International Studies of Management
Vol. 1 No. 1 Tahun 2025
e-ISSN : XXXX-XXXX p-ISSN : XXXX-XXXX, Hal 17-37
Available Online at : https://journal.univummibogor.ac.id/index.php/ISoM

Factors Affecting the Quality of Red Onions from the Post-Harvest Handling Side

Fidya Ningsih
Trilogi University, Jakarta, Indonesia

Author correspondence: Fidyanovian@gmail.com

Abstract: *Shallots are a commodity that the people of Indonesia widely cultivate. In addition to being cultivated, shallots are processed to be used as seasonings and additional ingredients in cooking. This study aimed to determine how many respondents were between champion shallot farmers and horticultural practitioners in implementing good and correct post-harvest activities by SOP (Standard Operating Procedures) and to determine the small number of respondents who had not carried out post-harvest activities correctly. The time and place of this study were from November 2020 to July 2021 in Brebes, Central Java. Data collection in this study was by distributing questionnaires to champion shallot farmers and horticultural practitioners who are experts in the field of shallot post-harvest. The data and information collected were analyzed qualitatively with a descriptive approach using the data source triangle technique and processed using Microsoft Excel. The results of this study are that many factors that support the success of the production of high-quality shallots are still lacking in direct application in the field, the highest value with the best value is only found in 3 factors, including the selection of varieties with the highest variable selection, namely superior varieties, drying with the highest variable selection using traditional methods under sunlight, and transportation activities with the variable value of using net sacks in open cars or having coolers.*

Keywords: *shallots, quality, post-harvest.*

1. INTRODUCTION

Shallots are seasonal commodities that the community has widely cultivated. Setiapermas et al. 2013 stated that shallots are seasonal commodities with planting schedules in October-January, February-April, and April-July. People always use or add shallots to complement various foods in Indonesia. Shallots are bulky or easily rotten commodities, causing changes in quality such as weight loss, and shallots require post-harvest methods and suitable storage methods to maintain the quality of shallots. Two internal factors and external factors are problems for shallots, such as internal factors, namely resources, the number of risks, and external factors in marketing, distribution, and post-harvest. Shallots are commodities that have long been cultivated by farmers and contribute to increasing the country's economy. They have spread to all corners of almost all provinces in Indonesia.

The production center of shallots itself is still concentrated in regencies on the island of Java, where Central Java is one of the leading production centers that produce shallots. Five of them are Brebes with a production reaching 302,933 tons in 2019, Demak Regency with a production reaching 46,089 tons in 2019, Pati Regency with a production reaching 39,676 tons in 2019. Boyolali Regency reached 18,343 tons in 2019, and Tegal Regency reached 16,853 tons in 2019. The problems that occur with this

Received: January 20, 2024; Revised: February 03, 2024; Accepted: February 17, 2024;

shallot commodity are that it often causes fluctuations due to high prices on the market because it is included in the type of seasonal commodity, and frequent losses ranging from 20% -40% due to poor or inappropriate handling of post-harvest operations (Nurmalia et al. 2021). The correlation between shallots as a seasonal commodity with price fluctuations is caused by an imbalance between the amount of demand and the amount of supply that occurs in the market, where the price will increase if the amount of demand exceeds the amount of supply and vice versa the price will decrease if the amount of supply exceeds demand. Many people have a high interest in shallot farming. However, in the process of its activities, many obstacles remain, such as technical activities and the economic field.

The average consumption of Indonesian people for shallot commodities reached 2,004,590 tons in 2021. The increasing public consumption of shallots indicates a high market opportunity and motivates farmers to increase production activities for shallots. The Central Statistics Agency (BPS) surveyed distribution patterns in the trade of shallot commodities. This survey was conducted to obtain an overview of the distribution patterns of domestic trade for shallot commodities.

Based on data from the 2020 National Socio-Economic Survey (Sunsenas), there are 20 horticultural commodities consumed daily by the community, one of which is shallots. Shallots have an average value of vegetable consumption per capita per day according to vegetable commodities (grams), March 2020, around 7.39 (grams). Moreover, shallots have an average monthly vegetable expenditure per capita per month according to vegetable commodities (rupiah), March 2020, around IDR 6,496, which is the highest value in national expenditure.

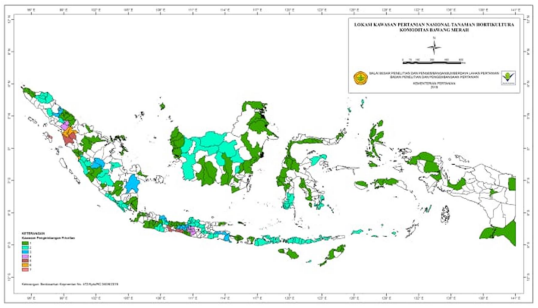

Figure 1 National agricultural area for horticultural crops, shallots (INAagrimap 2019)

Priority Development Areas with colored symbols include:

- Dark green : 1
- Green : 2

- Blue : 3
- Purple : 4
- Maroon : 5
- Orange : 6
- Red : 7

Basuki (2014) states that problems that often occur in shallot farmers include those related to socio-economic conditions in terms of internal factors (risk and resources) and external factors (marketing, climate, biological, and post-harvest handling). The decline in the quality of shallots is due to obstacles faced during storage activities (Mutia et al. 2014). In processing and packaging, shrinkage loss and damage occur due to excessive peeling and cutting activities (Sudjafha & Wisaniyasa 2017). One of the problems that occurs in shallots is in post-harvest activities, which can cause a decrease in weight loss or a decrease in quality faced by farmers during post-harvest activities.

The method of storing shallot bulbs applied by Indonesian farmers also affects the quality of shallots (Eko et al. 2016). Storage is generally carried out in Indonesia in a traditional way, resulting in weight shrinkage and weight loss in bulbs of up to 25%. Therefore, the application of SOP for post-harvest shallots is highly recommended, considering the large number of declines in the quality of shallots that always occur in activities carried out by farmers (Nur et al. 2001).

In addition to the above constraints, constraints that often occur to farmers and traders at the time are price fluctuations, uncertain climate conditions, and conditions where the remaining sales of shallots are not used up on the day of sale so that it is possible to store the remaining sales of shallots to be sold the next day. The government has issued RI regulation number 102 of 2000 concerning the quality of shallots, which is mentioned in the quality standardization, which contains the formulation, determination, and revision of standards in an orderly manner with all related parties.

Based on the formulation of the problem described, this study aims to determine the number of respondents who have implemented post-harvest activities by the SOP (Standard Operating Procedure) for shallots so that the percentage of respondents taken can be determined by good and correct post-harvest handling of shallots.

2. METHOD

Types of research

This research is qualitative with a descriptive approach. The types of data used in this study are primary and secondary data, where the primary source comes from the results of filling out the questionnaire. While secondary data is obtained from the Directorate General of Horticulture, scientific journals, journals, theses, BPS, from previous research.

Place and Time of Research

Population and Sample

The method of data collection from questionnaires that can be filled out by farmers, the Directorate General of Horticulture and the Center for Horticulture Research and Development, who are willing to be respondents in this study. The sample collection technique uses the purposive sampling method with a total of 27 respondents according to the fields of shallots, post-harvest, and quality standards as follows:

Table 1. Respondents

No	Source person	Areas of expertise	Amount
1	Champion red onion farmer	Post-harvest Farmers and Marketing	19
2	Directorate General of Horticulture andCenter for Horticulture Research and Development	Horticulture Practitioner	8

Respondents submitted in this study include farmers who carry out activities in the field and from the Directorate General of Horticulture as practitioners in horticultural agriculture. *Purposive sampling is* a technique for determining study samples from several specific considerations that have the aim that the data obtained can provide representative results, Sugiyono (2010). The sample data obtained will be processed with Microsoft Excel, and the results will be described according to the completion of the questionnaire carried out by the respondents.

Data collection

The research technique used is the triangulation technique of data sources, which only leads to and is seen when the respondents fill out the questionnaire. It is also obtained from secondary data, namely Horticulture, scientific journals, theses, and BPS from previous research.

Data analysis

The analysis method used was the results of filling out questionnaires from 27 respondents, where the first activity was to distribute questionnaires to 27 respondents online and offline, the second step was to present data formed through diagrams in Microsoft Excel by explaining the values in each post-harvest variable, the last stage was the stage of making graphs for the highest values in each variable so that it can be concluded by summarizing the results and discussions that are the problems and the lack of post-harvest activities that have the most minor or very bad values.

3. RESULTS

Overview of Red Onion

Shallots are a horticultural commodity included in the Agregatum group. They are widely cultivated and consumed as an additional flavoring in cooking by the community. Shallots are an easily perishable commodity, so the storage time required only lasts a short time. To influence the results obtained from post-harvest activities, many factors must be carried out with the SOP for shallots.

Respondent Overview

The total number of respondents who filled out the questionnaire was 27 respondents, consisting of champion shallot farmers, horticultural practitioners of the Directorate General of Horticulture and the Center for Horticulture Research and Development, 8 of whom were horticultural practitioners and 19 of whom were champion shallot farmers who were also referred to as practitioners directly in the field and carried out post-harvest activities every day.

Age of respondents

Table 2 Age of respondents

No	Age	Percentage	Amount
1	<40	37%	10
2	40-50	30%	8
3	51-60	22%	6
4	60-70	7%	2
5	>70	4%	1
Amount		100%	27

In agricultural activities, the success of an activity is also influenced by age factors, based on table 2 it can be seen that the age of the shallot respondents is in the age

group of less than 40 years where this age shows that some farmers have strength and high work spirit so that they can optimize their role in carrying out post-harvest activities of shallots. However, their experience is still relatively minimal compared to respondents over 70. In comparison, the group of farmers who are no longer productive is obtained by the age group over 70. Their experience is relatively high compared to respondents under 40 years old.

Formal education

Table 3 Formal education

No	Formal education	Percentage	Amount
1	Didn't Finish Elementary School	4%	1
2	SD	22%	6
3	JUNIOR HIGH SCHOOL	0%	0
4	Vocational High School	30%	8
5	Associate Degree	4%	1
6	Bachelor's Degree	19%	5
7	Master's Degree	11%	3
8	Doctoral Degree	11%	3
Amount		100%	27

Table 3 shows that the respondents' education level is mainly at the vocational high school level, with a total of 8 respondents. However, there are still farmers who only completed elementary school, with the second highest score being six respondents. Thus, many respondents are still aware of education so that they can absorb and apply innovation and technology in the agricultural sector. In addition, the presence of respondents who have an education level up to a bachelor's degree is expected to have a broader mindset and innovation to strive for the implementation of good and correct shallot post-harvest. So that productivity in post-harvest activities is carried out properly and correctly.

Non-formal education

Table 4 Non-formal education

No	Formal education	Percentage	Amount
1	Never	11%	3
2	1 to 4	33%	9
3	5 to 9	37%	10
4	10 to 12	0%	0
5	> 12	19%	5
Amount		100%	27

The table data shows that respondents' percentage of non-formal education is mostly at the level of educational activities, calculated from 5 to 9 times. According to farmers, this is due to the lack of extension activities from agencies related to the lack of insight that farmers have in post-harvest activities of shallots in Brebes. This non-formal activity is usually followed by respondents who only focus on extension activities and how products are promoted to countries.

Occupation

Table 5 Occupation

No	Work	Percentage	Amount
1	Farmer	70%	19
2	Practitioner Horticulture	30%	8
Amount		100%	27

Table 5 shows that most respondents have the highest value for farmers, whereas the value for farmers is higher and is prioritized because farmers are also practitioners in the field. Moreover, horticulture practitioners are in second place at the level of work as business implementers in the field of shallots. This shows that the data viewed from the two jobs were used to get correct and more accurate results.

Land area

Table 6 Land area

No	Land Area (Ha)	Percentage	Amount
1	< 0.05	7%	2
2	0.05 - 0.10	19%	5
3	0.10 - 0.25	26%	7
4	0.25 - 1.00	33%	9
5	> 1.00	15%	4
Amount		100%	27

Based on table 6 shows that the land area used by each farmer is different. The smallest land area is an area of less than 0.05 ha. At the same time, the largest land area is 0.25-1.00 ha. Most land area use is also at a land size of 0.25-1.00 ha, with the most significant number of respondents being 9. With the large area of land cultivated by each farmer, it is expected to increase the production and income of shallots.

Income

Table 7 Income

No	Income	Percentage	Amount
1	< Rp. 5,000,000	7%	2
2	Rp. 5,000,000 - Rp. 7,500,000	15%	4
3	Rp. 7,500,000 - Rp. 10,000,000	41%	11
4	Rp. 10,000,000 - Rp. 15,000,000	22%	6
5	>Rp 15,000,000	15%	4
Amount		100%	27

Based on the data in Table 7, farmer income is classified as high at an income of Rp 7,500,000-Rp 10,000,000, so respondents are more courageous in taking action in making decisions when making innovations in post-harvest activities. Income with the lowest value is generated with an income of less than Rp 5,000,000, this also affects the area of land owned by respondents where production results are less because of the small area of land.

Seeding

Table 8 Seeds

No	Seeding	Percentage	Amount
1	Original Seeds (seeds planted by farmers and the results are replanted)	0%	0
2	Get to know the seeds beforehand	22%	6
3	Purchased from other farmers	33%	9
4	Purchased from champion farmers	0%	0
5	Purchased from breeder	44%	12
Amount		100%	27

Based on table 8 shows that the most seed use is done in the selection of seeds purchased from breeders, breeders are people who breed or can be said to multiply, seeds purchased from breeders have gone through the stages of quality standard eligibility and have certification so that respondents who buy from breeders do not hesitate because the seed quality standards are guaranteed. The following selection of seeds is purchased from other farmers so that trust between farmers already exists, and they do not hesitate to buy

them from other farmers who sell shallot seeds. Farmers who sell also understand the quality of the seeds sold and the relatively cheaper price. The following selection was chosen because farmers knew the seeds before, and this selection included the trust of each respondent in finding the best seeds available. The selection of previously known seeds is hazardous for the bulbs' growth rate, considering whether the quality is good enough or the need for a standard quality test period. So, it is highly recommended that respondents buy seeds from breeders with guaranteed quality standard certification.

Cultivation

Table 9 Cultivation

No	Cultivation	Percentage	Amount
1	Origin Cultivation	0%	0
2	Conventional Techniques	37%	10
3	Market demand	7%	2
4	Planting Schedule	22%	6
5	GAP Compliant	33%	9
Amount		100%	27

Based on Table 9, most cultivation activities are carried out using conventional techniques. Where this technique is considered more efficient and easier to do by respondents, so many shallot respondents still apply this technique, with a total of 10 respondents who have carried out conventional cultivation techniques. The second highest value was obtained in cultivation activities according to Good Agriculture Practices (GAP), the GAP technique is a general guide in implementing cultivation activities to produce safe products, have quality, have high productivity, activities with the GAP technique are also a learning process for respondents, both business actors and farmers with the use of modern technology that is currently developing in agricultural activities, the application of shallot cultivation according to GAP has mandatory components in its implementation, including having land that is free from dirty waste pollution and has toxins, having a land slope of approximately 30%, not using human waste as fertilizer, the packaging of the harvest has a label that explains the identity of the product produced. The third highest value was obtained by cultivating according to the planting schedule, where the planting schedule for post-harvest activities of shallots

itself occurs in October-January, February-April, and April-July so that when the shallots have been harvested and have a storage period, it has been calculated from the planting period to marketing so that the time for cultivation activities has been arranged.

Varieties

Table 10 Varieties

No	Varieties	Percentage	Amount
1	Free	0%	0
2	Local and Available	0%	0
3	Local	19%	5
4	Mountain	15%	4
5	Superior	67%	18
Amount		100%	27

Based on Table 10, the selection of varieties with the highest value was obtained by using superior varieties, superior varieties where these varieties have many types, such as the bima brebes variety with the advantages it has, namely resistance to tuber rot disease and sensitivity to leaf rot disease and usually its planting is more suitable in the lowlands, the Pakatan variety has the advantage of being resistant to up to six months under normal conditions, the pancasona variety has the advantage of being able to survive 3 to 4 months under normal conditions, the trisula variety has the advantage of being able to survive up to 5 months, and the membrane variety is a variety that has good advantages compared to other varieties because it can withstand rain and can adapt to peatlands, some things that distinguish red onion varieties from others are based on shape, size, elasticity, aroma produced and color. The selection of varieties with the second highest value was obtained by selecting local varieties, local varieties themselves are in the maja cipanas, keeling, medan, and bima brebes varieties are also included in local varieties with superior categories. Moreover, the lowest value was obtained using the Jabal variety, where the Jabal variety itself can be interpreted as a local variety that has been adaptive to the planting area for a long time. From the results of online interviews, it was stated that there are several varieties in Brebes, one variety was found to be relatively high in its users, namely the Bima Brebes variety, which is a local variety that has been certified, the second is the Super Philip variety which is an introduction from the Philippines, and the third highest is the Trisula or Biru Lancor variety, the Trisula variety is a variety released by Balitsa and also Biru Lancor which is an adaptive variety in the lowlands.

Harvest

Table 11 Harvest

No	Harvest	Percentage	Amount
1	Free Time	0%	0
2	Seasoned conventionally	33%	9
3	Market demand with conventional	22%	6
4	GAP Technique	26%	7
5	Market demand with GAP technique	19%	5
Amount		100%	27

Based on Table 11, the highest value is obtained by harvesting in season with conventional techniques, where respondents and farmers in Indonesia widely use this technique because it is more efficient and easy to apply. Using harvest time in season with conventional techniques characteristically relies on the available land area, depends on the harvest season, uses simple or makeshift tools without the help of technological tools, uses fertilizers and chemical drugs to increase production results, and conventional techniques rely more on quantity than quality of shallots. The second highest value was obtained by using harvesting techniques in accordance with Good Agriculture Practices (GAP) by selecting locations and land in accordance with the requirements for growing onions so as to prevent failure in the production process, selecting seeds that have good quality, preparation in determining the planting time in accordance with the estimated shallot planting season and the estimated arrival of the rainy season or the availability of water for irrigation, fertilization that must be prepared in accordance with the dose, treatment, timeliness and type, irrigation to meet the water needs for the growth and development of shallots must be available until harvest time, maintenance is carried out by weeding by cleaning the planting area from growing weeds, harvesting is determined by observing the physical development conditions of the plants which are carried out when the plants are 60-72 days old with a physical condition of 80% of the leaves have fallen, turned yellow, and the bulbs are red, harvesting activities are carried out when the weather is sunny and there is no rain. The third highest value was obtained by the results of market demand with conventional techniques carried out by many farmers because it is known as an efficient way of harvesting shallots in bright and sunny weather, Most of the leaves have fallen approximately 80% and are pale yellow when the leaves are touched, the base of the leaves is limp, the bulbs have been seen on the surface of the soil and the color of the bulbs is dark red or purplish red and has a distinctive odor. Moreover, the lowest value was obtained by following market demand and carried out with the GAP technique, a market demand that farmers rarely carry out due to the many

risks that will be carried out because they have to meet market demand outside the shallot planting schedule.

Sorting

Table 12 Sorting activities

No	Sorting	Percentage	Amount
1	Mixed	0%	0
2	Separated according to physical	30%	8
3	Separated according to disease	4%	1
4	tuber classification	15%	4
5	separated according to product characteristics	52%	14
Amount		100%	27

Based on Table 12, the sorting activity with the highest value is carried out by separating according to product characteristics, separation according to product characteristics, namely seen from the size of the bulb, the color of the bulb, the dryness of the bulb, and the smell produced by the bulb. Separation through selection according to product characteristics can facilitate the classification of good and lousy bulb quality according to its characteristics so that bulbs with good quality are perfectly separated from damaged bulbs with a value of 52%, equivalent to 14 respondents. The second highest value was obtained by carrying out sorting activities by separating according to the physical characteristics of the shallot bulbs by looking at the color, weight, and dryness of the bulbs with a value of 30%, equivalent to 8 respondents, the third highest value was carried out by separating or classifying the bulbs which were carried out by looking at the difference between the physical and characteristics of the bulbs and the percentage with the lowest value was carried out by sorting activities by separating the bulbs according to disease so that it can be identified whether the disease is dangerous for the use of shallots for consumption.

Cleaning

Table 13 Cleaning Activities

No	Cleaning	Percentage	Amount
1	Mixed (good and defective)	11%	3
2	separated according to root tubers	26%	7
3	traditional tools	0%	0
4	tuber classification	7%	2
5	according to SOP	56%	15
Amount		100%	27

Based on Table 13, cleaning activities are carried out with the highest value, namely by the Standard Operating Procedure (SOP); farmers usually carry out cleaning activities at the same time as sorting and grading activities by selecting characteristics according to tubers with a value of 56% or equivalent to 15 respondents. The lowest value was obtained by cleaning activities with tuber classification, where tubers with good and bad quality are distinguished in sorting and grading activities with a value of 26% or equivalent to 7 respondents. The third value of cleaning is by mixing good and defective tubers so that tuber classification is carried out in sorting and grading activities with a value of 11%, equivalent to 3 respondents; the fourth lowest value was obtained by classifying tubers selected by looking at the physical intact and damaged tubers.

Grading

Table 14 Grading activities

No	Grading	Percentage	Amount
1	Mixed (good and defective)	4%	1
2	Separated according to physical	30%	8
3	Separated according to disease	0%	0
4	tuber classification	7%	2
5	according to product characteristics	59%	16
Amount		100%	27

Grading activities are also interconnected by sorting and cleaning activities, the classification of onion bulbs is also included in this grading activity category. Based on Table 14, grading activities are carried out with the highest value, separated according to product characteristics by looking at the bulbs' physical, odor, integrity, and color produced from the harvest with a value of 59%, equivalent to 16 respondents. The second highest value is obtained by separation according to physical, the bulbs that are separated are usually done by distinguishing rogol bulbs and bulbs that are still intact, with a value of 30%, equivalent to 8 respondents. The lowest value is done by mixing the

bulbs, mixing the bulbs themselves is seen from the bulbs that are still good, which are already good or defective, with a value of 7%, equivalent to 2 respondents, and the lowest is produced by mixing between good and defective bulbs so that there is no separation of bulbs according to characteristics and physical with a value of 4% equivalent to 1 respondent.

Drying

Table 15 Drying

No	Drying	Percentage	Amount
1	Dry wind	4%	1
2	Fumigation	7%	2
3	Sunlight	81%	22
4	Vacuum Pressure	0%	0
5	*In-store Drying*	7%	2
Amount		100%	27

Based on Table 20, the highest value is obtained by drying using sunlight, sunlight is included in the conventional techniques widely used by farmers in Indonesia. Besides being easy and efficient, sunlight also helps farmers in drying without existing technology. However, the disadvantage of drying with sunlight is that wilting leaves and drying bulbs will be increasingly hampered when the rainy season comes. It can cause bacterial growth to rot in the bulbs, which will reduce the quality of the shallot bulbs and the shelf life. Farmers in Indonesia still have minimal knowledge about in-store drying technology, where drying activities can be done faster in 3-4 days while drying using sunlight when the shallots are hung on the ladders takes longer to dry in approximately 10-11 days.

Storage

Table 16 Storage

No	Storage	Percentage	Amount
1	Dry open space	0%	0
2	Sun-dried	0%	0
3	Para-Para	41%	11
4	Ventilation Warehouse	33%	9
5	*In-store Drying*/Onion House	26%	7
Amount		100%	27

Based on table 16, the highest value was Obtained from storing onions on the racks, farmers in Indonesia widely use this storage because it is easier and does not require modern technology, after drying under the sun, the shallots are stored in a room

and hung on the racks. This traditional storage allows shallots to maintain their quality and quality for 6 months. Generally, racks are widely used in the Brebes area because conventional techniques are easy for farmers to use. The third highest percentage was obtained by storing in a ventilation warehouse, with a percentage value of 33% (9 respondents). Storage with a ventilation warehouse is usually done by tying and collecting in woven sacks with air vents on each side. The third percentage is stored with in-store drying technology or what is known as an onion house; this technology was developed by the Center for Post-Harvest study and Development of Agriculture, which has three roles at once, namely in drying, wilting, and storage. This technology has the advantage of regulating the temperature in drying, wilting, and storage so that the bulbs do not experience a decrease in quality. In the use of Instore Drying, there are settings at several temperatures, including water content settings of 80%, temperature settings of 26-29, and humidity settings of 70%. Instore drying also minimizes the high number of losses, estimated at 10%, in contrast to using racks widely used by farmers in Indonesia, which can cause high losses.

Transportation

Table 17 Transportation

No	Storage	Percentage	Amount
1	Plastic	0%	0
2	Wood without cover	0%	0
3	Used nets	0%	0
4	Bamboo basket lined with mesh sack	26%	7
5	Mesh sacks in open or refrigerated cars	74%	20
Amount		100%	27

Transportation with the highest percentage with a value of 74% (20 respondents) using transportation using net sacks in open or refrigerated cars, the use of net sacks is seen as practical and easy to carry by farmers, the net sack itself can carry a capacity of approximately 90-100 Kg so that many respondents choose net sacks as an alternative in transporting finished bulbs. Many respondents use open-back cars so that the temperature inside the net sack packaging remains low. There is no rotting or relatively low-temperature deposition and shoot growth and rotting in the shallot bulbs.

Marketing

Table 18 Marketing

No	Marketing	Percentage	Amount
1	Not Marketed	0%	0
2	With Cheap Price	0%	0
3	Industry and SMEs	19%	5
4	Local/Export	52%	14
5	Market demand	30%	8
Amount		100%	27

The highest production in the shallot commodity vegetable crop production category is in Central Java province at 611,165.00/Ton or 30%, while the second highest production is in East Java province at 454,584.00/Ton or 26%. In export activities, shallots were the most significant contributor of foreign exchange in 2018 in seasonal vegetables, with a net weight of 5.22 thousand tons and an FOB value of 6.29 million US $. Marketing activities do not only sell raw bulbs, there are many various shallot products as a form of added value in marketing, various shallot products include:

1. Onion paste
2. Dried sliced onions
3. Fried onions
4. Onion oil, and
5. Onion flour.

4. DISCUSSION

Analysis of factors that influence the quality of shallots from the post-harvest side of upstream to downstream activities can be seen through a graph that combines the number of post-harvest activities of shallots through the use of the highest values of each variable, as follows:

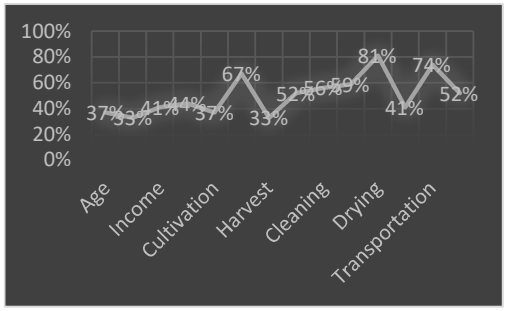

Figure 2 Analysis of Variable Values

Post-harvest activities of shallots from data taken from two respondents, namely farmers and Horticulture practitioners, the Directorate General of Horticulture, and the Center for Horticulture study and Development filling out the questionnaire sheet can be seen from the highest values in each of the specified variables. The graph above shows the most significant values taken from each variable; post-harvest activities can be seen through the graph of age to marketing; the highest age classification activity is less than 40 years, which means it is included in the very bad category. Activities in selecting a land area of 0.25-1.00 Ha with a pretty good category. Income-earning activities by respondents at the highest value of IDR 10,000,000-IDR 15,000,000 are included in the pretty good category, seed selection activities with the highest value are obtained with seed variables purchased from breeders in the outstanding category, cultivation activities have the highest value in the cultivation variable with conventional techniques are included in the bad category. Shallot variety selection activities with the highest value are obtained in the superior variety variable with an outstanding category. The highest value harvesting activity is in the harvesting season, with conventional techniques in the bad category. The highest value sorting activity with variables separated according to product characteristics has an excellent category value. Cleaning activities with a large selection of cleaning variables according to the SOP for shallots with an outstanding category. Grading activities with the most variable selections according to product characteristics with an outstanding category. Drying activities with the highest variables are carried out through sunlight in the good category. Storage activities with the highest variables using racks in the good category. Transportation activities with the highest variable selection of transportation with net sacks in open or refrigerated cars with an outstanding category, and the last activity is marketing with the highest value of marketing through local or export with a pretty good score value. It can be concluded that post-harvest activities for shallots early to late activities, there are still many respondents who have not maximally carried out post-harvest activities according to high score values, it affects the shallot commodity itself, such as rapid shrinkage in bulb weight, not resistant to long storage so that it becomes rotten in the flesh of the bulb, to cause low commodity selling power because the bulbs are not fresh or damaged.

CONCLUSION AND SUGGESTIONS

This study concludes that there are three activities with the highest values, namely drying activities, variety selection activities, and transportation activities, with the highest score obtained by the drying activity with the most selection on the variable by using sunlight, where this method is considered more efficient and utilizes existing natural resources so that respondents do not need costs in carrying out drying activities. The second score is obtained by using net sacks in open or refrigerated cars with a temperature that has been set at 20-23 ° C with a humidity of 60-70%, the third score is obtained by the variety selection activity with the highest variable, namely superior varieties that are widely used by respondents, namely the bima brebes variety, the Pakatan variety, the pancasona variety, the trisula variety, and the membrane variety. Other activities still have minimal percentage values. Therefore, post-harvest activities are carried out poorly, so the resulting tubers are of low quality and have a short shelf life.

The suggestions given from the results of this study are:

1. There is a need for systematic outreach activities every month.
2. Guiding farmers to carry out post-harvest by the Standard Operating Procedure (SOP) for shallots.
3. Horticultural practitioners assist farmers regarding SOP and GHP on proper and correct post-harvest handling of shallots to increase the yield of the best-quality bulbs.

REFERENCE

Adhiwibowo K, Mangala P. 2019. *Distribusi Perdagangan Komoditas Bawang Merah Indonesia Tahun 2019*. Jakarta: Badan Pusat Statistik Rakyat Indonesia.

Aldila HF, Fariyanti A, Tinaprilla. 2015. *Analisis Profitabilitas Usahatani Bawang Merah Berdasarkan Musim Di Tiga Kabupaten Sentra Produksi*. *SEPA* 11(2):249-160.

Arikunto S. 2010. *Prosedur Penelitian: Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.

Asmara R, Ardhiani R. 2010. *Intergrasi Pasar Dalam Sistem Pemasaran Bawang Merah*. AGRISE X (3):165.

Badan Pusat Statistik. 2018. *Statistik Tanaman Sayuran Dan Buah-Buahan Semusim*. Jakarta Pusat: Badan Pusat Statistik.

Badan Pusat Statistik. 2020. *Produksi tanaman sayuran 2020*. [internet]. [diunduh 8 Januari 2022]. Tersedia pada: https://www.bps.go.id

Badan Pusat Statistik. 2020. *Produksi Tanaman Sayuran 2020*. Jakarta Pusat: Badan Pusat Statistik.

Basuki S. 2006. *Metode Penelitian*. Jakarta: Wedatama Widya Sastra.

Djibran, Muchlis M, Siskawati, J Biki. 2017. *Penanganan Pascapanen Komoditas Bawang Merah (Allium ascalonicum L.) Didesa Tonggulo Kabupaten Limboto Barat*. *Bindhe* 2(1):95-98.

Fahroji, Zufia V, Syuryati. 2017. *Pascapanen Bawang Merah Dan Cabai.* Riau: Badan Penerbit Universitas Riau Ur Press.

Fitria E, *et al.* 2020. *Peran Penangkaran Bawang Merah Mendukung Agribisnis Bawang Merah: Studi Kasus Penangkaran Bawang Merah di Kabupaten Pidie Provinsi Aceh*. 4(1):529.

Gagung S, Fadil M. 2019. *Efisiensi Usaha Agribisnis Bawang Merah Sebagai Strategi Usaha Dalam Mendukung Ketahanan Pangan di Kabupaten Blitar*. Jurnal Agriekstensia. 18(1):39-46.

Hulzana, Mifta, Muhardi dan Rostati. 2014. *Kualitas Umbi Bawang Merah (Allium*

Kementerian Pertanian. 2010. *Standar Operasional Prosedur Budidaya Bawang Merah (Allium ascalonicum L.) Kabupaten Nganjuk Propinsi Jawa Timur*. Jakarta: direktorat sayuran dan tanaman obat.

Kementerian Pertanian. 2021. *Mengenal Jenis Varietas Unggulan Bawang Merah*. [internet]. [diunduh 8 Januari 2022]. Tersedia pada: https://dinpertanpangan.demakkab.go.id

Khoer I. 2020. *Pengeluaran Untuk Konsumsi Penduduk Indonesia Per Provinsi*. Jakarta: Badan Pusat Statistik.

Kiloes A, Hardiyanto N, Sulistyaningrum A, Syah M. 2018. *Strategi Pengembangan Agribisnis Bawang Merah Di Kabupaten Solok* (*Shallot Agribusiness Development Strategy In Solok Regency). J Horti* 28(02):269-280.

Komar N, Rakhmadiono S, Kurnia L. 2001. *Teknik Penyimpanan Bawang Merah Pasca Panen Di Jawa Timur*. Jurnal Teknologi Pertanian. 2(2):79-95.

Manongko A, Caroline B D, Pakasi, Pangemanan L. 2017. *Hubungan Karakteristik Petani Dan Tingkat Adopsi Teknologi Pada Usahatani Bawang Merah Di Desa Tonsewer Kecamatan Tampaso*. Agri-SosioEkonomiUnsrat. 13(2a):35-46.

Mardiana Y, Purwanto A, Pujantoro L, Sobir. 2016. *Pengaruh Penyimpanan Suhu Rendah Benih Bawang Merah (Allium ascalonicum L.) Terhadap Pertumbuhan Benih*. Jtep Jurnal Keteknikan Pertanian. 2(1):67-74.

Mutia A, Khairun Y, Purwanto A, Pujantoro L. 2014. *Perubahan Kualitas Bawang Merah (Allium ascalomicum L.) Selama Penyimpanan Pada Tingkat Kadar Air Dan Suhu Yang Berbeda*. J. *Pascapanen* 11(2):108-115.

Nirwana. 2019. Skripsi: *Faktor-Faktor Mempengaruhi Produksi Bawang Merah Di Kecamatan Baraka Kabupaten Enrekang*. Gowa.

Nurmalia *et al.* 2021. *Penanganan Pascapanen Penyimpanan Bawang Merah* (*Allium ascalonicum* L.): *Review.* 5(1):255-256.

Priyadi I. 2020. *Mengenal Jenis Varietas Bawang Merah Unggulan*. [Internet]. [diunduh 2021 juni 17]. Tersedia pada: http://cybex.pertanian.go.id/ .

Priyana H, Tety E, Eliza. 2015. *Analisis Pemasaran Bawang Merah (Allium ascalonicum L.) Desa Sungai Geringging Kecamatan Kampar Kiri Kabupaten Kampar*. Jom Faperta 2(2).

Priyantono E, Purwanto Y, Sobir. 2016. *Penyimpanan Dingin Bawang Merah (Allium ascalonicum L.) Varietas Bima Brebes, Tajuk, Dan Bali Karet*. *Journal Of Agro-based Industry* 33(1):32-38.

RS, Basuki. 2014. *Identifikasi Permasalahan Dan Analisis Usahatani Bawang Merah Di Dataran Tinggi Pada Musim Hujan Di Kabupaten Majalengka*. J. Horti. 24(3):266-267.

Rukmana H, Rahmat H, Yudiarachman H. 2018. *Sukses Budidaya Bawang Merah di Pekarangan dan Perkebunan*. Yogyakarta: Lily Publisher.

Sampul Pertanian. 2018. *Mengenal 7 Varietas Unggul Bawang Merah di Indonesia yang Bisa Ditanam Petani*. [diunduh 2021, September 22]. Tersedia Pada: https://www.sampulpertanian.com/2018/01/mengenal-7-varietas-unggul-bawang-merah.html .

Santoso P. 2020. *Perbedaan Cara Menanam Bawang Merah Modern dan Konvensional*. [Internet]. [diunduh 2022 Januari 8]. Tersedia pada: https://serbabawang.blogspot.com .

Sarjani S, Palupi E, Suhartanto M, Purwanto A. 2018. *Pengaruh Suhu Ruang Simpan dan Perlakuan Pasca Penyimpanan Terhadap Mutu dan Produktivitas Umbi Benih Bawang Merah (Allium Cepa L. Group Agregatum*). *J Horti Indonesia* 9(2):111-121.

Setiapermas N M, Rohman E, Basuki S. 2013. *Pengkajian Peningkatan Produktivitas Bawang Merah Berdasarkan Kesesuaian Standar Operasional Prosedur di Wilayah Pengembangan di Kabupaten Brebes*. Seminar Nasional Dengan Tema Menggagas Kebangkitas Komoditas Unggulan Lokal Pertanian Dan Kelautan;2013 Juni; Madura, Indonesia. Madura Hal:129-141.

Sugiyono. 2010. *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.

Tantalu *et al*. 2017. *Rekayasa Pengolahan Produk Agroindustri*. Malang: Media Nusa Creative.

Thompson A K. 1995. *Post Harvest Technology of Fruit and Vegetables. Blackwell sci.*

Triyono. 2008. *Teknik Penanganan Pascapanen Bawang Merah Di Kabupaten Bantul* (*Post Harvest Enhance Technique Of Shallot In Bantul Regency).* Prosiding Seminar Nasional Teknik Pertanian.

Tumiur G. 2014. *Sumber Benih Bawang Merah (Alliuym Cepa L. Aggregatum Group) Yang Diperdagangkan Dan Ditanam di Sumatera Utara)*. Seminar Nasional Inovasi dan Teknologi Informasi 2014.

W Sudjafha, Wisaniyasa B. 2017. *Fisiologi dan Teknologi Pascapanen (Buah dan Sayuran)*. Denpasar: Udayana University Press.

Waluyo K. 2010. *Agrobisnis Bawang Merah*. Bandung: Epsilon Grup.