



Education of Native Chicken Hatching and Crossing Management in the *Manuk Amertha* Group, Segah Hamlet, Asahduren Village, Pekutatan Jembrana

I Gusti Agus Maha Putra Sanjaya, Ni Ketut Ety Suwitari, and I Nyoman Kaca.

Animal Husbandry Department, Faculty of Agriculture, Warmadewa University, Indonesia,

ARTICLE INFO

Article History:

Received: 15 May 2022

Final Revision: 28 May 2022

Accepted: 26 June 2022

Online Publication: 27 June 2022

KEYWORDS

native chicken, management, hatching, crossing, feed additive, community service

CORRESPONDING AUTHOR

*E-mail: iga.sanjaya@gmail.com

A B S T R A C T

The demand for native chickens is increasing every year but this is not accompanied by an increase in population, especially in Bali. **Manuk Amertha** is a breeder group of native chickens located in Segah Hamlet, Asahduren Village, Pekutatan Jembrana. The purpose of this action research is to improve the knowledge and skills of farmers in hatchery management, crossbreeding, and the manufacture of feed additives for native chickens made from turmeric. The implementation method uses exploratory methods and active community participation. The exploratory method is carried out with a special dialogue with partners to explore all the problems experienced and the basic needs that must be addressed immediately. Specific observations and dialogues are intended to gather and identify issues in what Partner members desire. The result of this service activity is an increase in the knowledge and skills of members of the **Manuk Amertha** Breeder Group in hatchery management, operation of automatic hatching machines, crossing methods, and the manufacture of feed additives based on turmeric. From the service activities that have been carried out, it can be concluded that all group members have been able to understand hatchery management and operation of hatching machines well, understand the crossing method, and can make feed additives from turmeric

1. INTRODUCTION

1.1. Research Background

Asahduren Village is one of the 8 (eight) villages located in Pekutatan District, Jembrana Regency, Bali Province. The distance between the Provincial Capital and Asahduren Village is as far as 75 Km. The area of Asahduren Village is 6.13 km² or about 4.73% of the area of Pekutatan District and 0.73% of the total area of Jembrana Regency [1]. Segah Hamlet located in Asahduren Village is directly adjacent to the State Forest and Plantation (Regional Company). Its location which is a bit far from the crowd causes the village to be quite ideal as a place for cultivating native chickens. The increasing demand for native chickens has motivated farmers who are members of the Breeder Group “**Manuk Amertha**” to increase their native chicken population. However, the price of DOC also slows down the pace of native chicken rearing which automatically also slows down the population rate. So this is what causes the constraints of efforts to increase the population of native chickens in the **Manuk Amertha** Breeder Group. The information obtained during the initial meeting and discussions with farmers obtained the problem

that was most complained about by farmers, namely the low population of native chickens owned because farmers are always dependent on doc purchases. The main cause of the problem of farmers in the **Manuk Amertha** Breeder Group is that farmers have not been able to increase their native chicken population independently because they do not have a representative chicken egg hatchery and the ability to operate hatching machines. In addition, group members also need counseling on native chicken crossing methods, as well as making the alternative feed to reduce business operational costs. Based on these conditions, universities through community service programs took the initiative to help this livestock group through education and training on hatchery management and techniques for using automatic hatching machines, cross management, and training on making turmeric-based feed additives.

This activity is expected to be able to increase the knowledge and skills of group members in carrying out hatchery management using an automatic hatching machine, increase understanding of native chicken crossing methods and improve skills in making feed additives independently made from turmeric. With the improvement of the abilities and skills of the members of the livestock group, it is hoped that there will be an increase in the population of native chickens which will

automatically have an impact on increasing the income and welfare of members of the **Manuk Amertha** Native Chicken Breeder Group and even be able to carry out business development in the future.

1.2. Literature Review

Native chicken in Indonesia is a chicken from the domestication of the red partridge (*Gallus gallus*) carried out by the people of Indonesia centuries ago. This is following the statement from Ref. [2] which states that native chickens were originally partridges that were later domesticated and developed by rural communities. Native chicken is a type of dual-purpose chicken, where in addition to producing eggs, this type of chicken is also used as a meat producer. As a meat producer, the development of native chickens is experiencing obstacles due to its slow growth and growth rate [3].

The low productivity of local chickens is caused by three factors, namely low business inputs, the lack of breeding of genetic traits, as well as due to high mortality [4]. Upaya to increase growth and growth rate can be done by crossing superior native chickens. Ref. [5] mentioned that the purpose of crossing local chickens is to increase the productivity of these chickens by utilizing and developing the genetic resources possessed by each individual. Crossbred native chickens have higher body weight, diverse colors, uniform genetic qualities, good adaptability to the environment and have a low mortality rate [6],[7],[8]. In addition to improving genetic quality, improving feed quality through the addition of feed additives is needed to improve the performance of native chickens.

Efforts to increase the production and chemical composition of meat need to be carried out by improving feed quality by adding feed additives to improve the quality of native chicken meat [9]. Turmeric is one of the herbal plants that can be used as a feed additive. The content of turmeric curcumin has a function as an antibacterial and anti-oxidant. Curcumin in turmeric has properties as an appetite enhancer [10],[11]. The use of turmeric as a feed additive in poultry rations is useful for improving the performance of the digestive organs and stimulating the release of pancreatic sap containing the enzymes amylase, lipase, and protease which are useful for increasing the digestibility of feed ingredients protein, fat, and n carbohydrates [12].

1.3. Research Objective

The community empowerment program aims to improve the knowledge and skills of livestock group members in hatchery management and operating hatching machines properly and correctly, native chicken crossing methods, and the manufacture of turmeric-based feed additives. The methods used include counseling, counseling, hands-on practice, and mentoring that emphasizes active group participation.

2. MATERIALS AND METHODS

2.1. Method

The methods used in the educational activities of hatchery management, crossing, and making feed additives are as follows: (1) Observation and dialogue to find out the problems experienced by partners; (2) Face-to-face counseling and counseling methods are used to increase partner knowledge about hatchery management, crossing methods, and the benefits of feed

additives so that they can be a solution to the problems faced by partners; (3) Hands-on practice, guided by a competent service team in their field so that partners can directly practice the given methods.

2.2. Plan and Procedure of Activities

The community service plans and procedures that will be implemented are (1) Group approach, site selection, and data collection of participants who are members of the livestock group, which will then be referred to as trainees. (2) Interviews and Q&A about the problems faced by partners, this activity starts from activity planning that shows the steps for solving the problems faced; (3) Partners were first given material that had been prepared by the service team in the form of modules and leaflets on hatchery management, methods of crossing native chickens and turmeric-based feed additives[(4) At the end of the implementation of the service activity, several boxes of native chicken DOC will be handed over, automatic egg hatching tools and turmeric powder as feed additives for native chickens.

2.3. Level of Participation

Partners / all members of the livestock group are expected to be present on time and participate in all service activities in an orderly manner. In the implementation of the training, it is hoped that Partners can understand the counseling material provided well, attend training and practice it so that they can operate automatic hatching machines and hatchery management, crossing methods, and skills in the turmeric-based additive feed that exist in many in the surrounding environment. After the community service activities end, partners are expected to be able to operate automatic hatching machines, carry out hatchery management and apply crossbreeding methods, and make turmeric-based feed additives independently.

2.4. The Outcome

- 1) The population of native chickens owned by group members will increase which is accompanied by an increase in the income and welfare of partners.
- 2) Producing a small book / leaflet on hatchery management and methods of crossing native chickens and how to make turmeric-based feed additives that are easy to understand and apply by the general public.
- 3) Publication on social media (youtube channel) about counseling and training activities carried out by the service team to members of the **Manuk Amertha** Native Chicken Breeder Group.

3. RESULT AND DISCUSSION

The community service activities carried out at the **Manuk Amertha** Native Chicken Breeder Group located in Banjar Segah Asahduren Village, Pekutatan District, Jembrana-Bali Regency, went smoothly (Figure 1).

3.1. Achieved Outcome

The targets achieved from these activities are: (1) Partners can implement hatchery management and the operation of automatic hatching machines in their livestock business; (2) The group member farmers understand the basic concept of crossing native

chickens, especially to obtain certain feather colors as a means of religious ceremony in Bali;



Figure 1. The implementation of counseling and training activities on hatchery management, the operation of automatic hatching machines, the method of crossing native chickens, and how to make turmeric-based feed additives in the Manuk Amertha Breeder Group is in Banjar Segah Asahduren Village, Pekutatan District, Jembrana-Bali Regency.

(3) Produce feed additives using turmeric as the basic ingredient;
 (4) There is an efficiency in production costs and an increase in the native chicken population because group members are no longer dependent on doc purchases. In detail, the externalities

achieved from the activities of community service can be seen in Table 1.

Table 1. The activities produced by the Manuk Amertha Livestock Group are located in Banjar Segah Asahduren Village, Pekutatan District, Jembrana-Bali Regency.

No	Activities	Output	Information
1	Counseling and provision of DOC, automatic hatching machines, hatching management materials, crossing native chickens and turmeric powder as feed additives	Counseling material in the form of leaflets	Members of the Manuk Amertha Livestock Group have understood hatchery management, crossing methods, and the benefits of turmeric-based feed additives for native chickens
2	Hands-on training in using a hatching machine and making turmeric-based feed additives	Proper operation of automatic hatching machine and turmeric powder as a feed additive	Group members can operate automatic hatching machines properly and correctly and can make feed additives made from turmeric independently Group members can operate automatic hatching machines properly and correctly and can make feed additives made from turmeric independently
3	The use of automatic hatching machines and the addition of feed additives to the rations of native chickens belonging to members of the group	Application of the use of hatching machines for fertile eggs produced by group members and the use of feed additives in the ration of native chickens	All fertile eggs produced from the member's parent native chicken have been hatched using an automatic hatching machine and all native chickens raised have been given feed additives made from turmeric

3.2 . *Benefits*

This service activity has direct benefits both to the partner group and the surrounding community. The benefit of this service activity for partner groups is an increase in the population of native chickens owned by group members due to the provision of DOC grants to the group. In addition, the provision of several hatching machine units has also helped group members to increase the percentage of hatchability of eggs and the number of eggs hatched simultaneously / uniformly. Hatching with a hatching machine has advantages because the temperature can be adjusted more stably to increase the hatchability of eggs but requires higher and more intensive costs and treatment [13]. The working principle of the hatching machine is to condition the heat as generated by the hen during incubating with an artificial heating device [14]. Although using an automatic hatching machine, the use of this hatching machine must be done properly and correctly. Through direct practice, the use of automatic hatching machines has made members of the **Manuk Amertha** Native Chicken Breeder Group understand to operate them. The way of operation of the hatching machine will greatly affect the success of the hatching of eggs carried out. Mistakes made in the handling of hatching eggs will lead to the occurrence of failure in the process of hatching eggs [15].

The benefit of making feed additives for native chickens carried out in this community service to the environment is to reduce one type of air pollution sourced from the smell of livestock manure. Turmeric mixed into chicken feed will be able to eliminate the smell of chicken manure and increase chicken weight where turmeric essential oil is antimicrobial. Furthermore, it is said that the chemical ingredients of turmeric essential oil consist of α and β -tumeron, tumerol, α -atlantone, β -caryofilen, linalol, 1.8 sineol [16]. On the other hand, socially the benefit of this activity is an increase in the population of native chickens and helping the availability of native chickens that are beneficial for religious activities in Bali, especially in Jembrana Regency. Economically, an increase in the population of native chickens owned by group members will have an impact on improving their welfare. Native chickens that are old enough can later be sold, where the profits from the sales will provide additional income to the members of the Manuk Amertha Livestock Group. There is a difference between receipts and costs incurred [17].

3.2. *Partner contribution to the executor*

Community service program activities on hatching management and operation of hatching machines, methods of crossing native chickens, and making feed additives made from turmeric has going on smoothly in the **Manuk Amertha** Breeder Group located in Banjar Segah Asahduren Village, PEkutatan District, Jembrana Regency. The service activity was carried out on Saturday, May 7, 2022, in the form of counseling and counseling or theoretical studies to provide a material understanding of hatchery management and crossing methods in native chickens attended by 10 members of the Manuk Amertha Livestock Group. After the counseling and counseling activities ended, the activity continued with the direct practice of using an automatic hatching machine and making turmeric-based feed additives. On this occasion, extension team workers donated DOC, an automatic hatching machine, and ingredients for the manufacture of feed additives from turmeric. All partners (100%)

are active in participating in counseling and hands-on practice and partners expect continuous assistance in terms of native chicken rearing management.

3.3. *Inhibiting Factors of the Implementation of Community Service*

There are basically no inhibiting factors in the activities of the service to this community. Although this activity was carried out during the Covid-19 pandemic, it did not have much effect both during counseling activities and direct practice.

3.4. *Supporting Factors*

Members of the livestock group are very careful in listening to material on hatchery management and crossing methods in native chickens and also in the practice of operating automatic hatching machines and making feed additives that use turmeric as a raw material. Practical ingredients, especially turmeric, are easy to obtain and are abundant around the village.

3.5. *Future Plan*

The follow-up to community service activities in the Manuk Amertha Native Chicken Breeder Group is a committed team to continue to assist group members in terms of native chicken cultivation. The plan is that in addition to being able to produce doc native chickens independently, group members are also expected to be able to cross native chickens with certain feather color specifications to meet the community's needs for native chickens as a means of *upakara*.

Strategic Steps for Further Realization

A strategic step to realize the next plan is to provide native chicken seeds that have certain color specifications that are generally used as a means of religious *upakara* in Bali.

4. CONCLUSION

Community service in the Manuk Amertha Livestock Group has been successfully implemented smoothly. During the implementation of the service, the group members were very enthusiastic about listening to the counseling material and were actively involved in the practice of operating automatic hatching machines and making feed additives. This service activity has a direct impact on increasing the knowledge and skills of group members. The result of this service activity is that all members of the livestock group have understood the concept of hatchery management and crossing methods in native chickens. In addition, they have also been able to operate the automatic hatching machine well and can make turmeric-based feed additives independently.

ACKNOWLEDGMENT

The service team would like to thank the Rector and Head of the Warmadewa University Community Service Institute for providing opportunities and assistance in the form of institutional grants to the service team so that community service activities in the **Manuk Amertha** Native Chicken Breeder Group can be carried out.

REFERENCE

- [1] Badan Pusat Statistik, Kabupaten Jembrana. 2019. Kecamatan Pekutatan Dalam Angka 2019. ISSN: 2477-6807. Nomor Publikasi: 51010.1908. Katalog : 1102001.5101.040. CV Bhineka Karya. Denpasar.
- [2] Yaman, MA. 2010. Ayam kampung Unggul 6 Minggu Panen. Penebar Swadaya. Jakarta.
- [3] Rizkuna A, Atmomarsono U, Sunarti D. 2014. Evaluasi pertumbuhan tulang ayam kampung umur 0-6 minggu dengan taraf protein dan suplementasi lisin dalam ransum. JITP Vol. 3 No. 3, Juli 2014: (1-5).
- [4] Supriadi, H., D. Zainuddin dan P.P. Ketaren. 2005. Kajian sosial ekonomi pengembangan ayam lokal di lahan marginal. Pros. Lokakarya Nasional Inovasi Teknologi Pengembangan Ayam Lokal. Semarang, 25 Agustus 2005. Puslitbang Peternakan bekerjasama dengan Fakultas Peternakan Universitas Diponegoro, Semarang. hlm. 217 – 227.
- [5] Sartika, T. 2012. Ketersediaan Sumberdaya Genetik Ayam Lokal Dan Strategi Pengembangannya Untuk Pembentukan Parent Dan Grand Parent Stock. Workshop Nasional Unggas Lokal. Balai Penelitian Ternak, Bogor.
- [6] Faruque, S., N. U. Siddiquee, M. A. Afroz, et al. 2010. Phenotypic characterization of native chicken reared under an intensive management system. J. Bangladesh Agril. Univ. 8: 79-82.
- [7] Lawalu, F. H., F. U. Datta, M.U.E. Sanam, P. Romeo, dan S. Doke. 2000. Survey Berbagai Parameter Peternakan di Nusa Tenggara Timur. Hasil Penelitian Kabupaten. Fapet-Undana. Kupang.
- [8] Iskandar, S. 2005. Pertumbuhan dan perkembangan karkas ayam silangan Kedu x Arab pada dua sistem pemberian ransum. JITV 10(4): 253 – 259
- [9] Dewi S.H.C. 2010. Performans ternak ayam kampung yang dipelihara secara ekstensif di Kecamatan Fatuleu, Kabupaten Kupang, Nusa Tenggara Timur. Lingkungan Semiringkai. UNDANA Kupang. J. Agrisains. 1(2): 331-339.
- [10] Purwanti, S. Natsir, A. Dan Syam, M. H. 2010. Kombinasi Kunyit, Bawang putih dan Mineral Zink sebagai Feed Additive untuk Meningkatkan Performa Broiler. Seminar Nasional Teknologi Peternakan dan Veteriner. Makasar.
- [11] Adha, R. umay, Widjastuti, T., dan Abun. (2016). Pengaruh penambahan tepung kunyit (*Curcuma domestica* val) dalam ransum terhadap performan ayam betina sentul putih pada priode grower (8-16 minggu). Pengaruh Penambahan Tepung Kunyit, 0, 1–9.
- [12] Wirawati, C. U., & Putri, D. D. (2015). Penggunaan produk fermentasi dan kunyit dalam pakan terhadap performan ayam pedaging dan income over feed and chick cost. Zootec, 35(2), 379–389.
- [13] Jayasamudera, D.J, dan B.Cahyono. 2005. Pembibitan Itik. Penebar Swadaya, Jakarta.
- [14] Sujionohadi, K dan Setiawan A., 2007. Ayam Kampung Petelur. Penebar Swadaya (edisi revisi). Jakarta.
- [15] Kholis, S dan B. Sarwono. 2013. Ayam Elba Kampung Petelur Super. Penebar Swadaya. Jakarta.
- [16] Rahardjo, M dan O. Rostiana. 2005. Budidaya Tanaman Kunyit. Cirkular no.11 Badan Penelitian dan Pengembangan Pertanian. Balai Penelitian Tanaman Obat dan Aromatika. Bogor. 6 hlm.
- [17] Munawir, S. 2012. Analisis Informasi Keuangan. Yogyakarta: Liberty