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## Development of Green Village Based on Processing of Vegetable Flour Products in Sindon Village, Boyolali District

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### Abstract

Sindon Village is one of the vegetable center villages in Boyolali district. Vegetable production in the village is quite abundant, but there has not been optimal flour processing practice. The purpose of this community service activity is to improve community skills in processing flour-based vegetable products prepared for commercialization. The partners of the community service activities consisted of 3 groups, namely PKK, women farmer groups (KWT) and Aisiyiah groups. The activity begins with training in making cookies products with the addition of spinach flour. Then a spinach flour-based product processing competition was conducted. The results of the activity showed that the three partner groups were skilled at practicing the process of making spinach cookies. In the product competition, each partner group has featured its fine products. The result of the competition is the identification of flour-based vegetable products that will be continued in the commercialization process.

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## 1. Introduction

Ngemplak Sub-District administratively consists of 12 villages, one of which is Sindon, which located north of Adi Soemarmo airport. The population of Sindon village is  $\pm$  8,000 with more than half of them are farmers. Most of the residents are farmers of water spinach, spinach and mustard greens, in addition to most rice farmers. Some farmers work on land owned by Adi Soemarmo / Indonesian Air Force airport with a rent or profit sharing system (Sindon Village Profile, 2017).

The area is owned by Adi Soemarmo Airport which is used and utilized by Sindon farmers with more than 50 hectares. It is used for growing rice and vegetable plantations such as kale, spinach and mustard greens. Sindon village vegetable production is quite abundant especially in the rainy season, more than 5 ton/day, so the price of vegetables often falls during this abundant production. The normal price of a bunch of water spinach from farmers is Rp. 500.00 to Rp. 600.00/per-bunch, and only Rp. 200.00 when production is abundant. Often farmers feel frustrated and crops are wasted and not harvested.

The farmers ability to understand the behavior of the vegetable market is still limited, so farmers are dependent on traders or collectors in the village of Sindon. The skills to develop vegetable products into processed products that have a longer shelf life, higher economic value and high quality are not yet known by Sindon village farmers, although vegetable materials are a source of vegetable protein and fiber that are beneficial for the body's metabolism. Therefore, the introduction, training and assistance of various processed vegetable products become useful products, the economic value and nutritional value of vegetable flour are very interesting to teach and train for residents in Sindon, known as Sindon green village.

In 2016, the village of Sindon had been assisted through IbM Ipteks bagi Masyarakat (science and technology for community) activities involving three groups, namely the Kelompok Wanita Tani (female farmer group) "Mawar", Pembinaan Kesejahteraan Keluarga (Family welfare empowerment) members and the Aisyah recitation group. Female farmer group (KWT) Sindon village established in 2010, has 35 members and currently has activities ranging from planting plant seeds and vegetables, Japanese mustard cultivation, and show rooms for selling various plants and vegetable seeds. In 2013-2014 the group also received funding from the Boyolali Regency Government for family vegetable crop programs. Most of the activities carried out are cultivation of vegetable seeds, Japanese mustard cultivation and the sale of various plants, there is no attempt to process the harvest of vegetables produced by vegetable farmers in the village of Sindon. The activities of Pembinaan Kesejahteraan Keluarga (Family welfare empowerment) members and Aisyiyah Sindon village recitations are also quite routine, by holding regular meetings that are conducted around the board and members. During the implementation of IbM activities, the implementing team has provided knowledge and skills to partners in Sindon village, so that they have the skills to process vegetables into vegetable flour and develop them into processed products such as wet noodles, dry/instant noodles, crackers, biscuits, nuggets and greenis. The processed vegetable flour products have been produced and sold for activities at the meetings of PKK members, Aisyiyah recitations, and limited meetings or meetings at Sindon village hall. However, productivity and processing of vegetable processed products have not been done massively and routinely, still limited to incidental requests for these activities.

The problem faced by the people in Sindon village is to make Sindon village a Vegetable Flour Processing Center as a manifestation of the Sindon Village Green Village, are business development and management planning, the intensification of the organization of joint production and marketing management through a joint business group (KUB) has not been carried out, lack of knowledge about label design and packaging of processed products so

that the products produced are more attractive and durable. Therefore, the purpose of this community service activity is to improve community skills in processing flour-based vegetable products prepared for commercialization.

## 2. Methods of Implementation

The implementation of community service is divided into 3 stages:

### a. Socialization.

This stage was carried out through discussions with the village head and prospective partners from the PKK, KWT and the Aisiyiah Group. The discussion included building plans for activities to be carried out during the program.

### b. Training in making spinach cookies

The training was attended by three groups, which began with the provision of training materials by the speakers, followed by discussion about the technical implementation of the training. Each group was accompanied by one student during the training and then each group displays the product of the training.

### c. Products competition

At this stage, each group make their product independently, starting from making vegetable flour, providing additives, to processing equipment. Each group made 2 types of flour-based vegetable products for competition. Then each group presents their products on the table to be assessed by the speakers.

## 3. Results and Discussion

### 3.1 Cooking Spinach Cookies Training

Training and mentoring in cooking cookies was provided because cookies is product that preferred widely by various levels of society and age. In addition, processing cookies is quite simple using simple equipment. The training was carried out with all three partner groups.



Figure 1. Explanation of making spinach cookies



Figure 2. Practice of making spinach cookies



Figure 3. The spinach cookies products

Trainers accompanied by students first provide brief material on how to make cookies. Participants were then given the opportunity to ask questions through discussion sessions. Participants ask how to reduce the unpleasant aroma of vegetables on the product, especially during storage. The trainers gave an answer that giving flavorings such as vanilla can reduce the aroma of vegetables that are less preferred. Then the participants practiced making cookies accompanied by students, with the addition of vanilla.

Each group is given the same cookie recipe. However, during the training it appears that each group shows different skills in making cookies. Each group is also given the opportunity to make innovation to improve product quality. The ability of each group to process the product roasting also affects the quality of cookies.

The results show that all groups can make cookies products with good results. However, each group provides different product quality, including color, shape, size, texture and taste. Participants said that making cookies is simpler than other products, because the shaping process is easier, which is only using a fork. Participants also responded that the addition of vanilla had successfully reduced the unpleasant aroma.

Provision of knowledge and skills in processed spinach vegetable flour, is expected to help solve the problem of low levels of vegetable consumption by children, because most children do not like processed fresh vegetables. So that cases of vitamin and mineral deficiencies that often appear can be reduced or eliminated.

### 3.2 Vegetable Flour Products Competition

The identification of superior products from each group was carried out through a competition to make various processed vegetables. In collaboration with the leaders of Sindon Village, a vegetable flour processing competition was held based on the skills and creativity of the partner groups. The results of this competition will be continued at the facilitation stage of commercialization carried out through a competition in the manufacture of products made from vegetable flour. Each group determines itself the type of product to be competed and prepares raw materials independently. Each partner group makes two products, dry and semi-wet products.

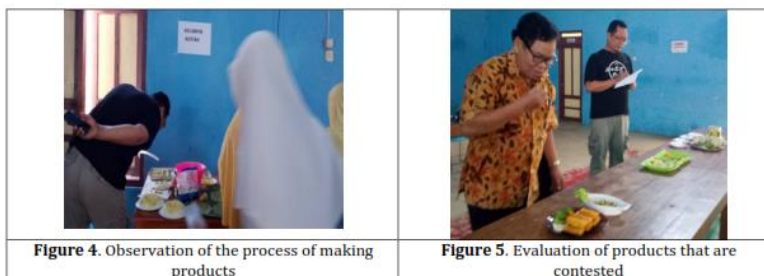




Figure 6. Display of contested products

The products displayed by partners are products that have been given in training and also creations from partner groups. Although some products are the results of training that have been given, but modifications have been made to obtain better products.

In the evaluation session, superior products have been obtained and can be continued at the production assistance stage for commercialization. Each group has identified its superior products. At this stage also given some suggestions and considerations to improve product quality

In general, participants or partners have gained skills and motivation to produce processed vegetable flour according to their abilities, skills and motivation for business development. Assistance to improve quality, make good packaging, and arrange for product distribution licenses also needs to be done jointly with the local government. So that the development of this vegetable flour based processing can really be realized and developed.

#### 4. Conclusion

The result of this community service activity is that partners obtained the skills to make vegetable flour-based products. Partner's superior products have been identified as feasible to be continued at the commercialization stage.

#### 5. Acknowledgements

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Rusdin Rauf dan Pramudya Kurnia, (2016), IbM Pemberdayaan Ibu-Ibu Rumah Tangga dan Kelompok Wanita Tani “Mawar” Desa Sindon Boyolali melalui Implementasi Teknologi dan Pengembangan Aneka Produk Olahan Tepung Sayuran, Pengabdian kepada masyarakat skema IbM dana hibah DRPM Kemenristekdikti.