

# Empowerment of farmer groups in rice seed business in Purbalingga Regency, Central Java

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**Abstract.** These activities aims to increase the capacity of farmer groups and expand job opportunities. An empowerment assessment was carried out on the Sri Rejeki farmer group located in Gembong Village, Bojongsari District, Purbalingga Regency, in August 2021-February 2022. The approach method used is participatory mentoring, by facilitating the needs of farmer groups in the rice seed business, which includes: obtaining seed business recommendations, working capital and technological innovation. The data collected includes farmer group resources, assistance in the production process, and inputs and outputs of rice seed production. Data was collected through interviews with the head of the farmer group, the head of PB Sri Rejeki, field assistants and direct observation in the field. The data obtained were analysed descriptively. The results of the study show that increasing the group's capacity in seed farming, among others, has a drying floor, warehouse and thresher. Working capital facilitation in labour, fertilizers, medicines, harvested plastic sacks, and 5 kg plastic seed packaging can provide motivation and initial capital for a rice seed business. The seed technology innovation applied resulted in 5,500 kg of ES class seeds. Empowerment of farmer groups needs to be done through assistance and provision of initial capital.

## 1 Introduction

The farmers' group empowerment technique has been the topic of substantial investigation in agriculture research. The empowerment strategy in emerging countries such as Indonesia is critical. Because of its significance, numerous sorts of research have been conducted locally and internationally on how farmer's group empowerment strategies might boost their income [1]. Farmers must be empowered in order for them to have expertise that will aid their activities toward self-sufficiency and the ability to compete, as well as to establish cooperation with other farmers and institutions of agricultural science or technology [2]. Farmers' group learning and innovation can empower farmers to engage as change agents in agricultural practice [3].

Farmer empowerment can be achieved through group training and counseling [4][5]. Several studies have found that farmers gain knowledge by participating in diverse networks [6] Farmers cannot alone make the institutional adjustments required for an innovation to spread [7].

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Empowerment activities provide the community with opportunities or opportunities and support and resources to independently control themselves [8]. Community empowerment is also an effort to increase the dignity of those who cannot afford to be able to escape the trap of poverty and underdevelopment [9]. The right handling step is to improve the quality of farmers' human resources, namely the group development approach [9], to explore their potential and dare to act to improve their quality of life through education for their self-awareness and empowerment [10].

In 2021, Central Java AIAT will carry out rice seeding activities. One of the locations is Gembong Village, Bojongsari District, Purbalingga Regency. The area of rice fields in Purbalingga Regency is 18,737.60 hectares. Nine hundred seventy-nine hectares of rice fields are in the Bojongsari District, consisting of 894.2 hectares of irrigated rice fields and 84.8 hectares of non-irrigated fields [11]. The area of rice fields in Gembong Village is 26 hectares [12]. Based on the approval of the Agriculture Service and the village government, Gembong Village became the location for rice seed activities.

So far, farmers' needs for rice seeds have been obtained from government assistance, bought from farm shops, or previous harvests. In Gembong Village, no farmers/groups produce rice seeds. This activity aims to improve and develop the ability of farmer groups to obtain improved income and expansion of employment opportunities which will ultimately improve welfare.

## **2 Methodology**

The research location was Gembong Village, Bojongsari District, Purbalingga Regency, from August 2021-February 2022. The location determination is purposive because the village is the location of rice seed activities carried out by Central Java AIAT. Respondents are members of the Sri Rejeki farmer group, who are cooperating farmers in rice seed activities. The approach method used is participatory mentoring, by facilitating the needs of farmer groups in the rice seed business, which includes: obtaining seed business recommendations, working capital (production facilities, labor wages, harvesting plastic sacks, and 5 kg seed packing plastic), and technological innovation. The data collected includes farmer group resources, assistance in the production process, also inputs and outputs of rice seed production. They collected data through interviews with the head of the farmer group, the chairman of PB Sri Rejeki, field assistants and direct observation in the field. The data obtained were analyzed descriptively.

## **3 Result and discussions**

### **3.1 Overview of the research site**

Gembong Village is one of the areas of Bojongsari District, which has an area of 1.28 km<sup>2</sup>. The rice fields in the Gembong Village area are 26 hectares consisting of 22.32 hectares of bent and 3.68 hectares belonging to residents [12].

Gembong Village has 3 farmer groups namely Sri Rahayu, Sri Rejeki and Sri Mulyo farmer groups who are members of the Sri Rahayu Gapoktan. There are two cropping patterns in Gembong Village, namely rice-paddy-rice for the Sri Rahayu and Sri Rejeki farmer group areas and rice-paddy-fallow for areas belonging to the Sri Mulyo farmer group. The springs for the Sri Rahayu and Sri Rejeki farmer groups are an abundance of Owabong, so the cropping pattern is rice-paddy-paddy in a year.

Farmers commonly planted rice varieties are Inpari 32, Ciherang, and Inpari 42. The need for seeds per ha is 30 kg. Farmers are used to using labeled seeds by buying them themselves or getting assistance from the government.

### **3.2 Empowerment of farmer groups**

Central Java AIAT empowers Gembong Village through rice seed activities by helping groups get letters of recommendation to become seed producers. Empowerment steps carried out in rice seed activities are as follows:

#### ***3.2.1 Get a letter of recommendation to become a producer and distributor of food plant seeds.***

To produce and distribute seeds, Farmer groups must have a letter of recommendation from BPSB Central Java. Central Java AIAT, through this rice seeding activity, guided the Sri Rejeki farmer group to apply for a letter of recommendation to become a food plant seed producer from the Central Java Province BPSB. [13] the group that becomes the seed producer will benefit economically because the selling price is higher than for consumption.

In the initial stage, the group formed a group of seed producers and an administrator. In the group meeting, Mr. Taryono was elected as chairman of the seed producer. Some of the steps required to become a seed producer are 1. Make a letter of application to the provincial BPSB by filling out the form provided. 2. After all the requirements are met and submitted to the BPSB, then verification is carried out by the BPSB Team. 3. After being declared eligible to become a seed producer, then waiting for the issuance of a letter of recommendation to become a seed producer and seed distributor for food plant development by the Provincial BPSB.

Procedures for Obtaining Recommendations as a Seed Producer are as follows: The applicant submits a recommendation to the Head of UPTD according to form model 1A, attached with: copy of Identity Card, photo size 4x6 cm, 2 (two) sheets, copy of Deed of Business Establishment and its amendments (for Business Entities, Legal Entities, and Government Agencies), copy of Taxpayer Identification Number, annual work plan for fostered seed production (type, variety, seed class, and some seeds), information on land tenure (area and land status), information on mastery of seed processing facilities (type, quantity, and capacity), information on control of supporting facilities (transportation equipment, warehouse/seed storage area), number and competence of labor in the seed sector [14].

In the initial stage, if the farmer group does not yet have seed processing facilities and supporting facilities, it can cooperate with other parties. At the start of this activity, the Sri Rejeki farmer group did not yet have seed processing and supporting facilities, so the group collaborated with the UPT Perbenihan, Purbalinga Regency Agriculture Service.

#### ***3.2.2 Delegation of Inpari 32 plantation area***

Before this seeding activity, the farmer group had not yet become a seed producer. At the start of the activity, a new farmer group applied to become a seed producer. For the seed production process to continue, the application for certification is carried out by IP2TP Batang first. After the farmer group has obtained a letter of recommendation to become a PB, it is delegated to PB Sri Rejeki. The delegation was carried out to market the seeds on behalf of PB Sri Rejeki.

The delegation document consists of; 1) a letter of application for the transfer of candidate seeds by PB Sri Rejeki, 2) Minutes of ownership of the transfer of prospective seeds, 3) A

statement letter from PB IP2TP Batang that it has an Inpari 32 HDB rice seed certification area and 4) approval to transfer candidate seeds from the Central Java Province BPSB.

The submission is accompanied by a preliminary inspection report, a report on the inspection of plants' vegetative and flowering phases. Ready delegation documents are submitted to the Provincial BPSB for verification. After the delegation was approved by the Provincial BPSB, known as the Central Java Provincial Agriculture Service, the next examination stage was on behalf of PB Sri Rejeki.

### 3.2.3 Assistance with facilities and infrastructure Farmer groups

**Table 1.** Total wages for labor, seeds, and fertilizers (organic, urea, and phonska) received by farmers in rice seed activities in Gembong Village, Puralingga, 2021.

No.	Farmer name	Land area	Total labor wages (IDR)	Number of seeds(Kg)	Quantity (kg) dan type of fertilizer		
					Organic	Urea	Phonska
1.	Kasmiarto	0.28	2,508,800	8.40	140	56	84
2.	Mono SP	0.42	3,763,200	12.60	210	84	126
3.	Sochimun WM	0.14	1,254,400	4.20	70	28	42
4.	Wastarun	0.14	1,254,500	4.20	70	28	42
5.	Ridin HS	0.70	6,272,000	21.00	350	140	210
6.	Kusmanto K	0.11	1,003,000	3.35	56	22	34
7.	Achmad S	0.70	6,272,000	21.00	350	140	210
8.	Nursahidin R	0.28	2,508,800	8.4	140	56	84
9.	Rati	0.14	1,254,400	4.2	70	28	42
10.	Sudiarjo R	0.14	1,254,400	4.2	70	28	42
11.	Warmin M	0.42	3,763,200	12.6	210	84	126
12.	Miswanto	0.42	3,763,200	12.6	210	84	126
13.	siswanto	0.14	1,254,400	4.2	70	28	42
14.	Jumad	0.14	1,254,400	4.2	70	28	42
15.	Sarno	0.14	1,254,200	4.2	70	28	42
16.	Edi Sukayat	0.07	627,000	2.1	35	14	21
17.	Maryanti T	0.07	627,000	2.1	35	14	21
18.	Rasyiman	0.28	2,508,800	8.4	140	56	84
19.	Hadi K	0.28	2,508,800	8.4	140	56	84
20.	Achmad S	0.28	2,508,800	8.4	140	56	84
21.	Waryono	0.35	3,136,000	10.5	175	70	105
22.	Sastrorejo	0.98	8,780,000	29.40	490	196	294
23.	Solikun	0.70	6,272,000	21	350	140	210
24.	Samid AA	0.56	5,017,600	16.8	280	112	168
25.	Achmad J	0.38	2,508,800	8.4	70	28	42
26.	Achmad M	0.14	1,254,400	4.2	70	28	42
27.	Dedi I	0.14	1,254,000	4.2	70	28	42
28.	Saryanto Al S	0.14	1,254,400	4.2	70	28	42
29.	Sudiarto	0.14	2,508,800	4.2	70	28	42
30.	Slamet R	0.32	2,885,000	9.65	161	64	97
31.	Slamet R	0.44	3,926,000	13.15	219	88	42
32.	Gito SP	0.14	1,254,400	4.2	70	28	42
33.	Salman AF	0.1	878,000	2.95	49	20	29
34.	Munawar	0.07	627,000	2.1	35	4	21
35.	Santurji D	0.07	627,000	2.1	35	4	21
<b>Jumlah</b>		<b>10.00</b>	<b>89,600,000</b>	<b>300.00</b>	<b>5,000</b>	<b>2,000</b>	<b>3,000</b>

When the Sri Rejeki farmer group started its activities, it did not yet have the facilities and infrastructure for rice seed production. For this reason, in supporting the rice seedling

program, farmer groups are provided with facilities and infrastructure so that activities run smoothly. The assistance provided was production facilities, labor wages, harvested plastic sacks, and 5 kg plastic seed packing. The production facilities provided are in the form of seeds, fertilizers, and medicines. Labor wages consist of labor for rice cultivation, processing, repairing warehouses, and making drying floors. In addition, plastic sacks for harvesting and plastic bags for packing 5 kg. [15] government intervention in agroforestry is needed to test the subsistence nature of farmers, especially in the provision of financial assistance, capital, and product marketing.

The land used for drying floors is the land of the village government. The wages for drying floors are from seed activities, while the building materials are from the village government and the community. The warehouse being repaired is a warehouse belonging to the village government that is not being used. Then repairs were made to be adapted into a warehouse for seed storage.

The production facilities assisted include 30 kg/ha seeds, organic fertilizers of 500 kg/ha organic fertilizers, 200 kg/ha urea, phonska of 300 kg/ha, and medicines. The distribution of production inputs is carried out by groups based on the area involved in the program of activities. The distribution of wages, organic fertilizer seeds, urea, and phonska can be seen in the Table 1.

### 3.2.4 Technology assistance

Assistance in rice seed technology is needed because the production of this seed is a new thing for the Sri Rejeki farmer group. With this assistance, it is hoped that the Sri Rejeki farmer group will succeed in becoming a seed producer. Based on the research of [9] stated that one of the success factors in the implementation of the Cocoa Gernas program is the role of the companion. The analysis results show that the facilitator plays a very important role in increasing the knowledge of farmers. The rice seed technology introduced in Gembong Village can be seen in Table 2.

**Table 2.** Rice seed technology in Bojong Village, Bojongsari, Purbalingga.

No.	Activities	Information
1.	Land preparation	Pass land history
2.	Isolation	Time
1.	Varieties	New Superior variety Inpari 32)
2.	Nursery	Soil tillage and sanitation. fertilizer 10 g Urea/m <sup>2</sup> , 5 g SP-36/m <sup>2</sup> and 5 g KCl/m <sup>2</sup> . Density 1 kg/40 m <sup>2</sup>
3.	Seed age	< 21 day
4.	Plant	Jajar legowo 2:1
5.	<i>Rogouing</i>	Does not match the description of the variety, abnormal (nutrient stress, temperature, and soil moisture), attacked by pests and diseases, vegetative, generative phase, and before harvest
6.	Harvest	physiologically ripe, 90% of the grain has turned yellow
7.	Drying	water content 12%
8.	Processing	Clean from a mixture of other varieties

Central Java AIAT assisted seed technology in collaboration with the Agriculture Service of Purbalingga Regency. Technology assistance is carried out by two methods: in-room meetings (extension) and field practice. According to [16], Agricultural extension has a role in helping farmers be able to help themselves overcome the problems they face properly and satisfactorily to increase their standard of living. Thus, the important value adopted in extension is empowerment so that farmers' independence is formed.

Counseling was carried out by PPL, POPT, and BPP Central Java. According to [17], counseling is carried out to increase the capacity of farmers' human resources, and also, the level of knowledge and skills of farmers is getting better. It can provide an increase in their standard of living. Meanwhile, according to [18], socialization and training activities can increase the knowledge, insight, and skills of farmers and students about the propagation of bananas in vitro, propagation by suckers, mycorrhiza applications, and enlargement of banana seeds. According to [19], to optimize production and obtain rice production efficiency, integrated effort are needed. A concerted attempt involves sharing expertise, technology use and programs counselling.

The initial stage in group strengthening was to host a series of meetings to pique the farmers' interest in embarking on seed and seedling production as a group activity and eventually as a profitable enterprise at both the household and community levels [20]. The meeting was attended by farmer cooperators, PPL, Aspiration Team, and village officials. The meetings were held three times, namely: 1) socialization of the seed activities carried out at KT Sri Rejeki; 2) jajar legowo planting system and 3) rice seed technology.

Technological assistance practices carried out directly in paddy fields are planting jajar legowo, controlling plant pests and diseases, and rouging. The field practice was guided by Central Java AIAT technicians and extension workers in Bojongsari District. Farmers are not used to using jajar legowo planting, so it is necessary to provide planting assistance. The row of legowo used was 2:1, with a spacing of (25x25) cm between the clumps in a row; 12.5 cm spacing in rows; and 50 cm as the distance between rows/aisles or written (25x12,5x50) cm.

One of the differences in rice cultivation for seed production and consumption is rouging. Rouging is one of the requirements to produce quality seeds that have high genetic purity. Rouging is the activity of removing plants whose morphological characteristics deviate from the characteristics of the plant varieties whose seeds are produced [21].

Pest and disease control assistance is carried out by Plant Disease Organism Observer, Bojongsari sub-district. If pests have exceeded the threshold, then pest eradication is carried out using drugs. For example, during field observations, pests were found. At the age of planting + 20 days after planting, the general condition of the plants was good. Overall, the planting system uses the 2:1 row of legowo with two kinds of tools for the legowo jajar tick and two directions of east-west and north-south legowo aisles. There is a development of OPT WBC (early hatching) and weeds, and this can be overcome by creating a scrubbing team and joint control coordinated by local extension workers. [22], the factors influencing farmers' agribusiness are training, apprenticeship, perception, motivation, extension activities, and farmer participation in agricultural extension activities.

According to [23], the safety of rice commodities as a source of staple food must be guaranteed from pest attacks. Effective pest control is an absolute requirement so that rice plants can produce maximum to meet national food needs. [24] the correct discovery of field observations is significant in identifying the relevant plant disorders.

The area of land used for this activity is 10 ha, with 35 farmers. All cultivation activities are the responsibility of the landowner. However, some farmers have other activities, so they cannot work according to their agreement. For this reason, farmer groups form working groups whose task is to assist farmers in cultivation activities that need to be carried out simultaneously or who do not have time to take care of their land. For example, weeding and eradicating pests and diseases need to be done simultaneously.

Based on the research of [25] that the level of participation of farmers in farmer groups is low. It means that farmer groups do not involve their members in group activities or are not participatory. The factors that significantly affect the level of farmer empowerment are the level of farmer participation in groups, empowerment patterns, physical and socio economic environment, personality traits of farmers, and availability of agricultural information. [26] The active participation of farmers in group activities is significant for the

sustainability of the group and the success of the participatory approach in extension. One of the recommendations from his research is to help farmers increase their income farmers access to training and counseling.

### 3.2.5 Rice seed farming analysis

Analysis of rice seed farming needs to be done to determine whether the farming is profitable or not by calculating the R/C ratio (Return Cost Ratio). The table below shows the analysis of rice seed farming in Gembong Village, Bojongsari, Purbalingga.

**Table 3.** Analysis of rice farming in Gembong Village, Bojongsari, Purbalingga, 2021.

Description	Seed (IDR)	Consumption (IDR)
One season of land rent	5,800,000	5,800,000
Cost incurred		
-Production facilities	5,135,000	3,305,000
-Labor wages	9,940,000	9,740,000
-Processing	7,200,000	
-Laboratorium test and print labels	176,600	
Omout	28,251,600	18,845,000
Seed production (Kg)	3,750	5,000
The assumption of the price of candidate seed is Rp. 5.000/kg and the price of seed is Rp. 14.000/kg	52,500,000	25,000,000
Profit	24,248,400	6,155,000
R/C	1.86	1.33

Based on the table 3, the profit obtained from the rice seed business is 24,248,400 IDR, higher than the profit of rice farming for consumption (6,155,000 IDR). The value of the R/C ratio for seed farming and consumption is more than 1, which means that rice farming for seeds and consumption in Gembong Village is economically feasible to cultivate and develop. R/C ratio of seed business is 1.86, which is higher than farming for consumption (1.33).

Rice seed farming produces 3,750 kg, and the rice consumption is 5,000 kg. The income from selling rice seeds is 52,500,000 IDR with a selling price of 14,000 IDR/kg, and sales of consumption rice are 25,000,000 IDR with a selling price of 5,000 IDR/kg. Seed rice farming provides a higher income than consumption rice farming. It is the first time farmers have produced rice seeds, and the results align with expectations. According to the opinion [27], productivity can be maintained or even higher with the spirit of sustainable farmer learning and can improve farmers' welfare.

## 4 Conclusion

Increasing the group's capacity in seed farming, among others, has a drying floor, warehouse and thresher. Working capital facilitation in labour, fertilizers, medicines, harvested plastic sacks, and 5 kg plastic seed packaging can provide motivation and initial capital for a rice seed business. The seed technology innovation applied resulted in 5,500 kg of ES class seeds. Empowerment of farmer groups needs to be done through assistance and provision of initial capital.

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