Abdimas Umtas: Jurnal Pengabdian Kepada Masyarakat
LPPM-Universitas Muhammadiyah Tasikmalaya
Volume: 8, Issue: 4, October, 2025; pp: 2296-2304
E-ISSN: 2614 - 8544

Enhacing Knowledge of Organic Vertical Cultivation Through Management and Production Training for KWT Titro Mekar Tani

Hanifah Karimatulhajj [1, a)], Ari Retno Purwanti [2, b)], Puji Handayani Putri [3, c)], Winda Lidiawati [1, d)], Aulia Daning Yulianti [1, e)]

[1]Pharmacy Department of Universitas PGRI Yogyakarta, Yogyakarta, Indonesia
[2]Business Law Department of Universitas PGRI Yogyakarta, Yogyakarta, Indonesia
[3]Informatics Department of Universitas PGRI Yogyakarta, Yogyakarta, Indonesia

[a)]Corresponding author: hanifah@upy.ac.id
[b)]ariretno@upy.ac.id
[c)]pujihp@upy.ac.id
[d)]windalidiawati165@gmail.com
[e)]danaulia07@gmail.com

ABSTRACT

KWT Tirto Mekar Tani uses conventional hydroponic and gallon-based vegetable cultivation methods and still uses synthetic fertilizers, which have long-term negative health impacts. Furthermore, inconsistent maintenance and limited knowledge of garden management result in limited yields, making it impossible to market more widely. Vertical vegetable cultivation using a wall planter and organic fertilizers is more effective and efficient, increasing yields, improving health, and contributing to environmental improvement. Therefore, to increase production and marketing results of organic vegetable cultivation products, community service activities include outreach, training, technology application, mentoring, and evaluation, leading to program sustainability. Human resource management training is conducted to increase business motivation, while production training covers cultivation, product processing, organic fertilizer processing, and packaging creation using Canva online. Questionnaires were administered before and after the training, which were tested on a sample of the KWT member population. The training showed an increase in the percentage of knowledge of KWT members, namely management training (6.19%; N=11), training in cultivation, processing of organic products and fertilizer (10.09%; N=16), and training in packaging design (4.3%; N=15).

ARTICLE INFO

Article History:
Submitted/Received: 25-09-2025
First Revised: 04-10-2025
Accepted: 15-10-2025
First Available online: 31 October 2025
Publication Date: 31 October 2025

Keyword :
Organic Farming
Vertical Gardening
Women Farmers Group
HR Training
Packaging

https://doi.org/10.35568/abdimas.v8i4.7220

INTRODUCTION

Background & Importance of Organic Vegetables

The increasing public awareness of healthy food consumption has led to a surge in demand for organic vegetables on the market. The antioxidant and vitamin C content of organic vegetables can boost the human immune system, thus protecting the body from various diseases and maintaining optimal health (Abror et al., 2020). Several obstacles to the development of organic vegetables exist, including high production costs and the relatively high price of organic-labeled vegetables on the market, which influence purchasing decisions (Ermiati et al., 2021; Widyastuti, 2018; Yunus, 2019). This presents an opportunity for the public to recognize the importance of organic vegetable cultivation and consumption, as organic vegetable cultivation offers numerous benefits, including increasing soil fertility, improving water and air quality, producing food biodiversity, being environmentally friendly, and reducing pesticide exposure to the soil (Bolly et al., 2021; Yuriansyah et al., 2020).

Problems Faced by KWT

KWT Tirto Mekar Tani (Women's Farmers Group) operates in Godegan Village, RT 05, Hamlet II Gatak, Tamantirto District, Kasihan Regency, Bantul, Yogyakarta. It's a 21-member farm on riverbanks with limited space. They grow vegetables using conventional methods, using hydroponics and gallons for planting with synthetic fertilizers. Growing vegetables using the horizontal hydroponic method using PVC pipes requires a lot of equipment, a larger area, and is more expensive. Meanwhile, the vertical planting method can increase yields, both in terms of quality and quantity, with minimal operational costs (Chintia et al., 2025). The KWT's fish ponds are underutilized, even though the water from fish waste can improve soil fertility (Begu, 2020; Sabindo Al Priangga, 2024). In addition, there is also the problem of unprofessional human resources in plant care and product sales. The lack of professional human resources in KWT, especially in the science and practice of cultivation, including plant maintenance, such as inconsistent watering and fertilization, causes plants to become infertile, resulting in less than optimal harvests (Rifardi et al., 2025; Zalzalah et al., 2025). Furthermore, synthetic fertilizers are still commonly used, which are considered safer than organic fertilizers. Agricultural products sold are still limited to KWT members and cannot be sold internationally due to limited and poor harvests. Therefore, efforts are needed to improve production, both in terms of quality and quantity. The professionalism of KWT members needs to be enhanced to achieve better results.

Objectives of the Program

This is the focus of the community service team in terms of innovation, cultivation techniques, and commitment to participation of KWT members. The purpose of community service is to increase Knowledge of Organic Vertical Cultivation through Management and Production Training for KWT Tirto Mekar Tani. The training is carried out through extension of production in terms of cultivation and product packaging and management in terms of HR and marketing as well as assistance in organic vertical cultivation by optimizing riverbank areas using a vertical wall planter planting system with automatic irrigation from fish ponds. In addition, technology is applied in processing surrounding organic waste using a shredder and media mixing mixer. This method can play a role in overcoming the limitations of organic waste processing which is still a controversial topic in the community. It is hoped

https://doi.org/10.35568/abdimas.v8i4.7220

that this series of community service activities can increase the knowledge and professionalism of KWT members, as well as increase the yield of agricultural products, so that KWT Tirto Mekar Tani becomes a more productive group of women farmers.

METHODS

The Community Service Method is carried out through stages of socialization, training, technology application, mentoring and evaluation, and program sustainability.

Socialization

The socialization carried out began with coordinating activities with the Community Service Team, KWT administrators and local RT permits, which was continued with socialization to KWT members by explaining the activity plans and targets.

Training

The training consists of three parts: extension, where 2 trainings are aimed at increasing knowledge in production, and 1 training is for improving HR management. Participants were given a pretest and posttest questionnaire consisting of five statements after the extension was provided. The questionnaire also consisted of descriptive questions.

- Training in cultivation, organic fertilizer processing, and processing of agricultural products

  The material covered cultivation methods, including land preparation, seeds, organic fertilizer production, seed processing, organic fertilizer application, product processing into stir-fries, drinks, and aromatherapy products, as well as documentation of agricultural and business results.

- Training in packaging design

  The material about the usage of Canva for packaging design

- HR motivation training, marketing, and product licensing (Management Field)
  - ✓ The material relates to motivation, marketing, and product licensing, aimed at increasing the entrepreneurial motivation of each KWT member, thereby hopefully reducing the existing gap. The Product Licensing theme examines the potential for sustainable KWT businesses following demand following socialization.
  - ✓ Human resource management is improved by holding new activities, such as adding interesting activities in meetings that can increase the interest of KWT members, so that it is hoped that the program for optimizing river areas in planting organic vegetables and medicinal plants can be achieved.

https://doi.org/10.35568/abdimas.v8i4.7220

TABLE 1. Questionnaire Statement of Training

Descriptive question
1. How often do you garden?
2. What vegetables do you grow at home?
3. Have you ever made organic fertilizer?
4. Which do you prefer: natural packaging or plastic and styrofoam packaging?
5. Do you think KWT activities have a positive impact on your physical health?
6. Do you think KWT activities have provided personal financial benefits?
7. How often do you participate in KWT activities?
8. Do you plan to resume your KWT activities after this community service program is complete?
Management Field Training (Training 1)
1. Business independence means being able to manage and develop one's own business without relying on external parties. (P1)
2. High motivation in entrepreneurship makes me more enthusiastic and innovative. (P2)
3. Products produced by the KWT must be tailored to local potential and needs. (P3)
4. A good marketing strategy can increase sales of KWT products. (P4)
5. Confidence helps me dare to make decisions and compete in the market. (P5)
Production Field Training (Cultivation, organic fertilizer processing, and processing of agricultural products) (Training 2)
1. Plant cultivation will produce uniform and quality plant products (P1)
2. Compost fertilizer is made from a mixture of organic materials in the form of dry materials, wet materials, soil, and molasses (P2).
3. Vegetables can be processed into cooked foods such as stir-fries, stir-fries, chips (P3)
4. Medicinal plants can be processed into contemporary herbal medicine and wedhang uwuh (P4)
5. Aromatic medicinal plants can be used as aromatherapy ingredients (P5)
Production Field Training (Packaging Design) (Training 3)
1. Packaging design with Canva software/application can be done using a cellphone or laptop (P1)
2. Vegetable packaging consists of a label containing the trade name/brand and product description (P2)
3. The use of contrasting colors can attract the attention of potential buyers (P3)
4. Packaging will increase the purchasing interest of potential customers (P4)
5. Natural packaging can increase sales value in supermarkets (P5)

The sample used was a total sampling of respondents who attended the training. incomplete answers were excluded from data processing. The percentage increase in knowledge is measured by the following formula:

$$Percentage\ Increase\ in\ Knowledge\ (\%) = \frac{(postest\ score - pretest\ score)}{pretest\ score}\ x\ 100\% \quad (1)$$

Application of Technology

This is done by creating a vertical system of planting areas on the banks of rivers and fish ponds, automatic irrigation by utilizing river water and fish ponds, and processing organic fertilizer from household waste collected from KWT members and non-members using an organic fertilizer processing machine.

Mentoring and Evaluation

https://doi.org/10.35568/abdimas.v8i4.7220

This includes activities such as creating vertical planting areas, cultivating, maintaining, harvesting, and documenting. Evaluation is conducted using instruments to assess the success of the training program and partner satisfaction.

Program Sustainability

Follow-up program plans relate to nurseries, processing of media products, fertilizers, and cultivated plants, as well as processing of processed products, along with plans for licensing and product marketing. These activities are conducted online through WhatsApp group communication with KWT members.

RESULTS AND DISCUSSION

RESULTS

A total of 72.73 of the training participants who are members of the KWT (Farmers Group) engaged in farming activities 1-3 times a week, while 27.27% never did. They plant some vegetables like eggplant, spinach, chilies, kale, mustard greens, and corn. 46.67% of participants have made organic fertilizer. The participants prefer to use natural packaging (66.67%). 72.73% of the participants felt the health impact of KWT activities, and 54.55% of the participants felt the financial benefits of KWT activities. 45.45% of the participants participated in KWT activities every day (plant maintenance), while 36.36% never participated, and 18.18% participated 1-3 times a week. 80% of participants plan to be active in the KWT after the community service activities are completed.

TABLE 2. Pretest and Posttest respondent average score of Training

Statement	Training 1		Training 2		Training 3	
	Pretest*	Postest*	Pretest*	Postest*	Pretest*	Postest*
1	4,36	4,73	3,80	3,93	3,81	4,00
2	4,36	4,64	3,80	4,07	4,19	4,38
3	4,45	4,73	4,07	4,47	4,13	4,50
4	4,55	4,73	4,20	4,67	4,50	4,63
5	4,36	4,64	3,87	4,60	4,19	4,19
Average	4,42	4,69	3,95	4,35	4,16	4,34

* The score displayed is the average score for each statement from the total number of respondents. Training 1. Management field training (N=11), Training 2. Production field training (Cultivation, organic fertilizer processing, and processing of agricultural products) (N=16), Training 3. Production field training (packaging design) (N=15). The maximal score was 5 points.

From Table 2, it can be stated that each training provides an increase in knowledge as seen from the increase in pretest scores, which are better in the posttest. In statement 5, it nothing different from the pretest and the pretest score.

https://doi.org/10.35568/abdimas.v8i4.7220

TABLE 3. Percentage Increase in Knowledge

Statement	Percentage increase in knowledge (%)		
	Training 1	Training 2	Training 3
1.	8.33	3.51	4.92
2.	6.25	7.02	4.48
3.	6.12	9.84	9.09
4.	4	11.11	2.78
5.	6.25	18.97	0.00
Average	6.19	10.09	4.3

Training 1. Management field training (N=11), Training 2. Production field training (Cultivation, organic fertilizer processing, and processing of agricultural products) (N=16), Training 3. Production field training (packaging design) (N=15),

From table 3, the training showed an increase in the percentage of knowledge of KWT members, namely training in the field of management (6.19), training in the field of cultivation, processing of organic products and fertilizers (10.09), training in the field of packaging design (4.3).

Based on the results of the packaging design training activity with Canva online, it can be seen that there was an increase in knowledge and skills after the training, with an average score of 4,16 to 4,34 (Table 2).

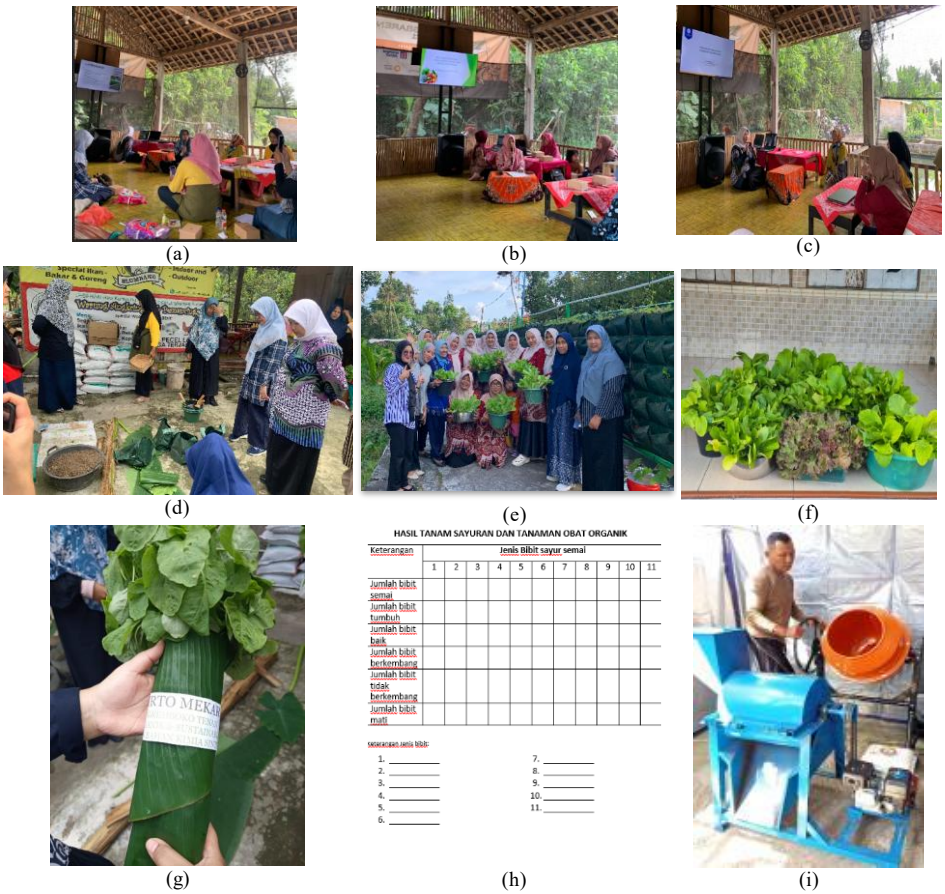

FIGURE 1. Community Service Activities (Training on cultivation and processing of harvested products (a), HR training (b), Packaging design training (c), organic fertilizer processing (d), harvesting (e), harvest results (f), labelling and packaging (g), documentation of seeding (h), organic fertilizer processing machine (i)

https://doi.org/10.35568/abdimas.v8i4.7220

DISCUSSION

The implementation of community service activities is depicted in 5 stages of activities and completion as follows:

Socialization program with the Community Service Team and Partners.

The activities involved assigning community service tasks to each lecturer and student. The community service lecturers created presentation files related to organic vegetable and herbal medicine cultivation, human resource management, and packaging using Canva. Students prepared questionnaire documents (pre-post test) and other administrative documents, including documentation. Permission was obtained from partners regarding the training.

Training

The average score for the cultivation training increased from 3,95 to 4,35. KWT members understood that organic cultivation would produce high-quality plant products, and they were able to independently make compost. 100% training participants understand the importance of trademarks/labels on product packaging because it will increase consumer purchasing interest. Product licensing is needed for the marketing of widely distributed food and beverage products in order to maintain product safety and consumer safety, while sales in a limited scope do not yet require licensing.

Application of Technology

The activities carried out include the use of wall planters for vertical planting with automatic irrigation installations from pond water to improve the quality and quantity of agricultural products. One 60 cm wide wall planter can grow 15 vegetable seedlings, increasing yields even in limited space. Another study measured the results of hydroponic planting using the vertical method, which can produce more vegetables and increase income (Chintia et al., 2025). Kitchen waste from the surrounding community is a potential source of organic fertilizer, which can be processed in several stages with the necessary equipment. The organic planting system produces healthy, pesticide-free, more economical, and environmentally friendly agricultural products compared to conventional systems (Yuriansyah et al., 2020). Organic fertilizer processing using an organic waste shredder and a mixer/mixer is carried out to create an independent planting medium with a mixture of dry materials such as cocopeat, sawdust, dry leaves, fresh organic waste materials, and molasses in a ratio of 1:1:1:1. KWT members gain knowledge and experience in managing kitchen waste to be used as organic fertilizer, knowing the correct mixture of planting media which can be developed into a product with economic value because it is processed using machines.

Mentoring and Evaluation

Activities included administering questionnaires to partners regarding KWT members' satisfaction with the program. Furthermore, evaluations were conducted on the results of vegetable harvesting and documenting, and so increase in the number of KWT members after the activity was carried out.

- The first harvest saw a 150% increase in yield compared to before the service. This was possible because the vertical wall planter requires a smaller area and produces a higher yield (Chintia et al., 2025). The automatic watering system simplifies maintenance, such as watering and

https://doi.org/10.35568/abdimas.v8i4.7220

automatically replenishing nutrients from the fish pond water.

- KWT member participation increased from the initial socialization to the end of the program. The number of human resources increased by 19% from the initial KWT formation. KWT members became more united, productive, and healthy as they were able to utilize the riverbank area to grow organic vegetables and medicinal plants. Furthermore, the training provided has a positive impact on increasing the participation of KWT members in routine activities. This aligns with previous community service efforts that increased KWT members' awareness and independence (Puspitorini et al., 2023).
- 100% of KWT members are satisfied with the program. The results of the satisfaction survey of KWT Tirto Mekartani members with the community service activities showed that 72.7% strongly agreed and 27.3% agreed after participating in the community service program, as they considered it to provide many benefits for the development of organic crop cultivation, increase business motivation, and support product marketing.
- KWT plans to divide tasks into groups consisting of planting and maintenance teams, documentation, product processing, and marketing.

Program Sustainability

This activity was carried out to accompany the development of KWT through online methods by providing information related to HR motivation, cultivation, insights into alternative processed agricultural products and planting media, product processing and licensing, as well as strengthening packaging design, so that it is hoped that the ongoing community service program can have an impact on increasing the independence and economy of KWT.

CONCLUSION

The human resource management and production training successfully increased knowledge of organic vertical farming, packaging, and member participation in routine activities. The abundant organic vegetable harvest using wall planters enabled product marketing to expand to the surrounding community, beyond KWT members. This provided momentum for KWT members to enhance their professionalism and contribute to improving the community's economy. The utilization of riverbank areas for vertical vegetable cultivation using wall planters was the first of its kind in Tamantirto Village. It can serve as a pilot project and has the potential to be developed into an integrated edufarm tourism area. Further programs that need to be implemented include improving agricultural product processing, licensing, and product marketing to increase KWT income.

ACKNOWLEDGMENTS

The devotee's gratitude is conveyed to the Directorate of Research and Community Service, Directorate General of Research and Development, Ministry of Higher Education, Science and Technology, for the grant provided, guidance provided by LPPM UPY, the commitment of the UPY Community Service Team, which is always united in its activities, as well as the loyalty of the KWT Tirto Mekar Tani partners. Hopefully, the dedication that has been carried out will have a positive impact on the progress of KWT Tirto Mekar Tani in particular and the wider community in general.

https://doi.org/10.35568/abdimas.v8i4.7220

REFERENCES

Abror, M., Arifin, S., & Eviyanti, A. (2020). Analisa Anti Oksidan Dan Vitamin C pada Sayuran dan Rempah-Rempah. Jurnal Farmasi Galenika, 7(2), 71–82.

Begu, M. V. (2020). Fermentasi Air Kolam Ikan Lele dan Limbah Sayur Sebagai Pupuk Tanaman Sawi (Brassica rapa L. var. Parachinensis L. h bailey) [PhD Thesis, UNIVERSITAS PGRI ADIBUANA SURABAYA].

Bolly, Y. Y., Wahyuni, Y., Apelabi, G. O., & Nirmalasari, M. Y. (2021). Pelatihan pembuatan pupuk organik padat berbahan dasar lokal untuk mewujudkan pertanian organik ramah lingkungan di kelompok tani alam subur desa waigete. Jumat Pertanian: Jurnal Pengabdian Masyarakat, 2(2), 87–91.

Chintia, A. C., Efrita, E., Kurniati, N., & Marwan, E. (2025). Analisis Usahatani Pakcoy (Brassica rapa L.) Pada Sistem Urban Farming. Jurnal MeA (Media Agribisnis), 10(1), 24–30.

Ermiati, C., Amanah, D., Utami, S., & Harahap, D. A. (2021). Minat beli konsumen terhadap sayuran organik pada pasar tradisional ditinjau dari persepsi harga dan sikap konsumen (studi pada Pasar Sambas Medan). Tirtayasa Ekonomika, 16(2), 282–295.

Puspitorini, P., Purwatiningsih, R., & Sunandes, A. (2023). Pemberdayaan Kelompok Wanita Tani (KWT) Tunas Berkah Kota Blitar dengan Metode Parcipatory Rural Appraisal. AJAD: Jurnal Pengabdian Kepada Masyarakat, 3(3), 238–243.

Rifardi, L. M. P., Pratiwi, E. Y. R., Fawaiz, A. N., Listia, N. K. N., Hazannu'ma, M., & Aditya, M. I. (2025). Revitalisasi Program Kelompok Wanita Tani (KWT) Desa Sumberbendo. Indonesian Journal of Community Dedication, 3(2), 280–288.

Sabindo Al Priangga, S. A. P. (2024). Pengaruh Pupuk organik cair limbah cair pabrik tahu dan air kolam ikan lele terhadap pertumbuhan tanaman tomat (Solanum lycopersicum L.). [PhD Thesis, Universitas Muslim Indonesia]. http://repository.umi.ac.id/5645/

Widyastuti, P. (2018). Kualitas dan Harga sebagai Variabel Terpenting pada Keputusan Pembelian Sayuran Organik. Ekspektra: Jurnal Bisnis Dan Manajemen, 2(1), 17–28.

Yunus, I. W. (2019). Analisis Kesediaan Membayar (Willingness To Pay) Sayuran Organik Dan Faktor Yang Mempengaruhi Di Kota Malang. Jurnal Sosial Ekonomi Pertanian Dan Agribisnis, 7(4). https://jim.unisma.ac.id/index.php/SEAGRI/article/view/4595

Yuriansyah, Y., Dulbari, D., Sutrisno, H., & Maksum, A. (2020). Pertanian Organik sebagai Salah Satu Konsep Pertanian Berkelanjutan: Organic Agriculture as One of the Concepts of Sustainable Agriculture. PengabdianMu: Jurnal Ilmiah Pengabdian Kepada Masyarakat, 5(2), 127–132.

Zalzalah, G. G., Farhan, F., Indriati, I. H., Ratnaningrum, N., & Susilowati, F. (2025). Pengembangan Kelompok Wanita Tani Melati melalui Strategi Bisnis Manajemen. Jurnal Pengabdian Masyarakat Bangsa, 3(4), 1412–1420.

https://doi.org/10.35568/abdimas.v8i4.7220