



The Implementation of the Use of Seed Bag Panel Boards for Vegetable and Crop Farmers in Kopeng

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DOI: <http://dx.doi.org/10.15294/rekayasa.v20i1.47538>

Submit: 11 September 2023; Revisi: 2 October 2023; Accepted: 23 October 2023

Abstract

One of the agricultural problems in the spotlight is the quality of harvest and postharvest commodities, which still needs to improve due to the failure of special handling. One solution for handling perishable and low-value agricultural commodities is to sell agricultural products alive and in special packaging on panel boards as wall decorations based on green interiors with an urban farming concept. The research aims to implement the concept of vegetable and flower panel boards based on green interiors to increase the marketing value of agricultural products in Kopeng. The application of this panel board concept is to improve the quality of agricultural products because they are easily damaged, so the public consumes fresh vegetables of good quality with this panel board. Three simultaneous benefits of panel boards are art, aesthetics and product freshness when consumed. The prototyping is panel board products with steps to ensure the concept's design, functionality and feasibility, panel size, layout of vegetables and flowers, panel placement and other supporting structures. Test the prototype by growing vegetables and flowers and storing fruit from user input. Prototypes that are refined and tested well are then developed into marketing strategies. This program is about applying the panel board concept to improve the quality of agricultural products by providing added value to agricultural products so that they can increase the profits received by farmers. From the implementation that has been carried out, marketing results have increased by 10% from marketing before using seed bags.

Keywords: horticulture, special packaging, prototype, flowers, perishable farm produce

INTRODUCTION

One example of agricultural problems currently becoming the spotlight is the quality of harvest and postharvest agricultural commodities, which still need to be higher due to a lack of special handling. FAO defines this problem as the second major problem or second-generation problem in the agricultural sector. On the other hand, development actions support a

capitalist approach driven by economic scale efficiencies that often negatively impact local community livelihoods and land rights. (Dell'Angelo et al., 2017)

Agricultural commodities, especially horticultural and floricultural crops, are perishable commodities, so their prices often fall easily because when these crops reach consumers, the quality decreases (Singh et al., 2021).

Afterwards, the commodity marketing distribution chain that is too long also causes reduced quality and too high price margins between farmers and consumers (Sexton & Ria, 2018). In the current era, competition for the quality of agricultural commodities is getting tighter considering the emergence of various modern agriculture, making conventional agricultural commodities increasingly less competitive in the market (Schreinemachers et al., 2018)

Kopeng is the name of a village located in Getasan subdistrict, Semarang Regency. Kopeng Village consists of nine hamlets: Cuntel, Kopeng, Sleker, Plalar, Sidomukti, Blancir, Tayeman, Dukuh, and Kasiran hamlets. Most of the residents of this village make their living as farmers. The main agricultural product from this area is vegetable commodities. The number of households producing vegetable commodities in Semarang Regency is 9,428 units. Based on this number, 7,346 household units produce horticulture sub-commodities for vegetables, while 526 households produce annual crops. Getasan Subdistrict is the area that has the most vegetable household units in line with the total vegetable production. In 2016, total vegetable production in Semarang Regency reached around 170 tons, of which 30% were contributed from the Getasan subdistrict. Most vegetable farmers sell their products to intermediaries, so the dependence of vegetable farmers on intermediaries is very high. This causes farmers' profits to decrease.

Sustainable agricultural practices adopted by producers of fresh food products and developing tools for producers and market stakeholders to measure their impact. Both for producers and society (Warsaw et al., 2021). Farmers are generally commercially oriented, where their decision-making in certain circumstances is primarily driven by the markets

they can access to maintain and increase profits (Gilbert, 2016). It is not enough to develop steps/programs/initiatives to increase awareness of the importance of land throughout society; but there must also be action from the community to continue to be creative in increasing land use and ways to market vegetable and flower products (Sameraro et al., 2021)

The importance of soil conservation has not received the attention it deserves, and the topic is not as popular as other issues in environmental discourse and public awareness. Nutrient depletion is another significant process of soil degradation with a severe economic impact on a global scale. To cover the losses, more land would have to be converted to agriculture, and more inputs would be used to replace the reduced soil fertility placed in practical and economical containers (Gomiero, 2016). Therefore, unique handling methods are needed for agricultural products, especially horticultural and floricultural commodities.

One of the solutions for handling perishable agricultural commodities with low added value is to sell the agricultural products alive and in special packaging in the form of panel boards as wall decorations based on green interiors with an urban farming concept. This solution can make perishable agricultural commodities last longer because they are sold in live condition with a short planting age so that consumers can store them as wall decorations before consuming them. Then, the distribution chain that is too long can be cut because farmers can sell directly to consumers. Farmers will also benefit more because commodity selling prices are more adequate with the plant value added. Besides providing artistic and aesthetic value, the panel board provides artistic value because the concept is like a living picture decoration and provides benefit value for farmers and consumers (Prajanti et al., 2020). With the panel board

concept as an alternative for marketing agricultural commodities, it is expected to improve product quality, which can satisfy consumers and increase farmers' profits because of the value added to the product, which is mutually beneficial for both parties. This service implements the concept of vegetable and flower panel boards as a marketing tool and business variant for farmers' products in Kopeng. The urgency of this service is the low selling prices of agricultural commodities due to their perishable nature, especially horticulture and floriculture commodities, which often cause farmers to suffer losses. Apart from that, the public's demand for good, qualified agricultural commodities is becoming a concern, so it is necessary to develop alternative solutions to overcome these two problems.

METHOD

As a follow-up to the study recommendations stated above, activities were carried out to make panel board bags and increase marketing for the economy of Kopeng farmers. This implies sustainable principles that are economically profitable, ecologically responsible, and environmentally friendly. The stages or procedures that will be carried out are as follows: a series of services with a roadmap guide created to improve the quality and level of implementation in the field. Collaboration with partners in the agricultural sector was carried out to provide operational input and guidance for developing the panel council's CV. Plantamor Semarang.

Observing and analyzing vegetable and ornamental plant cultivation businesses created a design pattern for applying panel boards to vegetables and ornamental plants. This pattern can be prepared by coordinating through interviews, observations, Focus Discussion Groups, and field tests. Furthermore, after all preparations have been carried out, we will

continue implementing the pilot plan, which involves making seed bead paper boards. At this stage, seed bags for planting layers, boards, vegetable seeds and ornamental plants are carried out.

The next stage was a trial of installing panel boards at the Kopeng agricultural location. At the same time, laboratory tests, monitoring and identification of deficiencies in research products are carried out to address them immediately. At this stage, it is also necessary to improve the products produced. Marketing analysis and feasibility tests on the products produced also address solving sales problems. Once the product is declared feasible, it will be produced commercially. At this stage, business start-up development, institutional strengthening, packaging models, brand design, business license applications, copyright registration, product promotion and marketing are also carried out. Product exhibitions are also held as part of product promotion to the public, farmers, potential consumers and stakeholders. Positive consumer/stakeholder perceptions and achievement of targeted turnover can be used as indicators of success.

RESULT AND DISCUSSION

The problem of postharvest quality of agricultural commodities, which still needs to improve due to lack of special handling and dependence on intermediaries, are problems that continue to arise in the handling of agricultural products, especially horticultural and floricultural commodities in Kopeng Village. Even though this village has abundant agricultural potential, this still means that the profits obtained by farmers are still low or less.

The solution offered to overcome this problem is the implementation of Seed Bag Panel Boards for Farmers' Plants and Vegetables in Kopeng. Seed bags were created to make it easier to plant vegetables or other plants on narrow land

or critical land; the size can be adjusted in such a way that it can be adjusted to plant spacing or integrated according to needs. Its portable nature makes it easier for growers to carry this tool to various locations. Additionally, hemp is 100% biodegradable, can consume up to 15 tons of CO₂, and releases 11 tons of oxygen during its growing season, which shows its very environmentally friendly nature (Ahmed &Kader, 2014).

This method can save the use of existing land compared to conventional methods. Therefore, panel boards with Seed bag media are

more effective and efficient. However, it only takes a short time for plants to be cultivated in seed bags. If the plant is not removed for an extended period, then the plant has difficulty developing roots, and the casing shows no signs of degradation. The use of biodegradable film in the form of burlap is an alternative in producing seed bags (Bilck et al., 2014), because the bags can then be transplanted directly into the soil without the need to remove the bags and cut them, thereby reducing the risk of damage to the roots during transplantation.

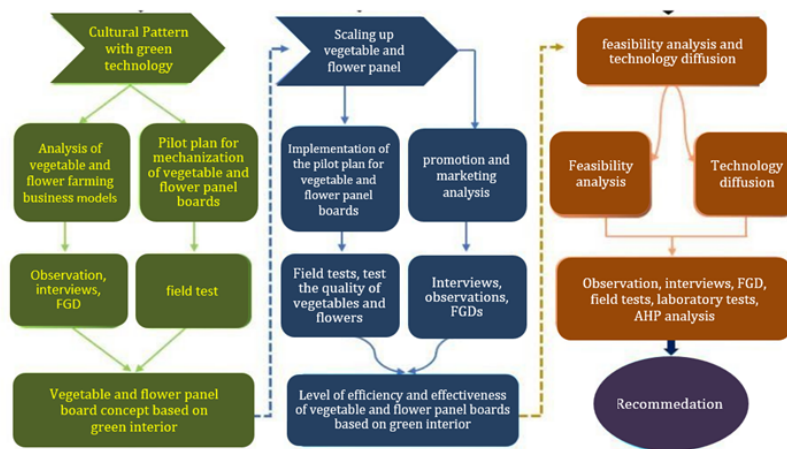


Figure 2. Service Flow Diagram of Implementation of the Use of Seed Bag Panel Boards for Vegetable and Crop Farmers

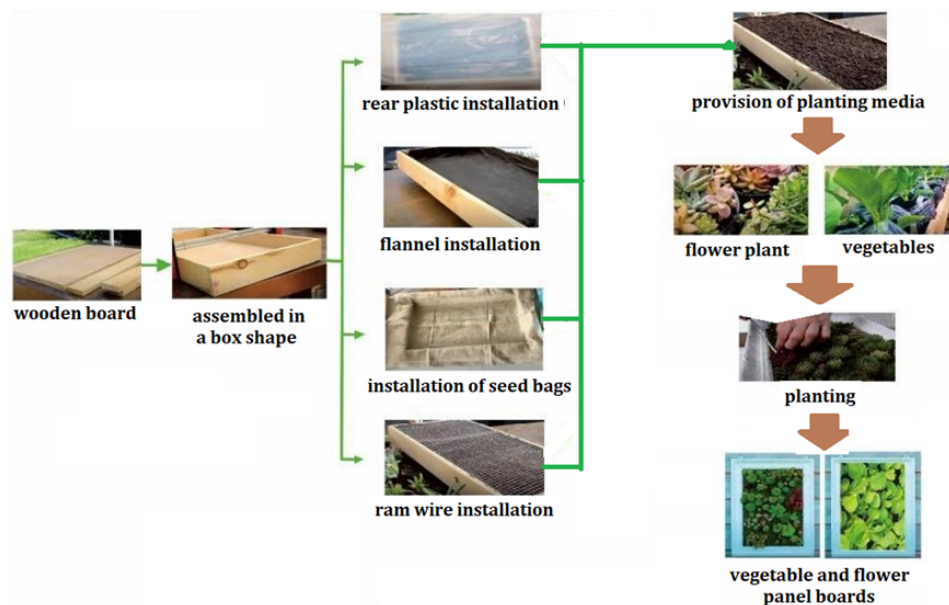


Figure 3. Method for Making Vegetable and Flower Panel Boards

The vegetable and flower panel board consists of a wooden frame, which is then covered with a plywood board. After that, it is given a base in the form of burlap cloth and then given another layer of burlap cloth, but it is made by making a hole in the burlap cloth; this hole will be the place storage of vegetables or flowers after the panel board is finished, hooks or hangers are made on the edges, the final stage of the storage hole can be filled with flower or vegetable plants. The reason for using jute sacks is that they are more environmentally friendly than previous inventions.

The aeration process can occur from the burlap curve's right, left, top, and bottom. Water protection behind the adhesive surface can be added to prevent water from seeping (smooth), thereby increasing the durability of the plywood. There is a choice of frame colour and jute media.

The vegetable and flower panel boards now emphasize portability in use, related to plant care and sizes that can be adapted to vegetables or flowers.

The use of planting media is an essential factor in optimizing agricultural production. This mechanization uses planting media as seed bags made from jute sacks. Seed bags are planting media that can be used for various types of plants. Meanwhile, the second innovation is a vegetable and flower panel board, which can be used as a green interior-based wall decoration. The vegetables can also be consumed when they have reached harvest time.

Plant growth studies will later be used as criteria for designing and developing automatic plant pot prototypes (Ismail et al., 2018). The implementation of this panel board concept is to improve the quality of agricultural products because they are easily damaged. With this panel board, the consumption of fresh vegetables with good quality by the community can be realized. Meanwhile, from the farmer's perspective, it is to provide added value (value added) to agricultural

products so that they can increase the profits received by farmers. Apart from that, this panel board concept can also cut the long distribution chain for agricultural products because farmers can sell directly to consumers, and they do not even need to wait for the harvest because this panel board concept allows consumers to care for the plants before they are consumed. Consumers will get three benefits at once: art, aesthetics, and the benefit of product freshness when consumed (fresh benefit). Vegetables cultivated using panel boards include pak choy mustard greens, celery, leeks and other vegetables with a size that adjusts to the size of the panel board.

Several advantages will be gained if using panel boards and seed bags as media for planting vegetables and other plants, as follows:

1. Land use efficiency
2. Portable, plants can be easily moved to other places.
3. We are reducing weeding because planting using panel boards reduces the growth of weeds.
4. Fertilizer savings, because it is planted in limited containers so it is not easily washed off by rain.
5. Do not use pesticides, especially pesticides for soil insects
6. If done in a closed room, it can save on watering because it can reduce water evaporation.
7. It has good beauty and aesthetics because the wall decoration looks alive (living picture).
8. They are making maintenance easier because the plants are grouped in one location.
9. The quality and freshness of the product is maintained
10. Saving agricultural inputs for farmers because plants can be sold without waiting for harvest time

The first stage of service implementation is training in making panel boards using seed bags

made from gunny sacks. This training is carried out based on previously designed programs.



Figure 4. Vegetable and Flower Panel Board Products implemented

The target participants in this training are vegetable farmers and ornamental plant farmers in Kopeng. The number of participants who took part in this training is 15 people. The training is conducted to provide training in making seed bag panel boards, which farmers have produced into more economical products. The products produced from this training are seed bag panel boards of various sizes and materials. The training provided is using a presentation of training material delivered by the instructor/trainer. Apart from instructors/trainers, this research also involved other personnel: assistant instructors, service team assistants, and local village officials.

Assistance Activity

This mentoring activity is intended to help farmers implement the results of the training provided by the service team. This assistance is carried out after the training is completed. Assistance is carried out using a discussion model so that the service team finds out more about the

problems local farmers face in implementing the training material provided. During this assistance, most people needed to familiarize themselves with new planting media methods. This is because most families in the surrounding community have low educational backgrounds. Small farmers in the procurement network can be assisted in meeting strict food safety and quality regulations, especially for vegetables, and in creating a sustainable agricultural food chain (Naik & Suresh, 2018). With this assistance, local youth organizations are more directed at helping communities make and implement seed bag panel boards for vegetables and plants. The bags as pots made from jute ribbon that were developed were superior to polybags in terms of soil loss during handling in the nursery (Ghosh et al., 2016). In addition, biodegradable jute bags significantly increase soil nutrient levels with organic carbon, potassium and phosphorus.

The application of the board concept provides three benefits from panel boards: art, aesthetics and product freshness. Agriculture in production and marketing should go through direct marketing to overcome various limitations and provide more significant benefits to farmers at the harvesting stage (Jeyaramya, 2022). Tools and equipment are used to implement agricultural technology and anticipate the challenges when combining technology with conventional agricultural activities. In addition, this technical knowledge is helpful for farmers during the planting period from sowing to harvest (Dhanaraju et al., 2022). Test the prototype by growing vegetables and flowers and storing fruit from user input. Prototypes that are refined and tested well are then developed into marketing strategies. Farmers can improve their abilities and skills in mastering planting technology using panel boards (vertical culture), such as preparing planting media and planting and plant care (Hartono et al., 2021).

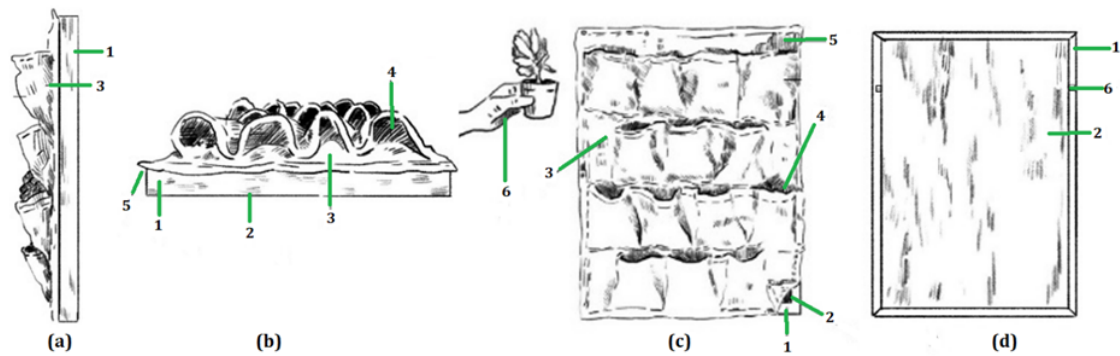


Figure 5. Prototype of Vegetable and Flower Panel Board Products

(a) side view, (b) top view, (c) front view, (d) back view.

Description: (1) wooden frame, (2) plywood board, (3) burlap cloth, (4) vegetable/flower storage hole, (5) hook or hanger, (6) vegetable/flower

Careful management and planning through technology, education and awareness raising, changing financial/economic patterns and mechanisms, considering various time dimensions to help farmers along different paths (Stringer et al., 2020).

This program is about applying the panel board concept to improve the quality of agricultural products by providing added value to agricultural products so that they can increase the profits received by farmers. Marketing results in 1 month have increased by 10% from marketing before using seed bags on vegetables and flowers. Besides that, container gardens are a form of greenery when brought to urban areas, providing many direct and indirect benefits, especially for attractive flowers or ornamental plants (Nagase & Lundholm, 2021).

CONCLUSION

From the service stages that have been completed as described above, the results obtained from this program are an increase in partners' knowledge and skills regarding the implementation of this panel board concept to improve the quality of agricultural products by providing added value to agricultural products so that can increase the profits received by farmers.

The application of the board concept provides three benefits from panel boards: art, aesthetics and product freshness. Test the prototype by growing vegetables and flowers and storing fruit from user input. Prototypes that are refined and tested well are then developed into marketing strategies. This program is about applying the panel board concept to improve the quality of agricultural products by providing added value to agricultural products so that they can increase the profits received by farmers. Marketing results increased by 10% from marketing before using seed bags on vegetables and flowers.

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