Farmer groups (kelompok tani) capability towards food self-sufficiency by applying “special efforts program for increasing rice, corn and soybean production” in Juwangi District, Boyolali Regency

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Abstract. Climate change is a challenge in realizing food self-sufficiency. Facing these challenges requires the readiness of farmer groups as an independent self-empowered group. This study aims to determine the empowerment of farmer groups towards food self-sufficiency in a special effort program to increase rice, corn and soybean production in Juwangi District, Boyolali Regency. The participants in this study were all farmers who received the program meant to increase rice, corn and soybean production in Juwangi Subdistrict, with 18 groups in total. This study uses a descriptive qualitative method. Data collection techniques are carried out through observation, interviews, and documentation. Questionnaire is used as an instrument for data collection. The results of this study are the majority of farmer groups have been empowered from organizational elements, and business elements. It is hoped that this special effort program will be able to assist farmer groups to be empowered, by providing farming technology that is able to be applied in the face of the challenges of climate change, expanding business orientation and collaboration.

1. Introduction
Agricultural development rice, corn and soybean is a priority towards food self-sufficiency. The focus towards self-sufficiency is strived the government through a program formulated in a special effort to increase the production of rice, corn and soybeans (Upsus Pajale). Self-sufficiency is influenced a shift in environmental changes caused by climate change. The indirect challenge the effect of climate change is the degradation of agricultural land, crop failure, decreased productivity, conversion of agricultural land and global market [1]. Some anticipation of the impact of climate change has been pursued through the use of adaptive superior varieties, integrated planting calendars, cultivation technology [2]. The success of these efforts is largely determined by the main actors, they are farmer groups.

One of the government's efforts in the Upsus Pajale program was the empowerment of farmer groups. Farmers capability will answer the readiness of farmers to face challenges climate change [3]. This study discusses the empowerment of the majority of farmer group with the Upsus Pajale program seen from the elements of organization, business and cooperation.
2. Review of related literature

Food self-sufficiency is an achievement in realizing the concept of food sovereignty that is not only able to meet food needs from within the country, but also aims to achieve food independence [4]. The extension agents’ work as an assistant to farmer groups in implementing the program, increasing the farmer institutions capacity, and developing networks and partnerships with business actors [5].

The community empowerment is an effort to motivated the community to be able to explore their potential and dare to act to improve their life quality [6]. Farmers empowerment is all efforts to change the farmers’ mindset in improving farming, growing and strengthening farmer institutions to improve their welfare [7]. The empowerment ultimate goal is the capabilities. It is in the form of an independent community, who are capable and have building ability to advance themselves towards a better life on an ongoing basis [8]. Department of Agriculture [9] categorized the characteristics of farmer groups capabilities with a tendency of pre-advance, advance and post-advance, based on elements of organization, effort, and collaboration. The table below is the categorizing summary of farmer group capability characteristics:

Table 1. Farmer groups capability (element: organization)

| Sub-element | Characteristics of Farmer Group Capability Trends |
|-------------|-----------------------------------------------|
| Membership  | Pre-advance: The presence of members in routine meetings is less than 50% of all members |
|             | Advance: between 50 - 75% of the all of members |
|             | Post-advance: more than 75% of the all of members |
|             | Requirements for group members are dominated by social considerations |
|             | Based on the ability to fulfil mandatory savings, principal savings and voluntary savings |
|             | Based on strict criteria |
| Administrators | Pre-advance: consists of 3 (three) main department (chairman, secretary, and treasurer) |
|               | Advance: consists of 3 (three) main department and other department according to the development of the group's needs |
|               | Post-advance: consists of 3 (three) main departments and other departments, as well as the examining department |
|               | There is a cadre of management |
|               | Decision making is dominated by management |
|               | Starting to involve certain members |
|               | Most group members are actively involved in decision making |
| Rules        | Pre-advance: Having non-written rules that is agreed and obligated by all members |
|              | Advance: Having written rules that is agreed and obligated by all members |
|              | Post-advance: Having written rules that is agreed and obligated by all members towards AD/ART, and there are strict and effective sanctions |
| Administration | Pre-advance: Having a simple financial notebook |
|                | Advance: Having a complete financial notebook and administrative organization |
|                | Post-advance: Having a complete financial notebook and administrative organization |
|                | There is an administrative auditing system |

Source: Department of Agriculture [11]
Table 2. Farmer groups capability (element: business)

| Sub-element                  | Characteristics of Farmer Group Capability Trends                                      |
|------------------------------|----------------------------------------------------------------------------------------|
|                              | Pre-advance | Advance | Post-advance                           |
| Business orientation         |             |         |                                          |
| Type of business             |             |         |                                          |
| • oriented to the production of fresh products |             |         | oriented towards increasing added value |
| • market oriented with post-harvest handling |             |         |                                          |
| Technology Application       |             |         |                                          |
| Only apply a small portion of the recommended technologies |             |         | Has implemented appropriate technology |
| • Has implemented most of the recommended technologies |             |         | (able to reduce costs with a fixed amount of production or fixed costs with an increase in the amount of production) |
| Business scope               |             |         |                                          |
| Businesses variety in basic food businesses |             |         | Has diversified business towards increasing added value |
| • Businesses variety in more dynamic and developing business as needed |             |         |                                          |
| Business management          |             |         |                                          |
| The business is simply managed |             |         | well managed                            |
| • well managed               |             |         | well and efficiently managed            |
| Production/sales value       |             |         |                                          |
| In accordance with local market needs |             |         | In accordance with national market needs |
| • In accordance with export needs |             |         |                                          |

Source: Department of Agriculture [11]

Table 3. Farmer groups capability (element: cooperation)

| Sub-element | Characteristics of Farmer Group Capability Trends                                      |
|-------------|----------------------------------------------------------------------------------------|
|             | Pre-advance | Advance | Post-advance                           |
| Created Networking |             |         |                                          |
| Collaboration between groups already exists (although not yet utilizing all available resources) |             |         | Has a cooperation network both between groups and with other parties |
| • has been routine and active and tends to develop |             |         |                                          |
| Cooperation Rules |             |         |                                          |
| There is an agreement on the cooperation rules although it is not yet written |             |         | There are written cooperation rules |
| • There is an agreement that the cooperation rules supplemented by violation sanctions (although not yet written) |             |         | Supplemented by violation sanctions |

Source: Department of Agriculture [11]

3. Research method
The study was conducted in Juwangi Sub-district, Boyolali District. The research was conducted from April to June 2019. The subjects in this study were 18 farmer group recipients of the Upsus pajale program in Juwangi Sub-district. This study used descriptive qualitative method. Data collection techniques were observation, interview, and documentation. Instruments for collecting data is a questionnaire.

4. Results and discussion
Farmer groups are seen from the elements of the organization, the majority are post-advanced in terms of membership (88.9%) and decision making (83.3%). The majority are advanced in terms requirements
members (55.6%), administrators (55.6%), organizational rules (77.8%), and administration (78%). Farmer groups are seen from the business element, the majority are post-advanced in terms of technology application (61.1%) and business management (55.5%). All farmer groups (100%) are pre-advanced in terms of business orientation, business scope and production / sales value. Farmer groups are seen from the cooperation element, the majority are pre-advanced in terms of created networking (61.1%) and cooperation rules (100%) (Figure 1).

4.1. Organization elements
Farmer groups are seen from the elements of the organization, the majority are post-advanced in terms of member ship (88.9%) and decision making (83.3%) (Figure 1). The presence of farmers in routine meetings is influenced by government facilities in the form of meeting incentives and seed subsidy. Their presence is also influenced by the desire to convey their aspirations and exchange farming information with the purpose of improving their standard of living. Farmer as human being have hopes desires and a better life will. Farmers also have the potential to be developed to improve their lives [10]. Decision making is in the hands of group members based on consensus agreement. It becomes a culture to achieve justice for all members. Collective decision making is the best step to build the ability of participatory groups [11].

Figure 1. Farmer group’s ability percentage of Upsus Pajale Food self-sufficiency program in Juwangi District, Boyolali Regency

Farmer groups are seen from the elements of the organization, the majority are advanced in terms requirements members (55.6%), administrators (55.6%), organizational rules (77.8%), and administration (78%) (Figure 1). Provisions being a member of a farmer group is based on the ability of fulfill mandatory savings, principal savings and voluntary savings based on group solidarity. Farmer group is an association of farmers with common interests/ goals. Business development and management in groups need to be supported by capital [11]. The majority of farmer groups have a group management there are elements chairman, secretary, and treasurer. Each groups have carried out a cadre management. Young group members are given the responsibility of being treasurer or secretary. The organizational structure of farmer groups had provided an image a clear division of tasks includes planning and implementing work programs [12]. The majority of farmer groups have written rules that are agreed and obligated by all members. These rules, among others, is in terms of taking seed assistance, the
contribution to maintain the sustainability of the group's cash. The majority of farmer groups have logbooks administration, there are financial logbooks guest books, member books, letter agenda book, and activity books/meeting agendas. Farmer groups are a place for farmers to realize their goals [12]. Farmer groups that are well organized facilitate the empowerment process and support the success of government programs in producing outputs of agricultural practices that are able to adapt with climate change [13].

4.2. Business elements
Farmer groups are seen from the business element, the majority are post-advanced in terms of technology application (61.1%) and business management (55.5%) (Figure 1). The majority of farmers have implemented appropriate technology. It is because farmers receive information about agricultural technology face the challenges of climate change in counselling, such as including land cultivation, the use of superior and quality seeds, planting systems by applying jajar legowo/jarwo, the use of organic fertilizers and balanced chemical fertilizers, management of disease pests, etc. Technical advances is reform that was born from research and economic requirements that can be influenced by the government [14]. The majority of farmer groups have well-managed and efficient agricultural management, including fertilization, additional irrigation, crop rotation, and intercropping. This can increase the resilience of agricultural production in the face of the effects of climate change [15].

All farmer groups (100%) are pre-advanced in terms of business orientation, business scope and production / sales value (Figure 1). The business orientation of the Upsus Pajale program focuses on the increasing production and planting area, but has not yet focused on increasing value-added product. Empowerment of farmer groups oriented in the increasing value-added will strengthen the group in facing the possibility of climate change which results in decreased production and productivity of their farming businesses and related to the implementation of the global market system. Most farmers only plant something they want to without seeing the consumens need. Basically, a product will be valued by the additional value in it [16].

4.3. Cooperation Elements
Farmer groups are seen from the cooperation element, are pre-advanced in terms of created networking (61.1%) and cooperation rules (100%). (Figure 1). Large-scale commercial farming that is only sales-oriented is hardly found. On the other hand, cooperation networks will be easily established if the farm is commercial and market-oriented. The Upsus Pajale Program empowers farmer groups to the level of production ability only. This program is not yet able to empower farmer groups to the stages of processing output and marketing. The empowerment of farmer groups in dealing with the effects of climate change, especially the existence of a free market, is by establishing extensive cooperation in marketing farm products. One alternative is to join several farms into farmer groups with greater coverage in accordance with market needs. There are a number of trends in market integration, very small agricultural businesses with large families using opportunities for subsistence purposes. Large agricultural businesses, on the other hand, produce more for the market [14]. All farmer groups are pre-advanced in terms of cooperation rules (100%) (Figure 1). Farmer groups with small-scale farming tend to put family food needs first. Larger scale farms start producing for the needs of the local market. The form of farmers’ cooperation in marketing the products is through middlemen / loggers. There are rules of cooperation in them, but they are still simple, run like habits and are not written down. Extension agents can achieve empowerment of farmer groups in terms of the realization of cooperation through counseling activities. Various informative and learning efforts must be made to encourage farmers to develop constructive behavior in dealing with the effects of climate change [17].

The realization of food self-sufficiency is carried out by anticipating the effects of climate change, there are degradation of agricultural land, crop failure, decreased productivity, conversion of agricultural land and global market. Farmer groups have the characters of empowerment in the organization and application of farming technology to deal effects of climate change on agricultural land. Furthermore, farmer groups need to be empowered in facing the effects of climate change on the global market.
Empowerment related to business orientation, business scope, business management, production/sales value and cooperation, needs to be done in the *Upsus Pajale* program.

5. Conclusion
The results of this study are the majority of farmer group capabilities in the *Upsus Pajale* program that can be seen from the elements of organization, business, and cooperation. The majority of post-advanced farmer groups are from organizational elements (the presence of members in meetings), business elements (the application of technology, business management). The majority of advanced farmer groups are from organizational elements (requirements to become members, number of administrators, rules, administration). The majority of pre-advanced farmer groups are from the business elements (business orientation, business scope, production/sales value, created network), from the cooperation elements (cooperation, cooperation rules).

Farmer groups have the characters of empowerment solidarity in organization and the application of technology, so they are able to deal with the effects of climate change on agricultural land. Farmer groups need to be empowered in facing the effects of climate change on the global market. Empowerment related to business orientation, business scope, business management, production/sales value and cooperation, needs to be done in the *Upsus Pajale* program.

6. Suggestion
It is hoped that the *Upsus Pajale* program will be able to assist farmer groups to be advanced, by providing farming technology that is capable of being applied in facing the challenges of climate change, expanding business orientation and collaboration.

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