



## Dragon Fruit Cultivation as a Solution to Rice Harvest Dependence in Kuwu Village, Madiun Regency

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### Abstract:

*This article is the result of research that examines the efforts of the Kuwu village community to escape dependence on rice yields through dragon fruit cultivation by utilizing empty house yard assets with the Community Based Participatory Research (CBPR) approach. This approach provides an opportunity for researchers from the University of the UINSA KKN Team and the Kuwu village community to partner and collaborate to conduct research together to find solutions to problems faced by the community to improve their economic welfare. After conducting the inculturation stage with a Focus Group Discussion (FGD) with the Kuwu village community, and conducting an analysis of the initial assets owned by local community members, the researchers from the UINSA KKN Team group 18[3] together with the community, focus on efforts to solve the problem of the dependence of the Kuwu village community on the yield of rice harvest by looking for alternative additional income by cultivating dragon fruit by utilizing the land in their empty yards. To solve this problem, researchers from the UINSA Team and residents of the Kuwu village worked together in every stage of the research. There are four stages in the CBPR method, namely: (1) Foundation laying, (2) Research planning, (3) Data collection and analysis, (4) Determination of action on findings. Through these stages, it can be concluded that the results of this study include; first, the planting of dragon fruit seeds carried out by UINSA KKN students and Kuwu village residents starting with a literacy study and socialization about the benefits of dragon fruit initiated by local community leaders and extension workers from the local Agriculture Service; second, efforts to carry out various joint experiments to make food/snacks from processed dragon fruit carried out by PKK women and UINSA KKN students. This action was also followed up by the village government by initiating a working group (farmer's group) to oversee this program until finally realizing the aspirations of the community members to become a dragon fruit center village in the future.*



## **Introduction**

Kuwu village is located in the Balerejo sub-district, Madiun district, East Java province. Geographically, Kuwu village is an area that does not have mountains and is mostly lowland. The total area of Kuwu village is about 445.34 Ha, with the following details; paddy land with an area of 264.14 ha, dry land with an area of 124.76 ha, and public facilities with an area of 56.44 ha. Kuwu village is bordered by Pulerejo village, Purworejo, Pilang Kenceng sub-district in the north, in the south by Babadan Lor village, Tapelan in Balerejo sub-district, while in the west it borders with Simo village, Kedungrejo, Muneng and borders Tapelan village, Purworejo in the east.

The travel time from Kuwu village to Balerejo sub-district is about 15 minutes by motorbike, while the distance to Madiun Regency is 6.40 km by traveling about 45 minutes. Kuwu village consists of 5 hamlets, namely: first, Pilang Patok hamlet which consists of 1 RW and 4 RT. Second, Kasutan hamlet, which consists of 1 RW and 2 RT. Third, Singge hamlet, which consists of 1 RW and 5 RT. Fourth, Kuwu hamlet, consisting of 1 RW and 7 RT. and fifth, the hamlet of Sekar Petak, which consists of 1 RW and 5 RT.

Based on these details, it is known that the Kuwu village area tends to be dominated by rice fields with technical irrigation being the largest agricultural land in this area. In addition, natural resources in the form of vegetables, fruits and tubers can be easily obtained in the yard, garden and rice fields. Thus, it can be concluded that the livelihoods of the majority of Kuwu villagers are farmers and farm laborers.

As a village that has a large enough agricultural land, the people of Kuwu village are very dependent on agricultural products (rice crops) as their main livelihood. The harvest that can only be enjoyed after the harvest period for approximately 4 months makes farmers need additional costs to increase the family economy.

In addition, problems in the form of pests that disrupt agriculture and the irrigation system have not been resolved, before the existence of cyber wells, residents had to really maintain the condition of agricultural land so that they could harvest according to the time and the expected results. Some of these things make residents feel the need to have other income to add to the family economy apart from the agricultural sector.

On the other hand, there is a lot of vacant land around the yard of the house which seems to have been left alone by the Kuwu village community, while if it is used properly it will certainly generate additional income. On the same side, the village government has made efforts to initiate by providing enlightenment to community members to look at dragon fruit cultivation in order to help provide additional income, this is evidenced by the efforts of the village head to send a village cadre representative (hamlet head) to conduct a comparative study at the same time. studied dragon fruit cultivation in Banyuwangi district one year ago. This was then followed up by making a pilot project of planting dragon fruit in the yard of the hamlet head's house.

The Kuwu village government itself actually has the dream to make this village have a certain "branding" that is known by the general public at large. From the problem of the



community's dependence on the uncertain rice harvest in recent times, the Kuwu village government wants to develop dragon fruit as an alternative to earn additional income "besides rice" as well as hope that in the future it will become a village that is self-sufficient in dragon fruit to improve the welfare of its people..

## Method

Community-based participatory research (CBPR) is a collaborative process between community-based organizations and academic investigators. This has the potential to make research more responsive to needs and to increase the community's ability to address important issues.<sup>1</sup>

Community Based Participatory Research (CBPR) can simply be interpreted as community-based research that is participatory and has the main characteristics, namely; first, relevant to the community, second, participatory, and action-oriented.<sup>2</sup> CBPR is defined as a transformative research model based on the principles of community empowerment, collaboration, and social change that places concerned people to participate not as research subjects but as partners and agents of change.<sup>3</sup>

Community-Based Participatory Research (CBPR) and Community Based Research (CBR) are two terms that are often used as a forum or umbrella for various research approaches that are oriented to action and community participation.<sup>4</sup> CBPR is an approach that emphasizes collaboration between researchers and the community. In other words, the most important component of CBPR is relationship building . CBPR then developed as a methodology that rewards communities for creating knowledge and change.<sup>5</sup>

The CBPR process includes identification of research questions, assessment of community strengths and assets, setting priorities and targets, developing research plans and data collection methods, implementation and research plans, interpretation of findings, dissemination of research results, and implementation of findings to improve community well-being .<sup>6</sup>

In CBPR, research is seen as a tool to empower community members as partners to produce knowledge (along with academics, civil society organizations, and other

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<sup>1</sup> Janet Weiner and Jasmine A McDonald, "Three Models of Community-Based Participatory Research.," *LDI issue brief* 18, no. 5 (2013): 1–8.

<sup>2</sup> Tim Penyusun CBR UIN Sunan Ampel Surabaya, *Community Base Research*, ed. Sulanam, 1st ed. (Surabaya: SILE, 2015).

<sup>3</sup> Tim Penyusun CBR UIN Sunan Ampel Surabaya, *Community Based Research: Sebuah Pengantar* (Surabaya: SILE/LLD, 2015).

<sup>4</sup> Randy Stoecker, "Community-Based Research: From Practice to Theory and Back Again," *Michigan Journal of Community Service Learning* 9, no. 2 (2003).

<sup>5</sup> Sadaf Shallwani and Shama Mohammed, "Community-Based Participatory Research: A Training Manual for Community-Based Researchers," *Aga Khan University* (2007).

<sup>6</sup> Kenneth C Hergenrather et al., "Photovoice as Community-Based Participatory Research: A Qualitative Review," *American journal of health behavior* 33, no. 6 (2009): 686–698.



stakeholders) that is carried out to gather information and seek change by utilizing community assets and/or to address important societal issues.

CBPR was chosen as the approach in this Transformative Real Work Lecture because the community assistance process is based on participatory research of the assisted communities which of course begins with the formulation of research questions originating from the problems encountered in the Kuwu village community. Solving the problem is also expected to come from the strengths and sources that come from the community. This CBPR approach believes that researchers (as outside agents) are expected to be able to cooperate with community members (who best understand) the conditions of all the problems and all efforts to find solutions.

In general, according to Karen Haker, the stages of CBPR in her book: *Community-Based Participatory Research* are; first, community assessment, second, setting strategic goals, third; problem identification, fourth, formulating research design, fifth, conducting research, sixth; analysis/interpretation, and seventh; dissemination of research results, including action (action) change.<sup>7</sup>

There are two main doors to enter CBPR/CBR, namely outreach and inreach . The outreach door is an invitation or invitation from the campus through its various civitas to members of the community or community to conduct joint research. Meanwhile, the door of inreach is in the form of complaints about problems faced by the community and asking the campus to conduct research with the aim of solving the problems it faces as well as utilizing its assets.<sup>8</sup>

The research stages in this CBPR broadly contain principles rooted in Kurt Lewin's opinion, namely as a cyclical spiral principle which includes planning, implementation, observation, reflection.<sup>9</sup> The key to CBPR/CBR is to involve the community in the entire research process. Therefore, since the beginning of identifying the research topic, the community together with researchers must discuss the research objectives and divide their respective roles, both from the elements of the researcher and the community.

According to Joanna Ochocka from the Center for Community-Based Research, CBR is divided into 4 stages, namely: laying the foundation , research planning , data collection and analysis ( information gathering and analysis ) and action on findings ( acting on findings). The CBR stages can be seen in the image below.<sup>10</sup>

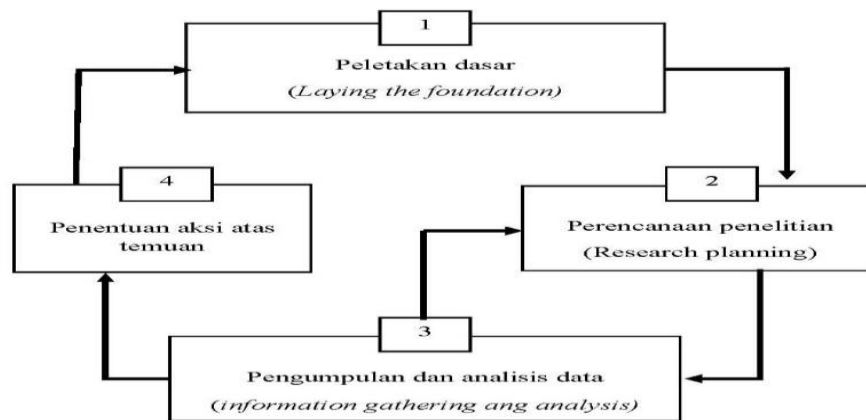
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<sup>7</sup> Karen Hacker, *Community-Based Participatory Research* (Sage publications, 2013).

<sup>8</sup> Ibid

<sup>9</sup> Tim Penyusun CBR UIN Sunan Ampel Surabaya, *Community Based Research: Sebuah Pengantar*.

<sup>10</sup> Ibid



The first stage: Laying Basic ( Laying the Foundation )

### **The first stage: Laying Basic ( Laying the Foundation )**

The key to CBR/CBPR is to involve the community in the entire research process. Therefore, since the beginning of designing the research, the community together with researchers must discuss the research objectives and divide their respective roles, both from the researchers and the community elements. This needs to be done until an agreement is reached. The important thing to be prepared at this stage is an introduction to the general picture of the life and condition of the research partner community through CBPR. For this reason, the implementation of the principle of partnership is inevitable. For CBR/CBPR partnership management and sustainability is assumed to be important because the research process requires a better understanding of social changes in the community.

This stage is a crucial initial stage in CBR/CBPR because it determines the success of the following stages. At this stage, both parties communicate with each other to share experiences, knowledge, and views on issues of mutual concern. The purpose of this communication is the understanding and common vision needed in joint activities.

### **The second stage: Research Planning**

At this stage, researchers and stakeholders organize joint activities according to their respective roles to plan research activities. This stage is the stage of " negotiating perspectives to illuminate " which means there is an understanding of perspectives to enlighten. At this stage, several assumptions that have been identified in the early stages are determined and selected which are the main priorities to be used as research questions, what methods will be used to answer research questions, how to accommodate stakeholder opinions , consider time and cost constraints and plan analysis techniques.



In addition, at this stage the research design is also determined. Research design means a frame in collecting and analyzing data. This will depend on the research objectives and questions, including decisions about what the research aims to achieve, and how much resources are devoted to it. Designs that can be used to plan research include experimental , quasi-experimental , or naturalistic descriptive . When determining research methods, it is necessary to identify research boundaries, determine focus and priorities, consider levels, units and analysis, consider the breadth and depth to be achieved and conduct a literature review .

### **Third Stage: Data Collection and Analysis**

This stage is also called negotiating meaning and learning , is a process of meaning and learning through collecting, analyzing and interpreting data. Data collection can be done in several ways and tools, for example by conducting in- depth interviews , observations, documentation, FGDs, story telling , community mapping , seasonal calendars, trend changes , and ranking matrices. It should be understood that before collecting data, there should be certainty about the plan of research instruments (tools) to be used, think about several alternative instruments, discuss them with the director, as well as matters related to research ethics.

Data collection and analysis is the process of systematically searching and compiling data by organizing data into categories, breaking it down into units, synthesizing it, arranging it into patterns. Bogdan and Biklen explain that data analysis is the process of systematically searching and compiling interview transcripts, field notes and other materials that have been collected that allow researchers to present findings.

Data analysis is the process of systematically searching and compiling data obtained from interviews, field notes, and other materials so that they can be easily understood, and the findings can be informed to others.[14] Bogdan and Biklen explain that data analysis is the process of systematically searching and compiling interview transcripts, field notes and other materials that have been collected that allow researchers to present findings. Koshy suggests three analytical processes developed by Miles and Huberman, namely: (1) data reduction , (2) data display , and (3) conclusion drawing/verification .

### **Fourth Stage: Determining Action on Findings**

This stage is the stage of mobilizing knowledge and the community towards the research results. This stage is to follow up on research results that can be used as new knowledge. In addition, the research results can be used as a tool for social change.

For this reason, research findings and results are important enough to be known by the wider community so that they can mobilize the public, especially stakeholders, according to the issues at hand. For example, the results of the CBPR research which is the result of collaborative research between scientific activities and advocacy activities with social groups in the community to encourage social change, should also be



disseminated to drive social change. Therefore, the results of CBPR research should be known and used with the community, especially the community who are partners in research. CBPR will be meaningless and/or considered a failure if the results cannot be used by the community for change.

When submitting research results, it is necessary to ensure that: (1) the research results are useful and relevant to all stakeholders , (2) it is necessary to involve all stakeholders in the facilitation process, (3) research results can inspire the community to make changes for the better. , and (4) evaluate all learning processes and outcomes.

## **Result**

### **Inculturation and Finding Problems with the Kuwu Village Community**

Inculturation is the process for the introduction of affected communities so that the realization of building trust ( trust building ) between the beneficiary communities and researchers. The important thing to be prepared at this stage is an introduction to the general picture of the life and condition of the research partner community through CBPR. For this reason, the implementation of the principle of partnership is inevitable. For CBR/CBPR partnership management and sustainability is assumed to be important because the research process requires a better understanding of social changes in the community.

Problem identification is a first step before determining the formulation of the problem in a study. In identifying the problem, the Kuwu village community members and students participating in the 2019 UINSA KKN group 18 discussed together to find problems that existed in the Kuwu village. The activities carried out to identify problems are through:

### **Forum Group Discussion (FGD)**

Prior to carrying out the work program, KKN 18 students held a Group Discussion Forum (FGD) with Kuwu village residents, entitled " Kuwu Village Citizens Meeting with KKN 18". The FGD aims to explain the programs they have and discuss the work steps that will be taken in realizing the program with the Kuwu village community.

In the FGD there were presenters who presented the reasons, benefits of dragon fruit, advantages and disadvantages of dragon fruit. The presenter explained that the economy of the residents who still depend on rice which is harvested every 4 months without other economic supports is one of the reasons why the 2019 UINSA KKN Group 18 of 2019 together with the Kuwu village community proposed to carry out a dragon fruit planting movement as a joint collaboration program to find problem solving for citizens. On the other hand, one of the strong reasons to support this program is because there is already one hamlet in this village that has succeeded in cultivating dragon fruit



in each of their yards. These hamlets are Kuwu hamlets, to be precise, RT 14 and RT 15 become one of the strong supporting capitals.

After the presenter has finished conveying various matters related to the program listed in the presentation slides, the discussion forum is taken over by the moderator who leads the discussion to determine the steps that must be taken to follow up on the program that has been taken.

In the FGD process, the Student Community Service Team of UIN SA Group 18 of 2019 Wave 1 positioned itself as a facilitator for local community members, so that all decisions were returned to the community. This is done starting from the determination of the day for socialization including the implementation of the action. The socialization aims to provide insight for community members on how to plant and care for dragon fruit. In addition to socialization, there was also a symbolic planting at the village hall.

After determining the day for socialization and action, the forum continued to discuss the location plan for planting dragon fruit in each hamlet. Each hamlet head proposed areas that could be planted. The total points from all hamlets are 682 points. Those involved in the action were the head of the hamlet, the head of the RT, community leaders, youth organizations and community members.



Figure 1: FGD with Kuwu villagers in the inculturation process

### **Engage in the Learning Process at School**

The UINSA KKN Team Group 18 mingled with residents of the State Elementary School (SDN) 1 and Kindergarten (TK) 2 of Kuwu village. Apart from being part of the student experience to practice teaching directly in schools, the KKN 18 Team also wants to be closer to the Kuwu village residents, especially in the field of education. This was done as part of a process to build trust between local community members and researchers from universities (the UINSA KKN Team Group 18) to finally make it easier for the data mining process to be carried out.



### **Unstructured Interview and Participatory Observation of Community Life.**

In implementing KKN with the CBPR approach, the Community Service Team of UIN Sunan Ampel Surabaya Group 18 conducted participatory observations as a first step to photographing the potential/assets owned by Kuwu village, Balerejo sub-district, Madiun district, this was also followed up with unstructured interviews to further explore the required data. in the research process. This process was carried out by KKN 18 students to establish closeness between Kuwu village residents as was done to several Kuwu villagers, including the following:

First, interview with the village head to find out who are the residents who play an important role in the lives of the Kuwu village community. In addition, the village head also informed some of the potential that exists in Kuwu village and the customs (culture/customs) that exist in the Kuwu village community . In this process the researcher found data that; The majority of the people in Kuwu village have their livelihood as rice farmers, so residents depend on the agricultural sector for their economy and income from rice crops, this is also explained by the village head; "When rice production falls, residents also experience economic difficulties" . For now, there are already several Kuwu village residents planting dragon fruit in their respective yards, in this case the village head wants the Kuwu village residents to also plant more which is expected to increase the economy apart from rice farming .

Second, an interview with the head of the PKK in Kuwu village. Conducting interviews with the head of the PKK, namely knowing the activities of the PKK and knowing the potential, creativity and business that exist in Kuwu village residents .

Third, interviews with the hamlet heads of Kuwu village, Sekar hamlet and Petak hamlet to find out the potential that exists in Kuwu and Sekar Petak hamlets. The potential of the Kuwu hamlet is; that the residents in the Kuwu hamlet and Sekar Petak hamlet are more enthusiastic in all respects to the activities in the hamlet and those in the Kuwu village, and some residents have planted dragon fruit to make it easier to implement the program initiated by the research team (KKN UINSA) and community members in dragon fruit cultivation efforts.

### **Asset Analysis for Change Action**

#### **Initial analysis ( Front-end Analysis )**

The initial analysis was used by researchers (UINSA KKN Team and Kuwu Village Community Residents) to find out the basic problems that existed in Kuwu village. The implementation is to gather all elements of the community in Kuwu village into a forum entitled "Musyawarah Together with KKN 18 Students and Kuwu Village Community Members" which was attended by both the local community, village officials, religious leaders, community leaders, as well as several people considered had great influence in Kuwu Village.



The deliberation was carried out by providing an open mindset - problem stimulus which was led directly by the moderator, by promoting the knowledge received from academics, it was not difficult for residents to grasp what was discussed at this stage. Without language restrictions, accents, and informality of sentence structure, residents enjoy participating in deliberations.

Furthermore, the moderator prompted the residents to think in general about the problems that are currently afflicting Kuwu village. Starting from the professional sector, assets, potential, development, economy, culture, organization, Human Resources (HR), religion, as well as education.

So that the whole community one by one began to be interested in conveying their impressions, suggestions, problems, aspirations, and solutions from their respective assumptions. At this deliberation, 18 KKN students agreed not to use a debate system (discussion and exchange of opinions on a matter by giving each other reasons to defend each other's opinion), but to use the consensus method (discussing problems that need to be found the source / root of the problem, then find a solution/how to overcome it), so that there is no chance of conflict at all, because there is no win-win solution target but an open discussion target .

As a result of this forum, the Research Team (UINSA 18 KKN students and community representatives) succeeded in gathering various aspirations of the people in Kuwu village, witnessed by the Kuwu village community themselves. This process is then continued with the stage of determining the priority scale of change action with the principle of " low hanging fruit" by looking at the assets owned by the villagers and the availability of human resources and paying attention to the limited time for the research team ( UINSA KKN Team group 18) .

### **Advanced Analysis ( Next Analysis Point ), Individual Asset Analysis**

The individual assets found were the existence of a Jelly Art entrepreneur in Kuwu village who is still active today. The business was initiated by a resident of Kuwu hamlet, Kuwu village, Mrs. Iska, at first her mother was just trying to see from the internet the process of making Jelly Art .

Mrs. Iska thinks that there is a business opportunity that is fortunately enough to increase her income. In 2010 Mrs. Iska started her business slowly. At first the produce was only sold to neighbors and closest people. However, now there are several shops that sell the processed jelly art , and some have even started ordering Mrs. Iska's jelly art . The ingredients used are jelly and food coloring, but sometimes her mother also uses natural dyes from fruits. There are various sizes of Jelly art, including the smallest to the largest with various prices according to size. Example: the smallest jelly is usually priced at Rp. 1,000, medium-sized bag Rp.2,500, the biggest jelly is Rp. 50,000. Lack of manpower



made Mrs. Iska's sales and business development only limited to selling in stores and when someone wanted to order it.

Apart from Mrs. Iska, who was successful in producing Jelly Art, there was one other individual who was also successful with the catfish farming business, namely Pak Fat, a catfish breeder in Sekar Petak Hamlet. His catfish farming business has been pioneered for a long time until now, his customers are residents of Balerejo village and surrounding areas. His business made a profit from the sale of catfish which was taken by several distributors to be sold in the markets.

### **Group Asset Analysis**

Community mapping is the success of the PKK organization. PKK is an organization engaged in the economic field. Within the scope of Kuwu village, the PKK in Kuwu village is the most prominent organization. It can be seen from the various routine activities carried out by PKK in Kuwu village, including holding blood donations every 3 months, nutrition post every 3 months, gymnastics for the elderly every Friday and also free medical treatment. This organization has several POKJAs (Working Groups) where each POKJA has its own duties. Among them are the Surveillance Working Group whose task is to focus on disease; The standby working group has the task of helping pregnant women or the sick; the working group for natural disasters has the task of focusing on natural disasters; In addition, there is a PHBS working group and a KADARZI working group or Nutrition Awareness Family.

### **Association and Institutional Asset Analysis**

Association is an association with several individuals who have ties. The association creates an interaction which then underlies the formation of social institutions. The existence of this association process makes it easier to identify the capacity of an organization. Examples are farmers' associations, workers' associations, and nurses' associations.

While the institution is a norm or rule regarding certain community activities that are binding for a relatively long time and have certain characteristics such as symbols, values, rules, and goals. The establishment of this institution has a goal that will be directly related to the community. Institutions are all structural stages of power whose implementation is based on social order and cooperation in shaping the behavior of each individual involved in a particular institution.

In the village of Kuwu there are several associations formed including the ta'lim assembly, PKK, Karang Taruna, Bumdes (Village-Owned Enterprises), BPD (Regional Revenue Agency), PKH (Family Hope Program), Farmers Groups, Pencak Silat Colleges, Village Officials, and society. After being identified, there are the following associated assets;



Associate Assets					
No.	hamlet Kuwu	hamlet Sekar Petak	hamlet Singge	hamlet Pilang Peg	hamlet shoes
1.	Youth organization	Youth organization	Youth organization	Youth organization	Youth organization
2.	Mother's Gathering	Mother's Gathering	Yasinan Ladies and Gentlemen	Yasinan Ladies and Gentlemen	Yasinan Ladies and Gentlemen
3.	Yasinan Ladies and Gentlemen	Yasinan Ladies and Gentlemen	Farmers	Farmers	
4.	Farmers	Farmers			

**Physical and Natural Asset Analysis**

To find a physical asset owned by Kuwu village, the transect technique is used . Transect is an imaginary line along a certain area for distribution survey purposes and other observations. By walking along those lines and documenting observations, an assessment of various assets and opportunities can be made. The results of the search that has been carried out by the UINSA KKN Team group 18 together with the Kuwu village community are as follows:

Physical Asset					
Dusun Kuwu	Singge Village	Sekar Hamlet	Petak Hamlet	Pilang Hamlet	Patok Kasutan Village
Home residents	Home residents	Home residents	Home residents	Home residents	Home residents
mosque	Islamic Prayer Room	Islamic Prayer Room	Islamic Prayer Room	Islamic Prayer Room	Islamic Prayer Room



Clean Storage	Water	Clean Storage	Water	Clean Storage	Water	Clean Storage	Water	Clean Water Storage
village meeting hall		Gate		School		Gate		
School Gate				School Gate				
Field								

**Natural Asset**

<b>Dusun Kuwu</b>	<b>Singge Village</b>	<b>Sekar Petak Hamlet</b>	<b>Pilang Hamlet</b>	<b>Patok</b>	<b>Kasutan Village</b>
Banana tree	Banana tree	Banana tree	Banana tree		Banana tree
Bamboo	Bamboo	Bamboo	Bamboo		Bamboo
Catfish cultivation	Catfish cultivation				
Mango tree	Mango tree				
Dragon fruit		Dragon fruit			

**Discussion**

**Determination of Dreams for Action for Change**

From the results of the identification of problems that occur through FGD activities, interviews, observations and analysis of existing assets. So the researcher (the UINSA KKN Team) together with the community members carried out a priority analysis based on the principle of " law hanging fruits ". Then the results of the discussion by always paying attention to the assets owned by the residents and the availability of time in the research process (CBT CBPR), finally led to a collective agreement to plan an action change towards Kuwu village self-sufficiency in dragon fruit as a solution to community dependence on crops. sometimes erratic rice by utilizing the empty yard of the house to plant dragon fruit until finally the community can meet the needs of the family with additional income from this dragon fruit cultivation sector.



## **Action for Change to Realize Dreams and Disseminate Knowledge**

### **Change Action Process**

#### **Literacy Benefits of Dragon Fruit**

After determining the assets to be developed and the institutions/organizations collaborating with KKN participants to develop dragon fruit assets which are mostly owned by Kuwu villagers, the next step is socialization to the community. The socialization aims to provide an understanding to residents regarding the effective use of yard land and the correct way to plant dragon fruit. The activity was carried out on Friday, February 1, 2019 at the Kuwu Village Hall with speakers from the Balerejo District Agriculture and Fisheries Service. In the socialization, it was explained about the dragon fruit planting process with the stages of selecting seeds, tools prepared for planting, maintaining dragon fruit plants to the correct harvesting process.

Dragon fruit is one type of tropical fruit that is still in the cactus plant family ( cactaceae ). This dragon fruit comes from Central America, but is the largest commodity from Vietnam. Dragon Fruit was first brought to Vietnam by the French a few years ago. Dragon Fruit brought by France to Vietnam with a large fruit size and attractive shape and only blooms at night.

Vietnamese people who know that Dragon Fruit tastes delicious, then take the initiative to plant and cultivate the fruit in Vietnam. So that currently Dragon Fruit is cultivated on a large scale as a plant that has high commercial value and is the largest foreign exchange income in Vietnam. The distribution of dragon fruit from Vietnam has dominated fruit markets in the Southeast Asian region, even now in Indonesia it has begun to be planted in various provinces.<sup>11</sup>

In Indonesia, dragon fruit began to be known around the middle of 2000. Until now, many regions in Indonesia have cultivated dragon fruit, including Pasuruan, Jember, Mojokerto and Jombang. From the beginning, few seeds were planted until finally they could be cultivated commercially.

Indonesia is a suitable country for cultivating Dragon Fruit because of its tropical climate and weather. Dragon fruit can grow optimally at an altitude of 0-350 masl with a rainfall of about 720 mm per year. The ideal temperature for dragon fruit growth ranges from 26-36 degrees Celsius.

#### **Dragon Fruit Cultivation Process<sup>12</sup>**

Dragon fruit plants can be propagated by generative and vegetative means .<sup>13</sup> The generative way is by multiplying plants from seeds. The seeds are taken from selected dragon fruit seeds. This method is rarely used because it is a bit difficult and only done

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<sup>11</sup> Mukhson Azwar Hamid, *Budidaya Buah Naga : Sosialisasi Pemanfaat Pekarangan KKN UIN Sunan Ampel Surabaya 2019*" (Surabaya, 2019).

<sup>12</sup> Tim Redaksi, "Panduan Teknis Budidaya Buah Naga," *Alamtani*.

<sup>13</sup> Ibid



by a few experienced people. While the vegetative method is relatively widely used because it is easier. With this vegetative method, dragon fruit cultivation is relatively faster to produce fruit. In addition, the characteristics of the parent plant can be ascertained according to the offspring. This vegetative way is like cutting, cutting can be done with the following steps:

1. Cutting is carried out on stems or branches of plants that have fruited at least 3-4 times. This is so that the cuttings can produce faster and the productivity can be known from the previous fruit.
2. Choose stems that are at least 8 cm in diameter, hard, dark, gray-green and healthy. The larger the diameter of the stem, the better, because the stem will be the main stem of the plant.
3. Cutting is carried out on stems that are about 80-120 cm long. Don't cut it all, leave about 20%, the 80% part will be used as a seed candidate.
4. Cut the stems of prospective seedlings with a length of about 20-30 cm. The top end is cut flat, while the bottom base that will be plugged into the ground is cut tapered. The point is to stimulate root growth.
5. Cuttings must have at least 4 buds. The length of the cuttings can be shorter but the consequences will affect the speed of fruiting.
6. Let the stem cuttings that have been cut into pieces until the sap dries. If directly planted sap that is still wet can cause stem rot. To avoid the risk of fungal attack stem cuttings can be dipped in a fungicide solution.
7. Prepare a bed or polybag to plant the cuttings. For a mixture of soil or planting media, please see how to make.
8. Flush the beds or polybags that have been filled with planting media. Then plug the pointed part of the cutting into the planting medium as deep as 5 cm.
9. Provide shade or cover to protect the cuttings. Do watering as much as 2-3 days.
10. After 3 weeks, the first shoots begin to grow and the shade or cover must be removed to allow the seedlings to get full sun.
11. Seedling maintenance usually lasts up to 3 months. At this age the seedling height ranges from 50-80 cm.

### **Dragon Fruit Cultivation Preparation**

In dragon fruit cultivation the most needed is the presence of seeds. In addition, climbing poles and powder are also required. Making a climbing pole is needed to support the growth of plants. Climbing poles are usually made of concrete in the form of rectangular or cylindrical pillars with a diameter of about 10-15 cm.

The height of the climbing pole for dragon fruit cultivation ranges from 2 - 2.5 m. The pole is planted 50 cm deep. at the end of the top of the truss in the form of a log or it could be a used motorcycle tire. The climbing poles are lined up with a distance of 2.5-3 meters between the poles.



After preparing the climbing pole, the next step is to make a plant hole with a size of 60 x 60 cm with a depth of 25 cm. the position of the climbing pole is exactly in the middle of the hole. In each hole mixed with compost or manure to make the soil more loose and increase nutrients.

### **Dragon Fruit Seed Planting**

For one dragon fruit pole it takes about 3-4 seeds of dragon fruit plants. Seedlings are planted around the climbing pole, the distance between the climbing pole and the plant seeds is about 10 cm. After that, dig the soil as deep as 10-15cm or according to the size of the seedling. Then the seeds are placed in the excavation and backfilled with compacted soil. After the seeds are planted, tie the stems of the plant seeds so that they stick to the climbing poles. The binding should not be too tight to provide space for plant growth so as not to injure the stem.

Simultaneous planting of dragon fruit seeds began on Sunday, February 3, 2019 to Tuesday, February 5, 2019 involving partners from the bumdes and youth organizations , village elders and kamituwo in each hamlet. The selection of partners who come from various circles of Kuwu village residents is considered to have a very good effect in encouraging the implementation of work programs. The role of BUMDES (Village-Owned Enterprises) in increasing the income of rural communities through various programs and economic business activities of rural communities is deemed necessary to support the implementation of this program so that later the dragon fruit seed planting program can continue and can be considered as one of the assets that needs to be developed and get financial support from the government. In addition, the role of kamituwo as village heads and elders as people who have important roles in the community is deemed necessary to invite residents to participate in activities. Meanwhile, Karang Taruna serves to mobilize villagers. Karang Taruna functions to invite young people to participate in the implementation of the dragon fruit seed planting program so that not only parents are involved, even village youth are also involved.



Figure 2. Dragon Fruit Planting by the Kuwu Village Community



## Conclusion

Kuwu Village is one of the villages located in Balerejo District, Madiun Regency. The majority of Kuwu villagers are farmers. This makes the economic needs of families in Kuwu village very dependent on income from these agricultural products, while the time period for harvesting rice is very long, which is approximately once every four months. From this problem, the research team (KKN students group 18 in 2019 collaborated with Kuwu village residents) jointly carried out research to help solve these problems and finally found an offer solution so that the Kuwu village community did not depend on rice crops alone. But there is an initiative from some residents and the Kuwu village government to invite other residents to jointly cultivate dragon fruit plants in their yards. This has actually been done by several people from the village community themselves with support from the village government (one of which is the example of the hamlet head (Kamituwo) Kuwu who has planted dragon fruit seeds. From this initiative, the action of planting dragon fruit seeds emerged. which involves KKN 18 students with the Kuwu village community. It is hoped that if the dragon fruit has produced a lot of fruit, it will increase the economic income of the village community, and in the future Kuwu will become a dragon fruit center village and be able to increase the welfare of its citizens.

With the implementation of the planting of dragon fruit seeds in Kuwu village, which was organized by KKN 18 students together with the Kuwu village community, it is hoped that it will become a long-term work program for the Kuwu village government so that the ideals with the community towards a dragon fruit center village are realized. Not only that, it is hoped that Kuwu village will later have many MSMEs (Micro, Small and Medium Enterprises) engaged in processing dragon fruit products that can advance the economy of the Kuwu village community. To achieve this, it takes the role of various parties as partners such as the Kuwu village government, BUMDES and the active involvement of the community to work together to realize the implementation of the long-term program

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