channel research through such existing women's groups.

Although over 30 percent of scientists at the National Institute for Livestock Research are female, few women are currently involved in work with farmers. If the potential of women rearers as co-operators in livestock FSR is to be utilized, women scientists have to be encouraged to undertake more village research. This could be achieved through a re-allocation of women to FSR programmes, appropriate training, incentives for conducting on-farm research and recognition of on-farm results for publication.

THE OPPORTUNITY OFFERED

The high potential productivity of Indonesian livestock has been well established under research station conditions. Growth and reproductive

rates, two to three times higher than those commonly found in villages, have been demonstrated in ruminants.³ Studies on village chickens have led to suggestions for simple modifications to new management which could at least double production and income.⁴

What remains to be done is to test the ideas conceived by specialists on farmers' animals. However, before any major progress can be expected in the field of testing, our means of gaining farmer co-operation have to be vastly improved. The increased involvement of women rearers and scientists in livestock component FSR seems to offer great opportunity for achieving the degree of close farmer contact needed for livestock development in Java.

REFERENCES

1. Banta, G. R. *Asian cropping systems research: micro economic procedures. No. 197c.* International Development Research Centre. Ottawa, 1982.
2. Basuno, E. Small scale animal husbandry at the village level. A case study in Desa Pandansari, Kecamatan Ciawi, Bogor, West Java, M.Phil. Thesis, School of Australian Environmental Studies, Griffith University, Brisbane. 1984.
3. Chaniago, T. D., Obst, J. M., Parakasi, A. and Winogroho, M. The growth of Indonesian sheep under village and 'improved management' systems. *Ilmu dan Peternakan. 1* (1984) 231-7. Bogor, Indonesia.
4. Cresswell, D. C. and Gunnawan, A. Indigenous chickens in Indonesia: production characteristics in an improved environment. *Report No. 2.* Research Institute for Animal Production. Bogor, Indonesia, 1982.
5. Dillon, J. L. The economics of systems research. *Agricultural Systems. 1* (1976) 5-21.
6. Dillon, J. L. and Anderson, J. R. Concepts and practice of farming systems research. In: Consultation on agricultural research in Eastern Africa. (Mertin, J. V. (Ed.)), Canberra, ACIAR.
7. Juarini, E., Prasetyo, H., Petheram, R. J. and Liem, C. Growth response to salt and sulphur in village sheep. Research Report, Project for Animal Research and Development, Ciawi, Indonesia. 47-9, 1983.
8. Knipscheer, H. and Suradisastra, K. Regular research field hearings (RRFH): A discussion of the contribution of farmers' opinions to farming systems research. *CRSP Working Paper No. 38.* Balai Penelitian Ternak, Bogor, Indonesia, 1984.
9. Petheram, R. J. and Thahar, A. A land classification of Java for livestock research and development. *Indonesian Agricultural Research and Development Journal. 60* (1985) In press.
10. Prawirodigdo, S., Prasetyo, H. and Petheram, R. J. Farm trials with

- Madura cattle: Urea supplementation. Research Report, Project for Animal Research and Development. Ciawi, Indonesia. 64-5, 1984.
11. Simmonds, A. W. The state of the art of farming systems research. *Proceedings, World Bank Agricultural Symposium, Washington, 1984.*
 12. Suradisastra, K. Family labour: its allocation and roles in sheep farming. The case of village Sukawargi, Garut (West Java). *Ilmu dan Peternakan. 1* (1984) Bogor, Indonesia. 239-42.
 13. Tripp, R. Data collection, site selection and farmer participation in on-farm experimentation. Economics Programme Paper, CIMMYT, Mexico. 1982.
 14. Wahyuni, S. and Juarini, E. Womens' role in small ruminant production in Cirebon, West Java. *Ilmu dan Peternakan. 1* (1984) 247-50. Bogor, Indonesia.
 15. Waugh, R. K. Component research in the farming systems approach. *Farming Systems Support Project Newsletter. 1* (3) (1983), p. 3. University of Florida, Gainesville.
 16. White, B. Population, employment and involution in rural Java. *Proceedings of Conference on Indonesian Agricultural Development. Madison, Wisconsin. July, 1974.*
 17. Zandstra, H. G. and King, D. J. Technology changes in livestock development in Asia. In: *Livestock in Asia. Issues and Policies.* (Fine, J. C. and Lattimore, R. G. (Eds.)). Ottawa. International Development Research Centre, 1982.