INNOVATION OF TOBACCO LEAF CUTTING TOOLS FOR FARMERS IN PRIMPEN VILLAGE, BLULUK LAMONGAN

Indah Nurpriyanti
Universitas 17 Agustus 1945 Surabaya, Email: indahnurpriyanti@untag-sby.ac.id
Elisa Sulistyorini
Universitas 17 Agustus 1945 Surabaya, Email: elisasulistyorini@untag-sby.ac.id
Yonata Wahyu Dwi Saputra
Universitas 17 Agustus 1945 Surabaya
Bagas Wahyu Prasetyo
Universitas 17 Agustus 1945 Surabaya
Ekky Julian Wahyudi
Universitas 17 Agustus 1945 Surabaya

Abstract

Indonesia is an agrarian country that relies on the agricultural sector, including tobacco as one of its main commodities. Lamongan Regency, especially the Bluluk District, has great potential for tobacco production but faces challenges in harvest efficiency. This study aims to improve the productivity of tobacco farmers in Primpen Village, Bluluk District, by developing and applying a tobacco leaf-cutting tool. The community service activities include a survey of farmers' needs, the creation of the tool, testing, handover, and training on how to use it. The results show that the tobacco leaf-cutting tool increased harvest efficiency by 30-35% compared to manual methods. Farmers responded positively to this innovation as it reduced their workload and improved harvest quality. With this tool, it is hoped that the productivity of tobacco farmers in the area will continue to improve, contributing to their overall well-being.
Keyword : Tobbaco, agriculture, Technology

Introduction

Indonesia is an agrarian country, where 40% of the majority of its population makes a living through farming. Indonesia is also the largest archipelago in the world, with 17,508 islands and a land area of 1,922,570 km². This allows Indonesia to be one of the largest agrarian countries in the world. In an agrarian country like Indonesia, agriculture plays a significant role not only in the economy but also in meeting the basic needs of its population, especially with the ever-increasing population, which means a growing demand for food. Additionally, the agricultural sector has a crucial role in improving the welfare of people, many of whom still live below the poverty line [1].

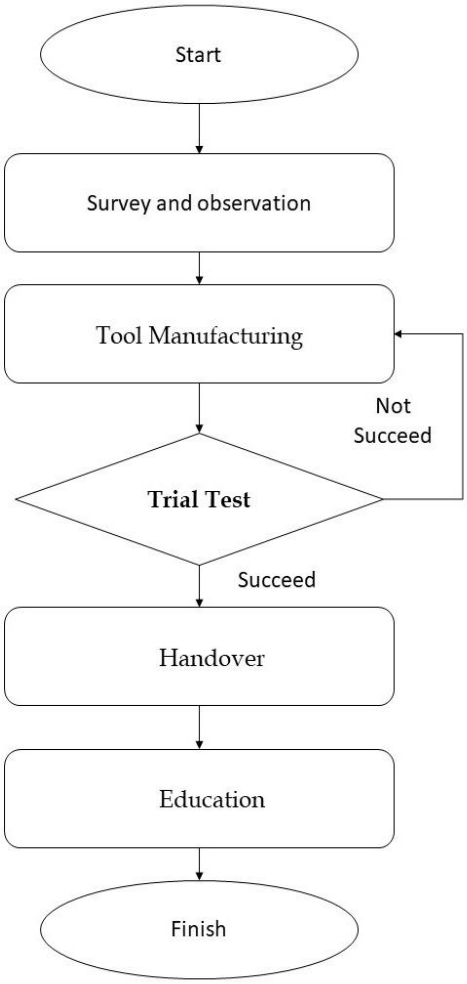
In East Java Province (2019-2024), Lamongan Regency is one of the regions prioritized for basic infrastructure improvement, enhancing its leading sectors, and reducing poverty. It is also part of the development cluster Labanegoro (Lamongan, Tuban, and

Bojonegoro), a cluster that, despite having industries, still has high poverty and unemployment rates compared to the province [2]. Most people in East Java work as farmers, supported by a suitable climate and vast land. For generations, they have relied on farming as their primary income, besides trade and production [3]. Lamongan is a regency in East Java, Indonesia, known for its vast agricultural land. Bluluk is one of the districts in Lamongan, classified in Cluster 1 in 2015, with an area of 0-4000 HA and a production yield of 1-3 tons [4].

Tobacco is one of the most important plantation commodities in Indonesia, serving as the primary raw material supporting the cigarette industry. The production of cigarettes has led to a widespread smoking habit among Indonesians. Madura tobacco is a type that has unique characteristics compared to other tobaccos due to its distinctive aroma, making it sought after by the cigarette industry [5]. Indonesia is the fifth largest tobacco producer in the world. As of 2017, Indonesia's tobacco production reached 198,296 tons. The large tobacco production is not just due to fertile land but also the significant role of tobacco farmers at every stage of the tobacco plant's growth. These farmers are involved in planting, maintenance, and post-harvest processing. As of 2017, there were 698,360 tobacco farmers in Indonesia [6]. The production process of tobacco farming includes: (1) Checking raw materials for quality standards, (2) Sorting into grades based on set criteria, (3) Grouping leaves of the same quality and bundling them, (4) Cutting the leaves using a large blade to standardize the cuts, (5) Sun-drying the leaves, and (6) After drying, conducting a final quality check before storing the leaves in large baskets according to their grades [7].

Technology with the help of machines can accelerate human activities. This concept inspired the idea of improving work systems, even creating tools or machines to perfect the work process. The creation of a machine typically starts with the planning or design phase, which can then be followed by its realization in physical form. Achieving a good and successful design depends on various factors, including the machine's ability to produce quality work, meet production capacity, ensure harmony in form and design, and also be visually appealing. The machine must be easy to operate, simple to maintain, which includes both upkeep and repairs, and reasonably priced [8]. A tobacco leaf slicer or cutter is a tool used to slice tobacco leaves harvested after they are picked [9]. The use of a tobacco slicer can significantly impact production capacity. The selection of machine components and tools also needs to be considered for efficiency purposes. The implementation of machines during the industrial revolution has proven to increase productivity, and thus, improvements in the slicing machine are expected to further boost productivity. The tobacco slicer is highly favored by the community because it offers a solution to the problem of tobacco harvest surpluses, which can then be sold effectively [10]. The implementation of the slicer manufacturing process includes field studies and literature reviews, tool calculations, machine component assembly, testing, data collection, machine performance testing, analysis, and conclusions [11]. The creation of the tobacco slicing machine involves several steps, which are: (1) Designing the machine, (2) Manufacturing the slicing machine parts, (3) Assembling the slicing machine, and (4) Testing the tobacco slicing machine [12]. Training was also provided

to the community in Beurandeh Village to ensure they can use the tobacco chopping machine effectively, making the process of chopping tobacco more efficient and reducing the drying time [13]. Therefore, the community service team developed a tobacco leaf-cutting tool and conducted training for tobacco farmers in Primpen Village, Bluluk District, Lamongan Regency.



Picture 1. Flow Chart

Methodology

The research was conducted in Primpen Village, Bluluk District, Lamongan Regency. The project was implemented over six months, from April to September 2024. The community service activities were carried out in several steps: (1) A survey by interviewing local farmers in Primpen Village, (2) The creation of a tobacco leaf-cutting tool, (3) Testing, (4) Handover, and (5) Education. The implementation flow is shown in Picture 1.

Results and Discussion

1. Survey

Data collection techniques at the beginning included observation, interviews, and documentation [14]. In an interview with a tobacco farmer in Primpen Village, Bluluk District, Lamongan, it was revealed that the farmers are facing significant challenges in the tobacco leaf harvesting process. One of the main obstacles they encounter is the lack of efficient cutting tools. The harvesting process, still done manually, is slow and exhausting, especially during the harvest season when large quantities of leaves need to be harvested. The farmer explained that without adequate tools, the quality of the harvest is also affected, as tobacco leaves can be damaged if not cut carefully. The farmers hope for assistance from the government or relevant parties to provide modern tools that improve work efficiency, reduce losses, and maintain the quality of the harvest.

2. **Tool Manufacturing**

The process of making the tool is carried out with the following details: Checking technical drawings and calculating the materials used in detail, Purchasing materials and an electric motor, Cutting materials and welding in the workshop, Assembling the machine

in the workshop, Finishing the tobacco slicing machine, and Painting.The Tobacco Leaf Slicer is shown in Picture 2(a).

Picture 2. (a) Tool Manufacturing (b) Trial Test (c) Handover and education for Farmer

3. Trial Test

Tobacco farmers in Primpen Village welcomed the development of the tobacco leaf-cutting tool by the community service team, as shown in Picture 2(b). They found the tool helpful, as it reduced the manual labor that previously required more effort and time. The tool also significantly sped up the harvesting process compared to traditional methods that relied on knives or other basic tools. The trial revealed a significant improvement in the efficiency of the tobacco leaf harvesting process. Farmers reported that the time required to cut tobacco leaves was reduced by about 30-35% compared to traditional methods. With the cutting tool, farmers could harvest more leaves in the same amount of time, thereby increasing their productivity.

4. Handover

At the handover event for the tobacco leaf-cutting tool conducted by the community service team in Primpen Village, Bluluk District, Lamongan, the event ran smoothly and was attended by representatives of the local tobacco farmer group and the community service team. The event is depicted in Picture 2(c). This event was an important moment for the tobacco farmers in the village as the tobacco leaf-cutting tool, which had been previously tested, was officially handed over for continued use.

The tobacco farmer group from Primpen Village, consisting of local farmers, enthusiastically received the tobacco leaf-cutting tool that was handed over by the community service team. The head of the farmer group expressed gratitude for the attention and assistance provided, especially after witnessing the direct benefits of the tool during the trial process.

In a brief speech, the representative of the farmer group expressed deep appreciation to the community service team for their concern and efforts in helping to improve the welfare of tobacco farmers in Primpen Village. They

acknowledged that the tool was a highly beneficial innovation and relevant to their needs. The farmers hoped that such cooperation could continue to support the productivity and quality of tobacco farming in their village.

With the handover of this tool, the community service team hopes that the tobacco leaf-cutting tool will have a significant impact on increasing tobacco farming productivity in Primpen Village. The farmers are expected to save time and effort during the harvesting process, as well as improve the quality of the harvest, which could ultimately increase their income.

5. Education

To ensure the effective and appropriate use of the tobacco leaf-cutting tool, the community service team from Universitas 17 Agustus 1945 Surabaya held a training session for the tobacco farmer group in Primpen Village, Bluluk District, Lamongan. The training was attended by local tobacco farmers who were the direct beneficiaries of the tool. The main goal of the training was to provide an in-depth understanding of how to use and maintain the tool so that it can be used for a long time and perform optimally. Farmers enthusiastically participated in the training, and some who had already taken part in the trial shared their experiences with those trying the tool for the first time. This created a positive knowledge-sharing atmosphere among the farmer group members.

The first session was delivered by speaker, with the title of the presentation: "Counseling on the Working Principles of the Tobacco Leaf Cutting Tool in Primpen Village, Bluluk, Lamongan." After the training session, the team continued with a education, titled "Maintenance of Tobacco Leaf-Cutting Tools in Primpen Village, Bluluk Lamongan." The team emphasized the importance of proper maintenance to ensure optimal performance and longevity. Maintenance activities were categorized into two types: "preventive maintenance" and "repair." Preventive maintenance aims to prevent damage, while repair activities are carried out to fix any damage that has occurred [15].

Conclusion

The development and implementation of a tobacco leaf cutting tool in Primpen Village, Bluluk District, Lamongan Regency, have shown positive results in increasing the efficiency and productivity of tobacco farmers. This tool successfully reduces the time needed for the harvesting process by up to 35%, while maintaining the quality of the harvest. Farmers in the area welcomed this innovation as it provides a solution to the problems they faced during manual harvesting. Additionally, the extension activities conducted have provided farmers with a deeper understanding of how to use and maintain the tool optimally. With the success of this implementation, it is hoped that the collaboration between the service team and farmers can continue to support the development of the tobacco agriculture sector in the village.

Acknowledgments
The study was carried out with the financial support of the Institute for Research and Community Service Universitas 17 Agustus 1945 Surabaya

References

[1]. QurotuAyun, Shidiq Kurniawan, Wahyu Adhi Saputro. 2020. Perkembangan Konversi Lahan Pertanian di Bagian Negara Agraris. *VIGOR : Jurnal Ilmu Pertanian Tropipka dan Subtropika.* 5(2) : 38 – 44
[2]. Lailatul Fitriyah. 2021. Efektivitas dan Keberlanjtan Program Pengembangan Prasarana Pertanian di Kabupaten Lamongan. I Cakrawala : Jurnal Litbang Kebijakan. Volume 15 Halaman 53-63.
[3]. Hamdi, M., musthofa H, D. iwan, & saddad, A. (2023). Hubungan Produktivitas Pertanian Tembakau dengan Fluktuasi Ekonomi Studi Kasus pada Masyarakat Desa Ampel, Kecamatan Wuluhan kabupaten Jember. *Al-Tsaman : Jurnal Ekonomi Dan Keuangan Islam*, 5(02), 71-91. https://doi.org/10.62097/al-tsaman.v5i02.1478
[4]. Arif Rohmatullah, Dinita Rahmalia, Mohammad Syaiful Pradana. 2019. Klasterisasi Data Pertanian Di Kabupaten Lamongan Menggunakan Algoritma K-Means Dan Fuzzy C Means. *Jurnal Ilmiah Teknosains*. Vol. V No. 2 Hal. 86-93.
[5]. Achmarul Fajar, Siti Maulidah. 2021. Fluktuasi Harga dan Kesejahteraan Petani Tembakau Madura. *Jurnal Penelitian Ilmu-Ilmu Sosial*. Vol.22, No.1, Hal 19 – 23.
[6]. Yuyun Risqa Puspitasari, Syamsulhuda BM, Kusyogo Cahyo. 2019. Beberapa Faktor Yang Berpengaruh Terhadap Perilaku Kerja Aman (Safety Behavior) Petani Tembakau Di Kabupaten Temanggung. *Jurnal Kesehatan Masyarakat.* Vol. 7, No. 1, hal 545-553.
[7]. Muhammad Nur Indra. 2021. Analisis Proses Produksi Untuk Meningkatkat Kualitas Produk Tembakau Dengan Menggunakan Metode Fmea (Studi Kasus : Umkm Sdn Tobacco). *Tugas Akhir Skripsi.* Program Studi Teknik Industri, Fakultas Teknologi Industri, Universitas Islam Indonesia Yogyakarta.
[8]. Mega Novita, Achmad Buchori, Ali Mujahidin. 2019. Diseminasi Teknologi Mesin Perajang Tembakau dalam Upaya Menerapkan Ekoteknologi di Desa Tumbrasanom Kecamatan Kedungadem Kabupaten Bojonegoro. *Journal of Dedicators Community*. Volume 3. Nomor 2 halaman 91-98
[9]. Sawin Sebayang, Penry Siregar, Joy hasibuan. 2022. Rancang Bangun Mesin Pengiris Tembakau Dengan Pisau Vertikal Kapasitas 30 Kg/Jam. *Jurnal Teknologi Mesin UDA*. Vol 3 No 1 Hal 84-95
[10]. Ike Kusdyah Rachmawati, Zainol Arifin, Achmad Noercholis. 2023. PKM Pemberdayaan Ekonomi Kelompok Tani Tembakau Dusun Tanjung Lor Desa

Karanganyar Kec. Paiton Kab. Probolinggo. *J-DINAMIKA : Jurnal Pengabdian Masyarakat.* Vol. 8. No.3, Hal 388 - 396

[11]. Elisa Sulistyorini, Maula Nafi, Ninik Martini, 2023. Rancang Ulang Mesin Perajang Pisang yang Digunakan Pada Industri Rumah Tangga di Desa Setro. *Mekanika : Jurnal Teknik Mesin.* Volume 9 Nomor 2 halaman 107 – 114

[12]. Sandra Malin Sutan, Yoga Aditya Pratama, Gunomo Djoyowasito, Ary Mustofa Ahmad. 2019. Rancang Bangun Dan Uji Kinerja Mesin Perajang Tembakau Mesin Perajang Tembakau Semi Mekanis Sistem Kayuh. *Jurnal Ilmiah Rekayasa Pertanian dan Biosistem* (*JRPB).* Vol.7, No.2, Hal 249-255.

[13]. Masykur, Al Munawir, Herri Darsan, Amsal Irmalis, Fajri Hadi, Firzan. 2022. Pelatihan POenggunaan Mesin Perajang Tembaka Untuk Masyarakat Gampong Beurandeh Kecamatan Bandar Baru Kabupaten Pidie Jaya. *JPMAI : Jurnal Pengabdoan Kepada Masyarakat Agro & Marine Industri.* Volume 2 Nomor 2 Halaman 1-6

[14]. Hayat. 2022. *Metode Penelitian Kualitatif.* Unisma Press. Malang

[15]. Wahyu Wiriatmaja, Masruki Kabib, Taufiq Hidayat. 2019. Rancang Bangung Mesin Pengisian Curah Tembakau ke Dalam Bin. *Jurnal Crankshaft.* Vol. 2 No. 2. Hal 33-40.