



## Farmer Behaviour of Certified High-Yielding Seed Users Increases Tobacco Productivity

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### Keywords:

Farmer Behaviour; Superior Seed; Certified Seed; Tobacco Production; Tobacco Cultivation

### ABSTRACT

*Superior seeds are certified as one of the determinants of increasing productivity. Farmer behaviour is also one of the keys to increasing productivity. This research used a descriptive qualitative approach. The subject of this study was 11 farmer groups in 8 districts. Data was obtained through in-depth interviews and participatory observation of tobacco farmers in several major tobacco-producing regions and data analysis using triangulation. The seeds of the Kubangsari variety had high production and the largest percentage yield compared to other varieties. The behaviour model of farmers using certified superior seeds could increase tobacco productivity and the behaviour of farmers who used certified superior seeds of Kubangsari varieties had the highest productivity level of 22,826 kg/ha the highest than varieties of timing, hence, Tanjung, Citrasari, and sigh. Therefore, seeds could be selected or determined to be cultivated more massively in locations that had similar microclimate characteristics to increase profits. The contribution of this research can be used as one of the materials for planning and evaluating seed activities in the tobacco commodity development area.*

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## INTRODUCTION

Superior seeds as one of the determinants of increased productivity. Increased productivity can be achieved by producing high-yielding seeds (Ula et al., 2023). Increased productivity can be achieved with the selection of superior seeds and balanced organic fertilizers (Taufik & Ruzardi, 2021). To ensure productive and sustainable cultivation can be done by ensuring superior seeds and providing biomass from available grasses (Satriani et al., 2023). Formal and informal education, counselling, superior seeds, and ready-to-use organic materials should be supported by the government (Muhardi & Effendy, 2021). Production is positively and significantly correlated with the use of high-yielding seeds (Kusumaningsih, 2023). The results also show that manager education, extension contacts, superior seeds, and organic lowland rice cultivation have a significant effect on the level of technical efficiency in lowland rice production. We concluded that there is an opportunity for farmers to increase lowland rice yields if they can efficiently manage production factors. The government could provide support for farmers, such as formal and informal education, extension, superior seeds, and ready-to-

use organic materials (Muhardi & Effendy, 2021). In other commodities based on the results of research, the use of superior seeds and balanced fertilizer application can increase productivity by 18.18 per cent (Taufik & Ruzardi, 2021). To obtain superior seeds, a breeding program is needed in the seed garden, let alone to obtain seeds that are tolerant to drought and the expected yield quality (Walther et al., 2022). The S.m.-SC regeneration system can restore the quality of seeds from detected viruses, so this system provides support to control the spread of disease and restore good Plasma Nuftah properties in S.m.\_SC (Yao et al., 2022).

In addition, superior seeds to be planted must be certified. In Brazil, studies have been conducted to test seed grains compared to certified seed varieties, resulting in better-certified seeds than seeds from semi-arid regions (da Silva et al., 2019). In terms of business, the use of certified benches can increase the income and welfare of farmers seen from the use of socioeconomic variable measuring instruments (Cevher & Altunkaynak, 2020). In addition, the use of certified seeds can increase productivity with the support of sanitary and physiological qualities, this determines the potential for more productive plants (Tonello et al., 2019). The use of certified seeds applied by farmers applying national regulations and international standards is proven to increase crop productivity, in addition to fertilizer application, irrigation and adequate crop management will also reduce the use of pesticides that are harmful to the environment (Wasilewska-Nascimento et al., 2020). High pest attacks, poor seed quality, lack of crop management, low availability of high-yielding varieties for farmers, lack of financial investment, and low knowledge of agriculture have been identified as major constraints on crop production and yield in Tajikistan (Husenov et al., 2021). Strengthening business capital, and providing fertilizers and superior seeds are strategies taken by the government to help rural communities (Pieter et al., 2022). The results showed that farmers have followed pesticide reduction, post-harvest loss reduction, and the use of certified superior seeds, it has become a special focus on the behaviour of farmers who cultivate tobacco (Connor et al., 2021). The selection of seed breeders according to confidence is one of the important factors in the strategy to prevent sources of risk of seed quality and previous seed purchase experience to ensure seed quality (Nurbudiati & Wulandari, 2020). The use of certified seeds has an impact on increasing the efficiency and sustainability of agricultural production for smallholders (Baglan et al., 2020). Crop cultivation is necessary and certified seeds need to be available throughout the country for the sustainable development of agricultural systems to strengthen food security (Husenov et al., 2021). The increase in productivity is determined by the use of certified seeds of known origin with sanitary and physiological qualities of the plant considering it to be the determining input of plant potential (Tonello et al., 2019).

Government contributions to farmers have been made for the provision of superior seeds. The farmers used direct cash assistance from the government and processed agroforestry products for sale and consumption as a survival strategy during the pandemic. Meanwhile, the government can help agroforestry farmers by increasing road access to rural areas, providing fertilizer and superior seeds, and also optimizing the role of livestock farmer groups (Pieter et al., 2022). In addition to the cost of renting land, other production facilities such as large quantities of manure, superior seeds, and labour also need important attention (Pieter et al., 2022).

Technical cultivation of farmers is one of the keys to agricultural success. In Cuba, tobacco production is key to the success of the economy that generates the greatest revenues (Ceiro-Catas et al., 2021). As the length of time on tobacco cultivation there will be changes in the decrease in soil aggregate stability, average diameter, and increase in soil credibility; increase in silt size fraction, reduction in soil organic matter content, and change in soil chemistry (pH) (Thomaz & Antoneli, 2022). Utilization of waste from tobacco cultivation can be used to determine and inhibitor ingredients of antiviral activity (Hu et al., 2022). For locations where there are often puddles, it is necessary to explore tobacco varieties that are tolerant of standing water so that tobacco cultivation can run even though it is constrained by climate change (Al Habib et al., 2022). The nicotine released into the soil during tobacco cultivation impacts various aspects of chamomile growth, including plant height, flowering period, flower yield, and flower quality (Zhou et al., 2023). The creation of superior seeds associated with plant breeding

programs is associated with climate change conditions and provides useful information for further studies in genetic science and seed breeding (Zhao et al., 2022). Soil for tobacco cultivation will be more effective in not more than 30-40 years so that the soil diameter is not lower due to raindrops and for soils that are more than 40 years old soil aggregate stability and soil credibility become 4 times lower (Thomaz & Antoneli, 2022). *Beauveria bassiana* can be used for tobacco pest control and requires further research to see its effectiveness (Vianna et al., 2021). Waterlogging is the cause of failure in tobacco cultivation due to the high rainy season resulting in hypoxia, hypoxic tolerant varieties due to waterlogging need to be developed to reduce yield losses (Al Habib et al., 2022). The former tobacco plant land has an impact on the growth of Chamomile which has important economic value after tobacco due to nicotine released into the soil has an impact on plant height, flowering period, and flower quality (Zhou et al., 2023). One of the most difficult tobacco diseases is the withers caused by *Fusarium oxysporum* f.sp. *Nicotiana* (Geobel Ceiro-Catasú et al., 2022).

Farmer behaviour is also one of the keys to increasing productivity. An individual will defend a particular area with limited resources thus shaping certain social behaviours as well (Lovari et al., 2020). Sedentary behaviour will increase during leisure and weekends for office work, as well as for farmer behaviour in the local area (Colomer et al., 2022). Tobacco production waste can be used for organic materials that are used as organic fertilizer in addition to hazelnut skin, wheat straw, and tea waste (Bayadilova et al., 2022). Southern Brazil has conducted case studies of conventional tobacco production to diversify agroecological management and successfully increase productivity (Stratton et al., 2021). Tobacco virus disease (TMV) attacks are the cause of decreased tobacco production in plants with a lot of weeds (Korbecka-Glinka et al., 2021). To produce cigar-type tobacco suitable in shade or low light conditions (Wu et al., 2021). Due to excessive rainfall, tobacco plants will experience growth failure and cause hypoxia, therefore hypoxia-tolerant seeds are needed to reduce losses in tobacco cultivation (Al Habib et al., 2022). Human behaviour depends on culture and favours accelerated adaptation as long as it conforms to tolerable rules and shapes one's social attitudes (Bringas Molleda et al., 2023). Behaviour is related to the disease that will be suffered if it is associated with the food eaten, as well as individual behaviour toward positive habitual activities that will produce good or useful things (Kheirollahpour et al., 2020). Women who have higher education tend to have better behaviour and insight into activity safety knowledge (Anusha et al., 2020). Cuba is a tobacco-producing country whose income is the largest from tobacco, and is key to its economy, but is attacked by *Fusarium* which decreases the commercial value of its tobacco leaves (Ceiro-Catas et al., 2021).

Based on plantation statistics data in 2021, currently, the area of tobacco plantations in West Java reaches 9,525 ha with a production yield of 8,778 tons (Dinas Perkebunan Provinsi Jawa Barat, 2023b). Most of the tobacco production in West Java is mole/bachelor tobacco. Based on the processed products, mole tobacco in West Java can be grouped into 2 (two), namely: red mole tobacco and yellow/white mole tobacco, mole tobacco has distinctive characteristics in terms of aroma, colour, and taste. West Java has 6 varieties that have been released as national superior varieties originating from two central tobacco, namely 3 varieties from Sumedang Regency (Temangi, Kenceh, and Hanjuang) and 3 varieties from Majalengka Regency (Citrasari, Kubangsari, and Sigalih) (Dinas Perkebunan Provinsi Jawa Barat, 2023a). This condition is related to the commitment of the Indonesian government to increase tobacco productivity to prosper its people by releasing seeds of these superior varieties, as also stated by the Chinese government. The Chinese government started to organize and implement superior seed adoption subsidies in 2002, and the central government invested 100 million yuan (\$15.4 million) to subsidize superior soybean seed varieties. In 2003, wheat was included in the scope of subsidies for superior seed varieties due to a sharp reduction in national grain production (Hongchang & Xinghong, 2019). The creation of superior seeds associated with plant breeding programs is associated with climate change conditions and provides useful information for further studies in genetic science and seed breeding (Zhao et al., 2022). The main challenge of producing biomass from this seaweed is ensuring a continuous supply of superior seeds for productive and sustainable cultivation (Satriani et al., 2023).

The objective of this study is to analyse and understand farmers' behaviour in the use of certified high-yield seeds and how this behaviour contributes to increased tobacco productivity. This study aims to identify the factors that encourage farmers to select and use certified seeds, such as knowledge of the benefits of seeds, access to agricultural resources, and support from the government and agricultural institutions. In addition, this study also aims to evaluate the impact of using certified seeds on tobacco yields, which is expected to provide important insights for the development of more effective agricultural strategies and policies, to increase the productivity and welfare of tobacco farmers.

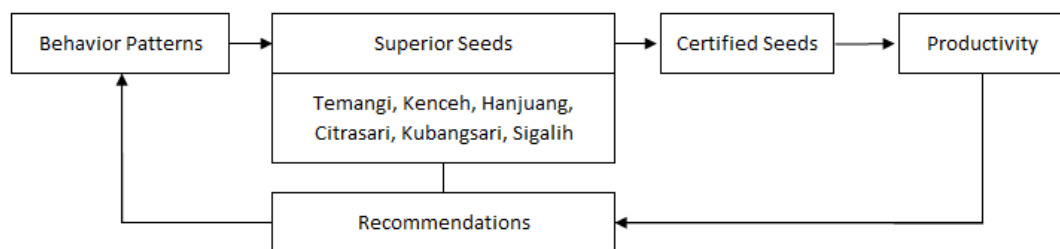
## METHOD

This study uses a descriptive qualitative approach that aims to understand farmers' behaviour in using certified superior tobacco seeds in eight regencies, namely West Bandung, Bandung, Garut, Tasikmalaya, Sumedang, Majalengka, and Kuningan. The study involved groups of farmers who participated in demonstration activities of six newly released improved tobacco varieties. Data in this study were obtained through in-depth interviews, direct observation, and documentation studies to obtain a comprehensive picture of the factors influencing the adoption of new varieties by farmers. To ensure the validity of the data, analyses were conducted using triangulation techniques, which allowed for testing the consistency of findings from different data sources. This approach provides an in-depth insight into the dynamics of new agricultural technology adoption among tobacco farmers, as well as the factors that influence their decision in selecting certified superior seeds.

## RESULTS AND DISCUSSION

### Implementation of Activities

Researching the behaviour patterns of farmers using superior varieties of seeds to increase tobacco productivity in West Java, as shown in Fig. 1.



*Fig. 1 Model of Farmer Behavior in the Use of Superior Varieties to Increase Tobacco Productivity*

Initially, farmers cultivating tobacco did not use superior varieties but used original seeds that came from outside or existing seeds not from established seed source gardens so that they could not be certified that productivity was low. After there is a change in farmer behaviour to use superior varieties of seeds that have been released by the West Java Provincial Government, namely the seeds of the varieties timing, hence, Tanjung, Citrasari, Kubangsari, and sigh then certified as seed quality assurance with the implementation of cultivation techniques by the correct Standard Operating Procedures (SOP), productivity is obtained that reaches the standard production target of 0.7-0.8 tons/hectare.

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## **Planting implementation technique**

### **Land Preparation**

Land clearing and processing for planting is carried out starting from seeds aged 2-3 weeks, then left for approximately 1 (one) week, then a second tillage is carried out. Furthermore, a sewer is made in the middle and perimeter of the plant as a drainage channel when it rains or to irrigate plants when there is a water source. After the guludan is ready, make a planting hole with a hoe spacing the holes between rows 1 m, in rows of 0.9 m with a single guludan system.

### **Seed planting**

A good planting period for tobacco seeds is at the end of the rainy season so that young plants still get enough water, during the time of flowering, and fruit development, until seed ripening in the dry season. Rain during the seed ripening phase can decrease seed viability. Seed planting time in the morning or evening. Before the seeds are planted, the planting pit is first fed with prepared organic fertilizer. If irrigation is available, irrigation is given as high as half a gulden. Embroidery is carried out up to 7 days after planting. The planting distance is 1 x 0.9 m so the population per ha is 12,000 trees with 6 varieties planted with 2,000 trees each.

### **Fertilization**

Fertilization is carried out 3 times. The first fertilization is given 8 days after planting, the second fertilization is given 20 days after planting, and the third fertilization is given 1 month after planting. The fertilizer given is NPK fertilizer.

### **Watering**

During the first 7 days watering is done every day, on the 8th to 25th day watering is extended to once every 3-5 days. Day 30 is given more watering, day 31 to day 45 watering intensity is reduced enough 2 times watering only. In the next phase until the age of 65 days watering is given once every 5 days with a larger volume of water, after which watering can be stopped unless there is very little rainfall and the plant withers.

### **Seasoning**

Seasoning is carried out 30-40 days after planting, serving to close the base of the stem, strengthen the establishment of plants, improve aeration, and create loose soil conditions.

### **Weeding and weeding**

Weeding and weeding are carried out until the end of harvest for optimal plant growth. Bud curing for hanging and hence varieties is carried out when the number of leaves is 16, while for the varieties Temanggi, Kubangsari, sikh, and Citrasari is carried out when the number of leaves is 20.

### **Disease Pest Control**

Disease pest control is carried out in an integrated manner according to the condition of plants attacked by pests in the field (the implementation time is carried out by looking at the condition of the plant). The use of pesticides and chemicals commonly used are Decis and Furadan depending on the pest attack. Harvesting, Displaying, and Drying. Harvesting is carried out by physiological ripe leaf blades characterized by the characteristic colour of the lower leaves having turned yellow, harvesting should be done when the dew is gone and the leaves are not moist. Before displaying, tobacco leaves are first watered 2-4 days after planting, the process of display and drying is carried out until the tobacco leaves are completely dry.

### **Production of High-yielding Varieties of Tobacco**

Production of each high-yielding variety grown by farmers in each district is different, as shown in Table 1.

Table 1  
 Total Production of West Java Superior Seed Varieties in 2023

No.	Varieties	Tree population	Production		
			Wet weight (kg)	Dry weight (kg)	Rendemen/ Yield (%)
1	Kenceh	4,000	19,264.00	2,714.95	14.09
2	Temangi	4,000	20,176.00	2,906.93	14.41
3	Hanjuang	4,000	19,287.20	2,914.86	15.11
4	Sigalih	4,000	18,833.20	2,741.80	14.56
5	Citrasari	4,000	20,686.20	3,022.88	14.61
6	Kubangsari	4,000	22,826.60	3,429.01	15.02
	Jumlah	4,000	121,073.20	17,730.43	14.64

Source: West Java Provincial Plantation Office, 2023

From Table 1, it can be seen that, the overall production of 6 superior varieties released by the West Java Provincial Government. The highest production is the next Kubangsari variety Citrasari, and the highest yield is in the Hanjuang variety. It can be recommended that seeds of Kubangsari and Hanjuang varieties be developed in West Java in districts that have similar microclimate characteristics. After obtaining the optimal production level at each planting site, it is recommended that each location according to the level of location match with the optimal productivity parameters of the pilot results in each district as in Table 2.

 Table 2  
 High-yielding seed Varieties are Recommended for Planting in Each District

No	Districts	Recommendations for varieties used	Average Wet Weight Per Tree (Kg)
1	Bandung Barat	Citrasari	0.41
2	Subang	Kubangsari	0.70
3	Sumedang	Kenceh	1.76
		Hanjuang	1.77
4	Bandung	Hanjuang	0.61
		Kubangsari	0.61
5	Garut	Hanjuang	0.58
		Kenneth	0.56
6	Tasikmalaya	Kubangsari	0.53
7	Majalengka	Kubangsari	0.64
8	Kuningan	Sigalih	0.74

Source: West Java Provincial Plantation Office, 2023

From Table 2, it can be seen that the variety with the highest production is hanging followed by cancer and sigalih, and the lowest production in Citrasari. The seeds of the Kubangsari variety have high production and the largest percentage yield compared to other varieties.

## Discussion

### Not All High-yielding Varieties that have been Released have the Same High Level Of Productivity

The newly released superior varieties from West Java are 6 varieties from Sumedang and Majalengka regencies, each with 3 superior varieties. After demonstration plots or demonstrations show different levels of production depending on the planting location, farmers' behaviour in carrying out cultivation techniques, and the local climate. The highest production of kubangsari varieties 22,826.60 kg / ha, citarasari 20,686.20 kg / ha, temangi 20,176.00 kg / ha, hanjuang 19,287.20 kg / ha, kenceh 19,264.00 kg / ha and the lowest sigalih 18,833.20 kg / ha. Overall seed productivity of high-yielding varieties reached 121,073.20 kg/ha.

This variation in productivity is often influenced by some factors, including the variety's adaptation to specific environmental conditions, the cultivation techniques applied, as well as climate change that can affect plant growth. For example, research by Rofik (2018) showed that certain tobacco varieties that exhibited high productivity in the lowlands did not perform similarly in the highlands, suggesting that the match between variety and growing environment is critical to achieving optimal yields.

In addition to environmental factors, farmers' behaviour in adopting and applying cultivation techniques also plays an important role in determining the productivity of tobacco varieties. Research by (Mango et al., 2017) revealed that farmers who follow modern tobacco cultivation practices, such as the use of organic fertilizers and proper irrigation arrangements, tend to achieve higher yields compared to those who still use traditional methods. However, in the case of newly released tobacco varieties in West Java, the yield differences between Kubangsari, Citarasari, and Sigalih varieties show that although these varieties have high yield potential, their productivity levels are highly dependent on the application of proper cultivation techniques as well as site-specific conditions.

Previous research by (Bailey-Serres et al., 2019) also found that although improved tobacco varieties are released with high-yield claims, yield variations in the field often do not reflect the maximum potential of the varieties. The results of this study reinforce the importance of more comprehensive field trials in various environmental conditions before the varieties are widely recommended to farmers. Thus, farmers and agricultural extension officers need to consider not only the high yield potential of a variety but also its suitability to local conditions to maximise productivity. These studies show that successful adoption of improved varieties depends not only on the genetic traits of the variety itself but also on the suitability of the environment and farmers' ability to manage the crop effectively.

### **There are High-yielding Varieties that are Attacked by Pests and Diseases and Reduce the Quality and Quantity of Production**

All varieties of seeds attacked by pests in plants are caused by several factors, including unclean garden sanitation, many weeds around the garden, and climatic factors. Types of pests that attack in West Bandung Regency Stem borer (*Phthorimaea* sp.), in Bandung Regency Leafworm (*Helicoverpa armigera*), Aphids (*Aphis* sp and *Phyzus persicae*) and TMV virus (Tobacco Mozaik Virus), in Garut Regency Armyworm (*Spodoptera litura*) and CMV (*Cucumber Mozaic Virus*), in Subang Regency Leafworm (*Helicoverpa armigera*), Tasikmalaya Regency Leafworm (*Helicoverpa armigera*), in Kuningan Regency Leafworm (*Helicoverpa armigera*) and TMV virus (*Tobacco Mosaic Virus*).

Although these varieties are designed to produce high yields, resistance to pests and diseases is often a significant challenge in cultivation practices and can cause severe damage to tobacco plants, drastically reducing yields (Lecours, 2014). In addition, this study also revealed that resistance to pests and diseases varies significantly between tobacco varieties, although all of them are categorised as high-yielding varieties. In field tests, the more susceptible varieties not only experienced a decrease in yield quantity, but also the quality of the tobacco leaves produced decreased, which has a direct impact on the economic value of the final product. This suggests that variety selection should consider not only high yield potential but also resistance to pests and diseases.

Efforts to develop tobacco varieties that are more resistant to pests and diseases continue, but the results have not been fully adequate for all environmental conditions. Research by (Khan et al., 2020) shows that although some new varieties have improved resistance, the variability in this resistance often means that farmers still face significant risks of pest and disease attacks. Therefore, in addition to appropriate variety selection, environmental management and good cultivation practices, such as crop rotation and effective pesticide use, are essential to minimise the negative impact of pests and diseases on tobacco production.

### **Not all Farmers Get Certified High-yielding Variety Seeds**

Not all farmers get seed facilitation of superior varieties considering that this seed variety has just been released by the Ministry of Agriculture of the Republic of Indonesia Number 613 / KPTS / KB.110 / M / 9/2019 concerning the Release of Kubangsari Varieties as Superior Varieties of Tobacco Plants and other decisions of the Minister of Agriculture for other varieties that are similar and have not been widely circulated in the community, in 2023 a demonstration of plots or demonstrations will be carried out so that they are still not popular. After the release of seeds of superior varieties, seed planting was then carried out for dem plot or demonstration of each seed so that there were not many seed supplies available for tobacco production purposes in West Java.

This limited access is often caused by unequal seed distribution, high prices, and lack of proper information among farmers on the benefits of using certified seeds. In some remote areas, farmers still rely on local, uncertified seeds due to limited access to improved seeds. As a result, although certified seeds have higher yield potential, farmers using local seeds often get lower yields and are vulnerable to pest and disease attacks.

To address this issue, a more inclusive policy in the distribution of certified seeds and increased counselling to farmers on the importance of using improved seeds are needed. (Diskatan Kab. Kuningan, 2024) highlighted the need for government intervention in improving the seed distribution chain, especially in hard-to-reach areas. They also recommended a more intensive training programme to raise farmers' awareness of the long-term benefits of using certified seeds. By doing so, it is expected that more farmers will be able to improve the productivity and quality of their crops, which will ultimately improve their welfare.

### **There are Still Farmers who Use Uncertified Tobacco Seeds**

Observations show that about 60% of tobacco farmers still use seeds that are not certified to come from other farmers. This is due to the lack of knowledge of the importance of using certified superior seeds in cultivating tobacco plants. Therefore, the extension function is very important to disseminate information about the importance of certified superior seed functions to increase tobacco productivity in West Java in particular.

The use of uncertified tobacco seeds can harm tobacco productivity and quality. Research by Karuppuchamy and Venugopal (2016) showed that uncertified tobacco seeds often have lower vigour and are more susceptible to diseases and pests. In field tests, yields from uncertified seeds tended to be lower than those from certified seeds and significant reductions in leaf quality. This research highlights how certified seeds can provide a competitive advantage in terms of yield and quality, but still, many farmers do not have the access or ability to switch to such seeds.

### **In addition, the Support of Other Factors such as Irrigation Techniques that are Suitable for Plant Locations Far from Water Sources, Fertilizers, and Guidance from Officers or Field Extension Workers is Still Inadequate**

Many farmers experience problems in managing irrigation, especially in locations far from water sources. Inadequate irrigation techniques can lead to water shortage or excess, which negatively affects plant growth and yield. Haryati (2014) explained that the implementation of efficient irrigation systems can increase tobacco yields in water-deficient areas. However, many farmers still use traditional irrigation methods that are less effective in managing crop water needs.

In addition, the use of fertilizers that do not match the needs of the plant can also affect tobacco yield and quality (Kusnianto et al., 2018). Unmeasured or inappropriate fertilizer application according to soil type can cause nutrient deficiencies, leading to a decrease in tobacco productivity and quality. The study showed that optimal fertilizer application, both in terms of type and amount, can significantly increase yields. However, many farmers do not have the knowledge or access to apply proper fertilizer techniques, resulting in sub-optimal yields.

Guidance from field officers or extension agents is also very important to improve farmers' skills in applying good cultivation techniques. Setyawan et al. (2024) stated that effective extension can improve farmers' knowledge of modern agricultural practices, including appropriate irrigation and fertilization techniques. However, many areas still suffer from a shortage of agricultural extension officers, resulting in inadequate technical support provided to farmers. By increasing the availability of extension officers and more intensive training, it is expected that farmers can adopt better practices and improve the yield and quality of their tobacco production.

Limited infrastructure, production facilities, and human resources of officers or extension workers are the cause of low productivity, in addition to the use of seeds of superior varieties mentioned above. Therefore, the selection of planting sites, the knowledge and skills of farmers, and the development of officer functions or the addition of extension officers are very important for efforts to improve farmer performance to increase tobacco productivity, especially in West Java. Especially for extension officers, some of them have non-technical agricultural backgrounds so they cannot directly support the improvement of farmers' skills. Therefore, increasing knowledge and skills for runners is also needed so that the dissemination of technical information on cultivation and other knowledge that supports efforts to increase tobacco productivity faster can be realized.

## CONCLUSIONS

Farmers who used high-yielding seeds of certified Kubangsari varieties had the highest productivity rate of 22,826.00/ha than other varieties. Therefore, seeds could be selected or determined to be cultivated more massively in locations that had similar microclimate characteristics to increase profits. In addition, the use of superior seeds of the Kubangsari variety had a yield of 15% above the average (14%) with an income value of Rp79,160,000.00/ha so that an additional income of 27% was obtained compared to the previous Rp21,748,000.00. The tobacco that had the highest yield was the Tanjung variety (15.11%) comparing dry weight with wet weight was another alternative in choosing superior varieties of tobacco, especially in West Java.

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