A strategy of assistance (guidance) for farmers to manage Bali cattle (Bos javanicus) improvement technology in South Sulawesi, Indonesia

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Abstract. The Australian Centre for International Agricultural Research (ACIAR) to finance research projects in Eastern Indonesia, especially in South Sulawesi through the project number. SMAR/2006/061 that have been conducted for the renewal of Bali cattle management technology. Bali cattle (Bos javanicus) are a vital component of Indonesia’s crop-livestock farming systems. This paper describes the method of participatory approaches to management of Bali cattle through the renewal component approach to production technology, namely: 1) Better use of existing forage/ feed sources, 2) Introduction and use of new forage, 3) Seasonal mating at the best time, 4) Early weaning and preferential feeding, 5) The calculation and the feed planning. Points 1 and 2 are important because often the main obstacles experienced by farmers. All of these components must interact with each other. Field tests conducted in farmers' land by 60 people scattered guided farmers in 12 villages in 3 districts in South Sulawesi is the regency of Bone, Barru and Gowa. Specific case studies carried out case by case basis experienced farmers in these three districts. The impact is being tested now and for the propagation in the system of plants and livestock farms in South Sulawesi.

Keywords: improving, management, Bali cattle, smallholders

1. Introduction

1.1. Background
Program conducted by the Australian Centre for International Agricultural Research (ACIAR) in Indonesia are concerned in terms of research and application of agricultural technology development aimed at increasing farmers’ income, especially the Eastern area of Indonesia. This concern has been reinforced through participation in the fund ACIAR AusAID Smallholder Agribusiness Development Initiative (SADI) for 10 years from the year 2006 which aims to achieve higher income households in rural farmers through increased productivity, access better markets and the value of activities outside farming. This activity is conducted in 4 provinces in the eastern region of Indonesia South Sulawesi, Southeast Sulawesi, West Nusa Tenggara and East Nusa Tenggara. ACIAR SADI role in the implementation of a sub component of the research program of Support for Market-Driven Adaptive Research (SMAR) which aims to improve access for farmers and Micro-Small-Medium Enterprises.
(SMEs) in terms of productivity and knowledge base of marketing agricultural products at the production level and higher quality. Research priorities during consultation for this is the SMAR in 4 provinces in late 2006 was given a high priority is to build a sustainable system of crop and livestock farming as the core of this program.

1.2. Basic Considerations

Increased demand in the Indonesian cattle for meat and live cattle to the present transmigration areas. Role of Bali cattle is dominant, especially in South Sulawesi as a producer of meat. The results of research/survey by [1] shows several important points are:

a) Bali cattle represent 90% of the total population of cattle in South Sulawesi.

b) Approximately 70-80% cows sold for slaughter, the rest to be maintained as seeds or cattle for fattening. There is also a cow that was sent to the inter-island as Kalimantan.

c) The total population of Bali cattle in South Sulawesi in 2005 is 628,000 head, and high population centers in Bone regency, Barru, Enrekang, Sidrap, Gowa, Sinjai and Bulukumba.

d) The rate of slaughter of cows increased lately, so the reliability of supplies have stabilized.

e) The possession of an average 2-3 cattle per family farmers, but there are some farmers who have a commercial business that can have up to 30 cattle.

f) The primary obstacle to cattle production is the supply of feed, especially in the dry season, the calving interval, health of livestock, availability of venture capital, marketing and maintenance workers.

From the above findings clearly the role of Bali cattle in crop and livestock farming in South Sulawesi. Types of Bali cattle is very familiar among farmers and proved resistant to extreme environmental conditions such as dry climate, the drought conditions were still able to bear children in good health. Animal Husbandry Department Program of South Sulawesi Province which target the achievement of cattle population of one million head in 2013. In the year 2007 population of 668,000 head in 2008 and the population to 704,303 head [2]. Application of improved technology package cattle feed will show the optimal results and good if the farmers not only as objects but as subjects of technology actors. Thus, researchers and farmers together to do research on farmers' land and direct benefits felt by the farmers. This has been done previously by [3].

1.3. Purpose and Output

The goal is to develop a strategy of assistance (guidance) for farmers to manage Bali cattle improvement technology in South Sulawesi. The output is a package of assistance strategies Bali cattle management innovation.

2. Methodology

2.1. Structure and Roles

Implementation of the program will be overseen by a Project Steering Committee (PSC) consisting of officials and the Office of Technical Agency and the personal from the project leader and project coordinator Indonesia and Australia. Project Management Team (PMT) consists of project leader and project coordinator of Indonesia and Australia which will directly manage project activities. Project is also supported by researchers and extension workers to form a multi-disciplinary technical teams from both sides Indonesia and Australia, called Project Specialist Team (PST). Then there On the Ground Team (OGT), each of which is formed separately for the work and responsibility in each district 3. The OGT is a personal effort Strata 1 young graduates who were recruited through newspaper notices and then media were selected oral and written strictly. Varied backgrounds and disciplines are trained in a training before being placed in the village with the farmers.

2.2. Preparation

a) The recruitment of younger staff OGT Strata 1 graduates from different disciplines but mainly agriculture and husbandry. In each district OGT placed 1 team consists of 4 people. The number of
districts as much as 3, so that the OGT was formed 3 teams for each district. The total number of personnel are recruited 12 people.

b) Training for the OGT is a technical training as a preparation for the farm team for the implementation of activities in the field, especially in interacting with villagers (farmers).

c) Build relationships between OGT becomes an inseparable part to establish relationships between team members because of the varied disciplines of science, agriculture, livestock, agribusiness, and there are socio-economic all of which need to interact in solving problems arising in the farmers.

d) Fix/clarify the methodology to be applied when necessary to revise the method, but does not alter the purpose and objectives to be achieved.

e) Identify 3 districts of each district 4 villages per district bringing the total village was built 12 villages.

2.3. Identification and Testing

a) Conducting basic surveys and research areas interviews with each farmer built.

b) Identify the target farmers randomly selected with certain criteria that is expected to represent the farmers in his village.

c) Testing to the farming land of several components that offer the technology as a technology choice.

d) Monitoring and Evaluation of each activity in the field by regularly visiting each location.

2.4. Dissemination

a) Through the media outreach conducted by the counselors at each of their meetings with farmers.

b) Through the media write good media such as newspapers, brochures, journals and electronic media.

c) Conduct training involving researchers, extension workers and farmers who simply packaged and interact with each other so that the impression is more relaxed but still the target.

3. Results and Discussion

The results of the preparation phase is recruiting OGT (On The Ground Team) has been carried out based on the written test data and results of interviews and tests which qualify as many as 13 people selected and placed in the respective regions coachee. Performed after determining the location or selection of survey villages in 3 district in South Sulawesi, aim to facilitate the gathering of information desired and the location of the election results: District in Barru: Mattirowalie village, Lompo Riaja village, Tompo village and Anabanua village. In Bone district: Bune village, Mattirowalie village, Tappale village and Laburaseng village. In Gowa district: Bontomanai village, Mangempang village, Pabbentengang village and Maccini Baji village.

OGT has conducted training among other things: 1) Basic training is a training facilitator who aims to provide insight to the OGT of the facilitator's self-image, duties and functions of ethics facilitators and facilitators. The training was also trained how to do OGT and also facilitating the development of training OGT in drafting work. The training is conducted as stock preparation for the OGT join community. 2) Training on livestock feed, nutrition and breeding is in order to increase knowledge about cattle management by OGT.

Training is conducted in the form of material space and practiced in the field. These activities make the participants better understand the feed livestock both theory and practice in the field. This training is more effective because of what is presented in the form of material and then practiced in the field so that they not only learn in theory, but also learn to recognize directly the conditions on the ground.

Activities farmers identification of prospective farmer will be built in 12 villages has been completed. Basic data (Benchmarking data) were collected from 12 villages in 3 districts, then in the analysis. Identification of farmers as many farmers built about 30 people, then the farmers selected 10 candidates who identified the next in an interview by the Specialist Team and the OGT, and the interview was given a score to determine the 5 people who selected two target farmers per village.

The number of farmers selected guided through the selection of Barru is 20 people, spread in 4 villages. The number of farmers selected built in Bone is a people scattered in 20 villages. The number of farmers selected built in Gowa were 20 people scattered in 4 villages.
Application of the technology package of integrated livestock management of cattle through the 5 approaches: 1) Better use of existing forage/ feed sources, 2) Introduction and use of new forage, 3) Seasonal mating at the best time, 4) Early weaning and preferential feeding, 5) The calculation and the feed planning. Components 1 and 2 more on the priorities to be applied as the main constraints experienced by farmers or cattle ranchers.

Component 1, 2 and 5 has been adopted by farmers all built, but the components 3 and 4 was partially due to the limitations of adopting a bull that is difficult to regulate mating and early weaning.

**Table 1.** Adoption of the technology package per component technologies cattle management

| Technology package | Component 1) Better use of existing forage / feed sources | Component 2) Introduction and use of new forage | Component 3) Seasonal mating at the best time | Component 4) Early weaning and preferential feeding | Component 5) The calculation and the feed planning |
|--------------------|--------------------------------------------------------|---------------------------------|---------------------------------|-------------------------------------------------|---------------------------------|
| Number of farmers built | Farmers who adopt | Number of farmers built | Farmers who adopt | Number of farmers built | Farmers who adopt | Number of farmers built | Farmers who adopt |
| BONE | 20 | 20 | 20 | 20 | 17 | 20 | 8 | 20 | 20 |
| BARRU | 20 | 20 | 20 | 20 | 6 | 20 | 3 | 20 | 20 |
| GOWA | 20 | 20 | 20 | 20 | 10 | 20 | 4 | 20 | 20 |

Of the five components of the applied approach are: 1) Better feed utilization with an existing, 2) Use of new forage plants, 3) Control mating time, 4) Early weaning followed by improvement of feed, and 5) Planning the feed so it appears that the components 1, 2 and 5 has been adopted by all farmers had guided and disseminate to other farmers nearby. However, components 3 and 4 not all farmers adopt coachee. This is because cattle are very limited male cattle or bull as most farmer to sell cattle when old enough. Bulls are left only young bulls that have not been good to serve as a male cattle parent.

Component 1 of the farmers had to make the most of existing feed include a field of grass, elephant grass and plant waste like straw and peanut hay shortage during the dry season. As for component 2 is the use of new forage plants also have been conducted with farmers in fields to plant their grass species and legumes include *Paspalum atratum, Brachiaria hybrid cv Mulato, Setaria sphacelata, Panicum maximum, Clitoria ternatea, Centrosema pubescens* and *Stylosanthes guianensis*. These types are able to adapt and was able to produce forage feed for cattle [4]. The fifth component of the feed meant planning was already counting the needs of farmers needed to feed cattle maintained, so that the amount of feed can be prepared for some cows. It is important that feed availability can be guaranteed throughout the year.

Dissemination to other farmers by farmers each coachee. There are two target farmers who quickly spread to other farmers, some are slow. Depending on how farmers built to promote its activities. Observations on technology dissemination component Bone faster due to the role of farmers built in Bone more intensively and actively disseminate its activities. In Figure 1 presented dissemination by farmers for farmers built around it. Dissemination of technology components appear very rapidly in the Bone, this is due to farmers’ average built very actively provide information to other farmers, both in formal forums or in-formal, so that other farmers who know about it more and more. Although the Barru and Gowa still a little spread, but it can be seen that there is an increase from time to time, this means that farmers built remains an example and motivate other farmers nearby. Another thing is also due in Gowa and Barru late onset of the start of October and November 2008, while Bone began in July 2008.
From the ACIAR assistance strategy for the management of Bali cattle in South Sulawesi by the approach taken for the implementation of the technology package comes several important questions are:

1) What factors that encourage dissemination of technology?
2) What obstacles are found so far in terms of dissemination?
3) How this can be accelerated deployment?

Answers to these questions can be described and analyzed as described below:

1. What factors that encourage dissemination?
   a) Success farmers built
   b) Strategic location and good for access
   c) Farmers have the talent to interact and communicate
   d) The relationship between family
   e) Good initial impression
   f) Curiosity about the new
   g) The experience of farmers built
   h) Trying new things
   i) Location of farmers built
   j) The social status of farmers
   k) The success of farmers built
   l) Cooperation with OGT
   m) Socialization by OGT and PPL
   n) Farmers actively guided to inform other farmers

2. What obstacles are found so far in terms of dissemination?
   a) Some farmers built the farmers did not inform the other
   b) There is a competition between farmers
   c) Farmers are very busy
   d) Location of farmers who are too far
   e) Farmers coachee inactive and less confident
   f) Self-centered attitude of farmers
   g) Remote field conditions
   h) Lack of land resources
   i) Information submitted farmers too convoluted

3. How this can be accelerated deployment?
   a) Support from local government
   b) There are special incentives for farmers built
   c) There is a public activity (safety, parties, etc.)
d) Visits from farmers to farmers
e) Formal meeting (workshop)
f) There is cooperation with the formal institutions
g) Training for the PPL
h) Create a pilot plot in the village
i) Cooperation with local authorities for dissemination and information
j) To make the location a successful farmer built as a place to visit
k) Meeting of farmer groups
l) The meeting between farmers ‘groups with other farmers’ groups

4. Conclusion
By ACIAR assistance strategy for the management of innovation, Bali cattle in South Sulawesi seems applicable is the mentoring begins an intensive to target farmers and motivate farmers to spread the coachee to other farmers. Thus occurred the transfer of technology from farmers to farmers.

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