Farmer's group dynamics on rice farming in using, legowo row planting system (jajar legowo system) in Ambulu sub district

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Abstract. Group dynamics provide an overview of the activities of farmer groups in cultivating the jajar legowo system. Group dynamics are analyzed based on group goals, group structure, task function, group coaching, group cohesiveness, group pressure, group work effectiveness, and hidden intentions. The purpose of this study was to determine the group dynamics in applying the Legowo row planting system on rice farming. The research area was determined purposively in Ambulu sub District. Determination of the research sample was carried out by simple random sampling on farmers and farmer group managers who planted rice using the Legowo row planting system. The number of research respondents was 65 people consisting of the group leader and group members. The results showed that 98.8% of all members stated that the dynamics of the farmer groups were at high criteria. The high dynamic of farmer groups because it got high criteria in some indicator such as group goals, group structure, task function, group coaching, group cohesiveness, group pressure and group effectiveness indicator while group atmosphere and group pressure indicator got moderate criteria regarding to the farmer’s groups dynamics on rice farming using legowo row planting system.

1. Introduction
Agriculture is a very important sector for Indonesia because most of the livelihoods of the Indonesian population utilize existing resources in the agricultural sector. The agricultural sector also plays a role in providing food for the population in a sustainable manner, increasing food diversification, increasing added value, competitiveness and exports, and improving the welfare of farmers [1]. There are several reasons that underlie the importance of agriculture in Indonesia: (1) the potential for large and diverse resources, (2) the share of national income is quite large, (3) the size of the population that depends on the agricultural sector, and (4) it becomes the basis for rural growth. The increasing production and farmer welfare is carried out by forming farmer groups [2].

Group is a unit that contains several individuals, who have the ability to act with their unity in a way and on the basis of a unity of perception [1]. Groups have diversity in many ways, namely: size, duration, value values, scope and most importantly the diversity in group size. Small groups have members of three to 20 people and if they are more called formal organizations [3-5]. Farmer groups are institutions at the farmer level that are formed to directly organize farmers in farming [6]. Farmer
groups are formed according to the needs of the community who have the same goals and want to work together with one another [7].

The lowland rice cultivation technology used by farmers has been relatively simple, the planting method is irregular, either with one-way ticks or two-way ticks, so the population is low [8]. Technological innovations to increase rice production continue to be carried out to obtain specific technology packages, one of which is the legowo row planting system.

One way to increase production is by applying the legowo row spacing system technology [9]. legowo row cropping system is to increase the population by regulating spacing [10-13].

Group dynamics is a study of the forces contained within and within the group that will determine the behavior of group members. The achievement of group goals will be largely determined by the actions or activities carried out by the group which are the embodiment of group behavior as an integral part of the behavior of group members [2, 3]. The group will survive if the group's goals are clear, because many groups are formed instantly which only meet the needs of a few people or irresponsible individuals. To find out whether a group is dynamic or not, it can be done by analyzing the behavior of group members through aspects or elements of group dynamics.

The success of the group in implementing rice farming is in many ways related to the dynamics of the farmer group. Groups that have good dynamics will support groups and group members in making decisions correctly and facilitate organizing farmers in applying the right technology at each stage of their farming cultivation, so that production will increase [14]. The purpose of this study was to determine the group dynamics in applying the *Jajar Legowo* system on rice farming.

2. Material and Methods
The research area was determined purposively in Ambulu Sub District. Determination of the research sample was carried out by simple random sampling on farmers and farmer group managers who planted rice using the *Legowo* row planting system. The number of research respondents was 65 farmers consisting of the group leader and group members of farmer groups.

The research method used in the research was descriptive method to provide a systematic, factual, accurate description or description of the facts, characteristics and relationships, and the phenomena being studied [4].

Descriptive method was used to determine the group dynamics. The descriptive method is a method that provides a systematic, factual, and accurate description of existing facts, using group dynamics indicators according to as follows [5]: group goals, group structure, task function, group coaching, group unity / group cohesiveness, group atmosphere, group pressure, group effectiveness and hidden purpose.

The dynamics of rice farmer groups that apply legowo row planting system on rice farming in Ambulu Sub District, Jember Regency using the statistical analysis approach of score tabulation, score intervals 1-3, category 1 score indicates a low level, a score of 2 is moderate and a score of 3 is high. These measurements are based on dynamic indicators of farmer groups.

The data obtained are interval data. To find out the scale range obtained, it can be seen using the interval width formula:

\[ i = \frac{m - n}{b} \]

Note:
- \( i \) = Interval
- \( m \) = Highest Number in Measurement
- \( n \) = Lowest Number in Measurement
- \( b \) = The number of classes formed

From this formula, it can be obtained:
Criteria for farmer group dynamics decision making:
1. Low level of group dynamics (score 47-78)
2. The level of group dynamics is moderate (score 79-110)
3. High level of group dynamics (score 111-142)

3. Result and Discussion

Group dynamics is a necessity for each individual who lives in groups by interacting with and needing each other. The determination of farmer group dynamics uses indicators in group dynamics. The group dynamics indicators used are: group goals, group structure, task function, group coaching, group cohesiveness, group atmosphere, group pressure, group effectiveness, and hidden purposes. Group dynamics can provide an overview of the activities of farmer groups, causing more changes to occur within farmer groups.

Table 1. Farmer's Group Dynamics on Rice Farming in Using, Legowo Row Planting System

| No | Score  | Criteria       | Number of Respondent | Percentage (%) |
|----|--------|----------------|----------------------|----------------|
| 1  | 47-78  | Low            | 0                    | 0              |
| 2  | 79-110 | Moderate       | 7                    | 11.20          |
| 3  | 111-142| High           | 58                   | 89.80          |
|    |        | Total          | 65                   | 100.00         |

Table 1 shows that the dynamics of farmer groups in rice farming using the legowo row system can be divided into three criteria with a predetermined score. The dynamics of farmer groups in rice farming that uses the legowo row system is in the high category, because most of the members of the group (58 farmers or 89.8%) are included in the high category. So, it can be concluded that the dynamics of farmer groups in rice farming using the legowo row system is high. Farmer groups in rice farming that use the legowo row system are dynamic farmer groups and have an understanding of the importance of knowledge and social relationships with other farmers as part of the development of farmer groups to be more advanced.

3.1 Group Goals

Group goals are something that a group wants to achieve, therefore group members carry out various group tasks in order to achieve the final group goals that all group members want to achieve and give direction to group activities. According to group goals are what the group wants to achieve, seen in relation to individual (member) goals [15].

The main objective of farmer groups in rice farming using the legowo row planting system is to increase farmers' knowledge, especially the legowo row planting system, which will increase rice production and farmers' income. In addition to these main objectives, there are other objectives, namely the existence of friendship between members of farmer groups. Group objectives are determined by all members of the farmer group. The determination of the objectives of the farmer group is done by deliberation by the members of each group.
Table 2. Group Dynamics Based on Group Goal Indicators

| No | Score | Criteria | Number of Respondents | Percentage (%) |
|----|-------|----------|-----------------------|----------------|
| 1  | 5-8   | Low      | 0                     | 0              |
| 2  | 9-11  | Moderate | 3                     | 4.62           |
| 3  | 12-15 | High     | 62                    | 95.38          |
|    | Total |          | 65                    | 100.00         |

The goal of the high group is because members of the farmer group have a high commitment, it was indicated by 95.38% of the member group. To determine group goals, group members must go through deliberations and members are free to provide suggestions and opinions related to the objectives of the farmer group. The goal of farmer groups is to increase farmers' knowledge in using the legowo row planting system, which will have an impact on increasing rice production and farmers' income. Increasing farmers' knowledge will improve farmers' skills in farming, for example in terms of maintaining rice plants, fertilizing, and controlling pests and diseases and the legowo row planting system.

3.2 Group Structure
The group structure is a pattern of relationships between various positions in a farmer group. Group structure is a factor that determines the effectiveness and efficiency of group interactions. The structure of the farmer group consists of a group leader, group secretary, group treasurer and group members. Formation of farmer group management based on members' deliberations, each member of the group is free to give opinions and vote related to the structure of the farmer group management.

Table 3. Group Dynamics Based on Group Structure Indicators

| No | Score | Criteria | Number of Respondents | Percentage (%) |
|----|-------|----------|-----------------------|----------------|
| 1  | 5-8   | Low      | 3                     | 4.61           |
| 2  | 9-11  | Moderate | 6                     | 9.23           |
| 3  | 12-15 | High     | 56                    | 86.15          |
|    | Total |          | 65                    | 100.00         |

The structure of the farmer group is on a high criterion (86%) because the election of group administrators is carried out by deliberation of members. The principle of openess and democratic life in the group causes each member to be free to express opinions and the right to elect group administrators. The organizational structure has a role to play in increasing the effectiveness of group communication. Through a clear structure, communication that is both coordinative and critical can run more smoothly. The communication of group members is more effective. The structure of the farmer group is written so that all members of the group are known. the respondent stated that the group structure was kept by the head of the farmer group.

3.3 Task Function
Task function is a set of tasks that must be performed by each member of a group according to their respective functions and positions in the group structure. Each group certainly has problems in the group which proves that the group is dynamic, for that, coordination is needed in the group in solving problems [16].

The task function categorized as high dynamic, because the member group (80%) explained that they have their own task. Such as the head of the farmer group is in charge of the group coordinator which coordinates, organizes and is responsible for all group activities. The farmer group secretary is
in charge of the group administration. The farmer group treasurer is in charge of the group financial administration.

### Table 4. Group Dynamics Based on Task Function Indicators

| No | Score | Criteria  | Number of Respondents | Percentage (%) |
|----|-------|-----------|-----------------------|----------------|
| 1  | 5-8   | Low       | 4                     | 6.15           |
| 2  | 9-11  | Moderate  | 9                     | 13.85          |
| 3  | 12-15 | High      | 52                    | 80.00          |
|    |       |           | **Total**             | **100.00**     |

Group leader motivates members to come to group activities. For example, if a routine meeting or coaching meeting will be held, the group leader always informs the members. Group secretaries, treasurers have worked in accordance with their duties and obligations, such as: the secretary organizes all group administration while the treasurer manages group financial administration such as: group fees, group member loans etc. On the other hand, some members cannot explain their obligations in detail but can explain their main obligations as group members, namely being obliged to attend regular meetings. Other obligations that must be carried out by members include obeying rules or norms in the group, cooperating with each other among farmers between members and non-group members, and implementing the results of the collective agreement as well as possible.

### 3.4 Group Coaching

Group coaching is an effort to maintain group life and efforts to increase member participation. For that, the group must always strive for activities that involve the members and provide the facilities needed by the members, coordinate, supervise, and maintain smooth communication. Group coaching aims to keep groups active and developing, so support is needed from various parties who have an interest in advancing farmer groups [10].

The development of farmer groups in Ambulu sub-district is carried out through regular meetings held by Field Extension Officers (PPL) and private extension officers attended by members of farmer groups.

### Table 5. Group Dynamics based on Group Development Indicators

| No | Score | Criteria  | Number of Respondents | Percentage (%) |
|----|-------|-----------|-----------------------|----------------|
| 1  | 6-10  | Low       | 0                     | 0              |
| 2  | 11-14 | Moderate  | 0                     | 0              |
| 3  | 15-18 | High      | 65                    | 100.00        |
|    |       |           | **Total**             | **100.00**     |

All of the respondents (100%) stated that the coaching of the groups was done by coordinating in group activities. The head of the farmer group regularly motivates members to participate in every group activity. The form of coordination is in the form of visits made by the group leader to members who do not attend the coaching meeting and asking the reasons for their absence. The coordination that is carried out aims to maintain relationships between members so that it will reduce misunderstanding among members.

### 3.5 Group Unity/Group Cohesiveness

A compact group will be able to continue to grow and be able to overcome obstacles that arise. Cohesiveness is the total strength that attracts members to enter into a group, prevents members from leaving the group, and motivates members to be active in group activities. The results of data analysis on group cohesiveness are presented in Table 6.
Table 6. Group Dynamics Based on Group Cohesiveness Indicators

| No | Score | Criteria  | Number of Respondents | Percentage (%) |
|----|-------|-----------|-----------------------|----------------|
| 1  | 7-12  | Low       | 0                     | 0              |
| 2  | 13-17 | Moderate  | 8                     | 12.31          |
| 3  | 18-21 | High      | 57                    | 87.69          |
|    | Total |           | 65                    | 100.00         |

The majority of respondents (87.69%) stated that the dynamics of farmer groups based on indicators of group cohesiveness is high, this is because group members cooperate with each other in every activity and have high tolerance, for example in the irrigation system, use of hand tractors, prevention of pests and diseases, and each group member mutually exchanging information about rice farming and legowo row planting system.

The division of work among all group members is carried out fairly and equitably, there has never been a major conflict that causes estrangement in the group, although sometimes minor conflicts occur during discussions, but all of this is just a dynamic in group life.

3.6 Group Effectiveness

A group can be categorized as effective if it succeeds in achieving its goals which can be seen in the attainment of conditions or changes (physical or non-physical) that satisfy its members. In general, group goals are the conditions or goals the group wants to achieve in the future through group activities. Effective group members have the skills to overcome or remove obstacles in achieving group goals, maintain and improve the quality of interactions among group members. The state that group effectiveness tends to increase group dynamics when viewed from various perspectives, including production, productivity, group morale, enthusiasm and sincerity, and the level of satisfaction of its members [17].

Group work plans are activities that have been planned to be carried out by group members and serve as a guide in the implementation of group activities to fit the target. Group work plans are determined by group members through members' deliberations. Each member gives an opinion regarding the work plan to be carried out by the group so that each group member knows and implements the group work plan properly. Group Dynamics based on Group Effectiveness Indicators shows in Table 7.

Table 7. Group Dynamics Based on Group Effectiveness Indicators

| No | Score | Criteria  | Number of Respondents | Percentage (%) |
|----|-------|-----------|-----------------------|----------------|
| 1  | 5-8   | Low       | 0                     | 0              |
| 2  | 9-11  | Moderate  | 10                    | 16.40          |
| 3  | 12-15 | High      | 55                    | 84.60          |
|    | Total |           | 65                    | 100.00         |

Group effectiveness is in the high category as much as 84.60%, this is because members are satisfied with the group work plan that is aligned with the achievement of members' personal goals, besides that, members agree with the group work plan. Work plans are made by members and management of farmer groups, so that all members know and carry out all activities made in the work plan, such as: attending farmer group meetings which are held every month.
Each member is given the opportunity to express their opinion, then an activity that represents the activities of the majority of members is selected. Such activities serve as group work plan and approved by the managements.

**Hidden Purposes/Intention**

Hidden purposes are a program of assignments or goals that are not known, are not realized by group members. Hidden purposes influence each other and are just as important as open intention and goals. This hidden meaning is important for group life, pretending not to know the event or problem or ignoring it will not help, so it must be resolved. Groups can work for specific purposes and hidden purposes the same time.

The main reason for farmers to join as group members is to increase their knowledge about all things related to rice cultivation using the legowo row planting system. Farmers realize the importance of being a member of a farmer group because they will get a lot of information about farming, facilities and benefits, such as: being given subsidized fertilizer, grants, certified seeds and farming skills.

| Table 8. Group Dynamics based on Hidden Purposes Indicators |
|-----------------|-----------------|-----------------|-----------------|
| No | Score | Criteria | Number of Respondents | Percentage (%) |
|-----|-------|----------|------------------------|-----------------|
| 1   | 5-8   | Low      | 0                      | 00              |
| 2   | 9-11  | Moderate | 3                      | 4.62            |
| 3   | 12-15 | High     | 62                     | 95.38           |
|     | Total |          | 65                     | 100.00          |

The respondents stated that they fell the benefits of being group members as mentioned by 95.38% of respondents. The benefits most felt by farmers were personal goals such as increased knowledge and increased income, ease of obtaining subsidized fertilizers, distribution of fertilizers with the existence of a cooperative, and ease of selling rice production. In addition, members hope that the sustainability of the benefits obtained will have an impact on the progress of farmer groups and the welfare of rice farmers.

One of the indicators in the group's hidden purposes is the social changes felt by group members. The social change felt by members is a sense of brotherhood between group members. Before becoming a group member, farmers did not know the right application of the legowo row planting system. After becoming a member of a farmer group, they knows how to apply the legowo row planting system in their farming. Some application models for planting the legowo row planting system are: 2: 1 with a spacing of 25 x 12.5 x 50 cm: 2: 1 with a spacing of 30 x 15 x 40 cm, and 2: 1 with a spacing of 20 x 10 x 40 cm [18].

The reason why farmers join the group is due to the similarity between the personal goals of the members and the group's goals, such as increasing farmers' knowledge about the legowo row planting system. Farmers realize the importance of being a member of a farmer group because it will improve the welfare of farmers.

### 3.7 Group Atmosphere

A positive group atmosphere is indicated by the good and close relationship between members. This is evidenced by the frequent meeting of members both in formal and non-formal meetings which make the exchange of information flow without obstacles and share personal experiences in cultivating rice regarding to the legowo row planting system.

| Table 9. Group Dynamics based on Group Atmosphere Indicators |
|-----------------|-----------------|-----------------|-----------------|
| No | Score | Criteria | Number of Respondents | Percentage (%) |
|-----|-------|----------|------------------------|-----------------|
| 1   | 5-8   | Low      | 3                      | 4.62            |
The group atmosphere of the rice farmer in the legowo row planting system is at moderate criteria (78.92%) because group members rarely do activities that violate group rules, even if there is generally only breaking a little rule such as not attending group meetings and not attending coaching meetings, for that members must provide reasons for his absence from the meeting to the group leader. Meanwhile, the atmosphere of the farmer group with high criteria, mentioned by 18.46% of respondents is due to the democratic life in the group which is manifested in deliberation by members. Each member has a strong commitment to always creating a democratic life in the group, so that a comfortable and good group atmosphere will be created. There are no sanctions imposed within the group, because if there are problems among farmers it will be resolved in a family manner.

3.8 Group Pressure

Group pressure is anything that can create tension within the group. The existence of this tension is necessary to foster dynamism, but at too high a level it can actually destroy the life of the group. Therefore, the level of tension must be able to be manipulated in such a way as to create optimal dynamics. Pressure can come from within and outside the group [10].

The regulations in farmer groups are following group meetings and group coaching meetings, filling in the attendance list of group members, and notifying the reasons for absence to the group leader. There are no sanctions for members that are imposed in farmer groups, this is done in order to create a pleasant and brotherly atmosphere, and there is no competition that can lead to conflict.

| No | Score | Criteria | Number of Respondents | Percentage (%) |
|----|-------|----------|-----------------------|---------------|
| 1  | 4-6   | Low      | 8                     | 5.56          |
| 2  | 7-9   | Moderate | 34                    | 50.00         |
| 3  | 10-12 | High     | 23                    | 44.44         |
|    |       |          | Total 65              | 100.00        |

Group pressure with moderate criteria (50%) is due to the existence of farmer group regulations that are written in order to be known and remind group members to always comply with the rules. Group pressure with high criteria (44.44%) is due to the rules that must be obeyed by group members, namely attending regular group meetings and group coaching meetings, filling in the attendance list of group members, and telling the group leader the reasons for absence. Rules are made to be obeyed by members so that group goals that have been determined by deliberation can be achieved properly. Competition in the group is competition in doing rice farming to get better and get a high rice production, but even so, respondents still want to share information about the cultivation techniques they know about rice cultivation using.

4. Conclusion

Group dynamics is a necessity for each individual who lives in groups by interacting with and needing each other. Group dynamics can provide an overview of the activities of farmer groups, causing more changes to occur within farmer groups.

The results showed that the dynamics of the farmer groups were at high criteria. The high dynamic of farmer groups because it got high criteria in some indicator such as group goals, group structure, task function, group coaching, group cohesiveness, group pressure and group effectiveness indicator while group atmosphere and group pressure indicator got moderate criteria regarding to the farmer’s groups dynamics on rice farming using legowo row planting system.
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