Research Article

Development of Ornamental Plant Products in Petiga Village, Marga District, Tabanan-Bali

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Abstract.

This research aims to provide solutions to the problems faced by (1) the Guna Sari Ornamental Plant farmer group, Mitra; (2) KWT Mekar Sari, Mitra; (3) the Simatri Sekar Pasti Wangi Group, and Partners; and (4) the Guna Sari Cooperative. The problems are production, arrangement of nursery stock and planting media, and marketing. The implementation methods used include: PALS (participatory action learning system), Entrepreneurship Capacity Building (ECB), Technology Transfer (TT), as well as persuasive and educational Appropriate Technology (TTG),. We recommend implementing the program with the target of increasing the level of partner empowerment, increasing ornamental plant business productivity, and increasing farmer income through sales of ornamental plants, compost, vegetables, and bio urine.

Keywords: development, products, ornamental plants and Petiga Village

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1. INTRODUCTION

Tabanan Regency has the most extensive agricultural land in Bali Province, so it is nicknamed Bali's food barn. Agriculture in this district is not only food crops but agriculture in a broad sense, which includes plantations (horticulture), animal husbandry and fisheries. In the field of horticulture such as ornamental plants, fruit plants and organic vegetables. One of the villages that has advantages in the field of horticulture in the form of ornamental plants is Petiga Village, Marga District, Tabanan. Since 2016, Petiga Village has been designated as a rural area development location which is a national priority rural area (KPPN) through Tabanan Regent Decree Number 180/373/02/HK&HAM/2016.

Based on data from prodeskel.binapemdes.kemendagri.go.id, the profile of Petiga village has village/kelurahan code: 5102072009, located between 115.168424 LS/LU8.443646 BT/BB, located 500 meters above sea level and borders the area: Northern part with Tua Village, the Southern part with Geluntung Village, the Eastern part with Perean Village, and the Western part with Payangan Village. Petiga Village

has an area of 281 hectares, with 89% (250 hectares) being agricultural land and the remaining 11% (31 hectares) being fields. The population is 1,801 people (923 men and 878 women) divided into 573 families. Spread into three hamlets, namely: Semingan, Petiga Kangin, and Belanban. Most of the population's livelihood is farmers (ornamental plants) as well as livestock breeders (90%), 5% are employees (PNS, TNI/Polri, Private/BUMN), 3% are farm workers, and 2% are self-employed/traders. Throughout the seasons, this area can always meet daily needs through agriculture and animal husbandry. Currently Petiga Village is classified as a developed village according to the Building Village Index (0.717) with an environmental resilience index (IKL) of 31%; social resilience index (IKS) 37.2%; and the economic resilience index (IKE) is 31.8% and is classified as developing according to the village development index (62.91235966).

The potential of Petiga Village is considered prospective to support an ornamental plant production center. As an implementation of Tri Hita Karana local wisdom, many things can be developed, such as: (1) religious tourism, (2) agrotourism (ornamental plant and fruit plantations), (3) tracking routes, and (4) various educational tourism (eduturism) . This can be done because of the extraordinary potential possessed by the Petiga Village community in the form of traditional organizations (pakraman village), agricultural groups (subak bena, gangsang, dangakitan, bekaye), ornamental plant farmer groups, women farmer groups (KWT), cooperatives, and farmer group. Based on the results of interviews conducted with Petiga village head I Wayan Sugita, ornamental plant farmers, and community leaders to Petiga Village, Marga District, Tabanan Regency on Saturday 8 January 2022 , several problems were identified which were obstacles faced by ornamental plant farmers, and the basis for selecting Petiga Village, such as production issues, arrangement of ornamental plant stock, cash flow and financial issues, vegetable breeding and production, as well as procurement of bio urine installations and provision of dry feed. Based on these problems, the aim of this research is to increase production and marketing. One of the reasons for this problem is the lack of appropriate technology application due to limited business capital. The solution is to diffuse technological innovation or update production equipment (providing production aids) for ornamental plants and their facilities and infrastructure [1], [2], [3], [4], [5], training and assistance in making compost and bio urine , Assistance in the use of production facilities and infrastructure [6], [7], [8], as well as training and assistance in financial management (cash flow), 2) good business planning, 3) Savings and loans for business capital, and 4) marketing of farming businesses ornamental

plants [9], [10]. Based on this, it can be explained as follows: 1) additional procurement of greenhouses for managing production stock, 2) additional procurement of production equipment such as wheelbarrows, hoes, sickles, shovels, as well as computers and cooperative programs, 3) assistance and strengthening of cash flow and finance for KSP Guna Sari, 4) assistance and strengthening of plant and vegetable cultivation and marketing for the Guna Sari ornamental plant farmer group and the KWT Mekar Sari group, and 5) creation of facilities for compost fertilizer and bio urine production for the Simantri Sekar Pasti Wangi livestock group.

2. METHODS

The implementation method includes 2 main things, namely the method of empowering village communities and the method of implementing activities. Methods for empowering village communities need to be determined because they are operating in a pandemic atmosphere, requiring modifications to the empowerment process. There are 3 methods of village community empowerment (innovation communication methods), namely: 1) Village community empowerment is carried out in full in the field, 2) Village community empowerment is carried out in a combination of field (offline) and online activities, and 3) Village community empowerment activities are carried out in full by online. In this service, the PIPK team chose to implement village community empowerment fully in the field because the community situation was already in normal condition after the Covid-19 pandemic. Meanwhile, the method of implementing activities is carried out using the PALS method (participatory action learning system), the Entrepreneurship Capacity Building (ECB) method, Technology Transfer (TT), as well as applying Appropriate Technology (TTG), Persuasive Methods and Educational Methods. PALS (participatory action learning system) was developed by Linda Mayoux in 2000. The PALS method is one of the empowerment methods within the scope of PLA (participatory learning and action), the result of the evolution of RRA (rapid rural appraisal) and PRA (participatory rural appraisal) [1]. PRA emphasizes community involvement in all activities starting from planning, implementation and evaluation of activity programs. PALS has the principles: (1) A defined methodology and systematic learning process, namely a methodical, participatory cumulative and systematic learning process, (2) multiple perspectives, namely empowerment prioritizing the achievement of diversity and diverse actions, (3) group learning processes , namely solving the complexity of real world problems with a recognition process through group inquiry and interaction,

(4) context specific, namely a contextual problem handling approach, (5) facilitating experts and stakeholders, namely the use of experts and community participation in actions to improve community conditions, (6) leading to sustained action, namely strengthening personal capacity and community institutions in overseeing sustainable action programs. This ECB model is related to the entrepreneurial abilities of the community, with this model it is hoped that it can (1) provide insight, attitudes and business skills, (2) provide opportunities, (3) facilitate (loan capital, etc.), and (4) monitor and evaluate business development (1).

3. RESULTS AND DISCUSSION

Based on the results of the analysis and results of FGDs conducted with related parties in Petiga Village such as the Village Head, ornamental plant farmer groups, cattle breeder groups, women farmer groups, and savings and loan cooperatives, it can be identified that this problem arises, one of which is caused by a lack of implementation. appropriate technology due to limited business capital. The solutions taken to overcome these problems are: 1) additional procurement of *greenhouses* for managing production stock, 2) additional procurement of production equipment such as wheelbarrows, hoes, sickles, shovels, as well as computers and cooperative programs, 3) assistance and strengthening of cash flow and finances for KSP Guna Sari, 4) assistance and strengthening of plant and vegetable cultivation and marketing for the Guna Sari ornamental plant farmer group and the KWT Mekar Sari group, and 5) creation of facilities for compost fertilizer and bio urine production for the Simantri Sekar Pasti Wangi livestock group. This solution is the result of an agreement from an FGD conducted with related parties in Petiga Village.

3.1. Procurement of greenhouses for Arranging Production Stock

The provision of greenhouses for the Guna Sari and KWT Makar Sari ornamental plant farmer groups is very necessary to support the productivity of nurseries and arrange production stock. Sometimes farmers cannot produce ornamental plants in large quantities because they are constrained by display and nursery areas. The frequently changing weather makes production hampered, especially in the dry season, nursery stock is still very limited because there is no shaded place to store nursery stock. This is also felt by farmers who specifically produce Aglonema ornamental plants.

Figure 1: Greenhouse made by the Guna Sari Ornamental Plant Farmers Group.

With this greenhouse, farmers find it very helpful in producing ornamental plants. The results of interviews and observations show that there has been an increase in the production of ornamental plants, especially nurseries, up to 30% from before. Of course, this also has an impact on increasing farmers' income. For example, the croton plant is a favorite. Before the *greenhouse* , farmers could only produce an average of 1,000 trees, but with the addition of *a greenhouse,* farmers were able to produce 1,200-1,500 trees in one harvest. If you cash it in, you can see an increase in sales of around Rp. 600,000, - Rp. 700,000, with an average price of croton per stick of Rp. 2,000,-.

3.2. Procurement of Production and Support Equipment

Production tools needed to support farmer activities include: wheelbarrows, sickles, hoes and shovels. All of this really helps farmers in increasing the amount of ornamental plant production, vegetable production, and makes it easier for simantri breeders to find animal feed. For Sari cooperatives, the procurement of a computer and printer is added to simplify administrative activities.

3.3. Mentoring and Strengthening

Accounting can be applied to cooperatives because cooperative activities bear a lot of risk, and professional management and administration are required. The only supporter of professional performance is administration and accounting [1]. The accounting policy of a business entity is very important as a guideline for implementing bookkeeping in preparing financial reports for cooperatives. The accounting policy must contain in detail the policy basis for applying a particular accounting method that is applied to the cooperative consistently from one period to the next [2]. So far, the Guna Sari cooperative has experienced difficulties in distributing credit to ornamental plant farmers due

to knowledge constraints in managing cash flow in the cooperative, in addition to the fact that farmers are often late in realizing their loan payments. Through the assistance and strengthening carried out, it not only provides knowledge and increases the staff's ability to manage the flow of funds in the Guna Sari cooperative, but also helps increase farmers' understanding in producing vegetables and ornamental plants effectively. With this assistance, the Guna Sari cooperative can manage its financial resources more efficiently, increase transparency in the use of funds, and ensure fair distribution to its members. Apart from that, farmers also benefit by increasing their understanding of better cultivation techniques, the use of organic fertilizer, controlling pests and plant diseases, as well as selecting varieties that suit environmental conditions. This has a positive impact on improving the quality of harvests and diversifying agricultural businesses, so that farmers can obtain a more stable and sustainable income.

Figure 2: Assistance and Strengthening for the Guna Sari and KWT Mekar Sari Cooperatives.

Assistance and strengthening was also provided to KWT Mekar Sari in terms of vegetable cultivation and marketing. With this assistance and strengthening, KWT women are able to broaden their knowledge in producing vegetables both in the yard and in the den plot. Previously, KWT women had difficulty producing vegetables, especially green vegetables, because they always rotted. With the assistance and strengthening provided by the PIPK team, this no longer happens. Even now, the demand for vegetables for KWT women continues to increase. Increased production from initially around 40 kg per harvest in year 1 can become 60 kg per harvest for all types of vegetables. The method of distributing harvests through collectors who sell vegetables to the city is an effective choice because it allows farmers, including KWT members, to focus on production activities without needing to be directly involved in the marketing process. These collectors act as middlemen who collect harvests from various farmers and send them to large markets in the city. In this way, logistics and distribution burdens can be minimized, while access to wider markets can be opened for farmers. Apart from that, collectors can also provide additional services such as sorting, packaging and temporary storage of harvested produce before being sent to market, which can

increase the selling value of the product and maintain its quality. With collectors, farmers can obtain more stable and competitive prices for their crops, while reducing the risk of losses due to market fluctuations or excess supply at the farm level. This has the potential to increase farmers' overall income and provide sustainability to their farming businesses in the long term.

3.4. Procurement of Compost Chopping Machines and Compost Production Facilities

Procurement of compost chopping machines for the Simantri Sekar Pasti Wangi livestock group is necessary to anticipate the very high demand for compost fertilizer from cow manure and animal feed from ornamental plant farmers and KWT flowering plants. This happens because of the increasing production and sales of ornamental plants in Petiga Village.

Figure 3: Compost Fertilizer Production by the Simantri Sekar Pasti Wangi Livestock Group.

Meanwhile, the bio urine installation of the Simantri Sekar Pasti Wangi livestock group is capable of producing 500 liters of clean, ready-to-sell urine per month at a per liter price of Rp. 10,000,-. Sometimes the simantri group is unable to meet the demand for bio urine which is up to 700 liters per month. With this bio urine, it can increase the income of farmer groups by an average of IDR. 500,000,- per month which is used as cash. Meanwhile, selling compost can generate additional income for Simantri of 1 million – 1.2 million per month. Based on this, the findings of this research are in the form of: (1) increased understanding of farmers regarding the management of seed stocks and raw materials, financial management, bio urine processing. The results of interviews and observations show that ornamental plant farmers feel that there has been an increase in the number of ornamental plant production, especially the croton type, with the presence of a green house. This increase is an average of 30% from the previous (year-1), from 1000 croton stalks per harvest to 1200 to 1500 stalks. (2) the availability of 5 carts carrying materials and production results out of the 10 targeted, (3)

the presence of 5 green houses in farmers' fields, out of the 10 targeted. The existence of this production tool has a very positive impact, it becomes faster and easier for farmers to produce (more efficiently), and saves energy. For example, a wheelbarrow, with this wheelbarrow transporting production and nursery products becomes easier and smoother. Where previously transportation used baskets which required more effort and less carrying capacity. (4) the presence of 1 unit of bio urine installation. This bio urine ultimately provides passive income for Simantri Sekar Pasti Wangi breeders between 600-700 thousand per month from the sale of bio urine. (5) There is a compost chopping machine and a compost drying place which is used by simantri to make fertilizer from cow dung and leftover feed. This compost production can increase farmers' income by 1 million-1.2 million per month.

Apart from the benefits already mentioned, increasing ornamental plant production with a greenhouse also provides other benefits for farmers, such as better environmental control. Green houses create controlled environmental conditions, including temperature and humidity, so that plants become healthier and more productive. This also helps protect plants from pests and diseases, and extends the growing season, so farmers can obtain more stable harvests throughout the year. Apart from that, the use of production aids such as carts to transport materials and produce also increases farmers' work efficiency [13]. With a cart, the transportation process becomes easier and more efficient, reducing the time and energy required, and increasing the transportation capacity so that the amount of production that can be transported at one time is greater. The use of compost shredding machines and compost drying stations also has a significant positive impact. Production of compost from cow manure and feed waste helps reduce unused agricultural and livestock waste into a valuable resource [14]. Apart from that, the use of compost as organic fertilizer also helps improve soil fertility and the quality of crop yields, thereby helping to increase farmers' income in the long term. Thus, the use of production aids and technology such as green houses, transport carts, bio urine, compost chopping machines and compost drying stations not only increases farmers' productivity and work efficiency, but also has a positive impact on the environment and overall farmer welfare.

4. CONCLUSIONS

Overall, it can be explained that the problems in Petiga, Marga, Tabanan Villages in order to increase the Membangaun Village Index to become an Independent Village

have gone according to plan. This can be shown from: 1) additional procurement of greenhouses for managing production stock, 2) additional procurement of production equipment such as wheelbarrows, hoes, sickles, shovels, as well as computers and cooperative programs, 3) assistance and strengthening of cash and financial flow for KSP Guna Sari, 4) assistance and strengthening of plant and vegetable cultivation and marketing for the Guna Sari ornamental plant farmer group and the KWT Mekar Sari group, and 5) creation of compost fertilizer facilities and bio urine production for the Simantri Sekar Pasti Wangi livestock group. This solution is the result of an agreement between the PIPK team and partner groups based on the results of the FGD on June 12 2023. Apart from that, it can also be seen from: (1) increased understanding of farmers regarding the management of seed stock and raw materials, financial management, bio urine processing (average 30 %), (2) the availability of 8 carts carrying materials and production results out of the 10 targeted (80%), (3) the presence of 5 greenhouses in the farmers' fields, out of the 10 targeted (50%), 4) and the presence of 1 installation unit bio urine that has been produced (80%), 5)

The people of Petiga Village also face several obstacles, such as: 1) there are several members of the Guna Sari farmer group who can't wait to get their turn in making greenhouses, so they are antipathetic to this activity, 2) it is difficult to find people who want to work on bio urine processing among Simantri members. Sekar is definitely fragrant because the smell that sticks to the body is very strong for up to 3 days. To support government programs on an ongoing basis with the aim of making Petiga Village an independent village, a community strengthening program is needed in the form of training and mentoring with greater intensity. Apart from that, providing assistance with production facilities and infrastructure that have higher technology needs to be done in the future.

As an Independent Village, efforts to improve community welfare must be carried out comprehensively and sustainably. Therefore, community strengthening programs in the form of training and mentoring need to be increased in intensity. Targeted training and continuous mentoring will help improve community skills and knowledge in managing their businesses effectively and sustainably. Apart from that, providing assistance with production facilities and infrastructure that have higher technology is also a very important step. Investment in modern technology not only increases production efficiency, but also opens up opportunities for business diversification and increases the added value of products [15]. One of them is the introduction of smart agricultural technology such as automatic irrigation systems, the use of soil sensors, or

the use of digital applications for agricultural management. helps increase productivity and quality of agricultural products. By combining an intensive training and mentoring approach with the provision of high-tech assistance, Mandiri Village can become a highly competitive agricultural center, contributing to increasing community income and overall village economic independence.

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