Analysis of Competitiveness of Shallot (Allium cepa L.) Commodities in Nagari Alahan Panjang and Nagari Air Dingin Kecamatan Lembah Gumanti Kabupaten Solok, West Sumatera.

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Abstract

One of the horticultural commodities that has the potential to be well developed in Indonesia is the shallot commodity, which has the potential to be traded on the international market. The main producing province of shallots on the island of Sumatra is West Sumatra, Solok Regency. This study aims to determine the competitiveness of shallot farming in Solok Regency, West Sumatra and determine the impact of government policies on outputs and inputs in onion farming. The research method is descriptive qualitative and quantitative descriptive methods. Data analysis is PAM (Policy Analysis Matrix). The analysis shows that onion farming in Solok Regency, West Sumatra has a Private Advantage of 34,269,456.00 (Competitive Advantage) and has a Social Advantage of 92,203,432.00 (Comparative Advantage), and has a competitive advantage with a yield of 0.24 (Private Profitability) and comparative advantage with a result of 0.04 (Social Profitability).

Keywords: Competitiveness, Policy Analysis Matrix, Shallot

1. Introduction

Aside from being the main sector on which food security is based, the agricultural sector has other strategic functions, including to solve environmental and social problems (poverty, justice, etc.) and its function as a provider of tourism facilities (agro-tourism). Positioning the agricultural sector in national development is the main key to success in realizing a dignified, independent, developed, just and prosperous Indonesia (Renstra of the Ministry of Agriculture, 2015-2019).

The use of shallots in Indonesia is not only for cooking spices, but can also be processed into fried onions and medicine. The variations in their use are increasingly varied. With the increasing population of Indonesia, the need for onions has also increased. The onion agribusiness opportunity will certainly grow even more attractive, not only for domestic production, but at the same time attractive for its export business opportunities (Nolasary, Mega Putri 2017). The center of onion production in Indonesia is Java with a total production of 956,652 or around 77.53% of the total national onion production. While the largest onion producing province outside of Java is West Nusa Tenggara with a production of 117,531 tons or around 9.52% of the total national shallot production and then followed by West Sumatra with a total production of 61,329 tons or around 4.97% of total production national shallots (Nolasary, Mega Putri 2017).

In the province of West Sumatra, more onions are dominated by imported onions, onions from Java such as Brebes, Medan. This shallot commodity is a competitor of Solok Regency's local shallot. The city of Padang only sells 5% of local shallots, the rest comes from areas outside West Sumatra. Whereas local shallots are more widely marketed to other regions such as Pekanbaru, Jambi, and regions outside West Sumatra.

One of the problems is caused by the lack of coordination between agribusiness actors. This causes the institutional structure of the onion commodity agribusiness to be fragile and the linkage of supply chain management to be weak so that the competitiveness of shallot commodities becomes weak.

The weak competitiveness of shallot commodities is a challenge in the implementation of agricultural development in the future so that a strategy is needed to improve the competitiveness of shallots so that they can compete in the domestic and export markets.

The future strategy of agribusiness development of sustainable vegetable commodities is directed at efforts to develop production in accordance with needs, creating evenly distributed cropping patterns throughout the year, increasing competitiveness and capability of Human Resources (HR), strengthening farmer institutions, capital, and marketing, and optimizing land use and facilities and infrastructure (Taufik, 2012).

With the onion problem as described above it is necessary to conduct research on namely:

1. What is the picture of shallot agribusiness in Nagari Alahan Panjang and Nagari Air Dingin, Lembah Gumanti District, Solok Regency?
2. How is the competitiveness of shallots in Nagari Alahan Panjang and Nagari Air Dingin Kecamatan Lembah Gumanti, Solok Regency?

2. Materials and methods

This research was conducted in Nagari Alahan Panjang and Nagari Air Dingin Lembah Lembah Gumanti, Solok Regency. The research location was chosen purposively with the consideration that the location was one of the shallot production centers in West Sumatra. The choice of research location in Lembah Gumanti Subdistrict was also based on the consideration that the location was one of the shallot production centers in several Sub-districts in the Solok Regency. Then the selection of locations in Nagari Alahan Panjang and Nagari Air Dingin is based on the consideration that of several types of horticultural commodities developed in Nagari Alahan Panjang and Nagari Air Dingin, shallot commodities are more sought after by the community. The method used in this study is a survey method. Analysis of the data used is a qualitative and quantitative analysis method. The qualitative analysis aims to explain the characteristics and performance of shallot farming in Solok Regency. While the quantitative analysis aims to analyze the onion farming income. The data used in this study are

primary data and secondary data. Primary data were obtained from direct interviews with farmers using a questionnaire. Whereas secondary data was obtained from relevant agencies (BPS, BPP, UPTD, etc.). The population of this research is 912 shallot farmers. Sampling using the random method. So that the number of samples of this study were 30 farmers. Analysis of the data for the first purpose by describing the onion crop management agribusiness carried out by farmers in Nagari Alahan Panjang and Nagari Air Dingin Lembah Gumanti District. For the second purpose, the Policy Analysis Matrix data analysis method, which has been developed by Monke and Person since 1987, is an analytical tool used to determine economic efficiency and the magnitude of incentives or impacts of interventions in the operation of various farming activities as a whole and systematically. This analysis can be used in commodity systems with various regions, types of farming and technology. In addition PAM analysis can also be used to find out whether a policy can improve competitiveness of the exploitation of a commodity produced through the creation of business efficiency and revenue growth, as follows:

Data processing and analysis consists of the analysis of strategy formulation, namely:

a. Competitiveness analysis using the PAM (Policy Analysis Matrix) method

Analysis of the data used is descriptive analysis method and Policy Analysis Matrix. The PAM matrix consists of two identity calculations, namely: profitability identity and identity divergences, but in this study the analysis used is limited to only calculating private profit, social profit, competitiveness with comparative advantage analysis and competitive advantage.

Table 1. Policy Analysis Matrix (PAM)

Description	Income	Input Cost Tradable	Input Cost Non Tradable	The Profit
Private Price	A	B	C	D
Social Price	E	F	G	H
Divergence Effect	I	J	K	L

Sources: Monke and Pearson, 1989

Information :

- 1. Private Benefits : D = A - (B + C)
- 2. Social Benefits : H = E - (F + G)
- 3. Private Cost Ratio : PCR = C / (A - B)
- 4. Domestic Resource Cost Ratio : DRCR = G / (E - F)
- 5. Output Transfer : (OT = I) = A - E
- 6. Input Transfer : (I T) = A: I = B - F
- 7. Transfer Factor : (FT = K): K = C - G

• 8. Net Transfer : (NT = L): D - H

• 9. Effective Protection Coefficient : (A - B) / (E - F)

• 10. Profitability Coefficient : D / H = (A - B - G) / E - F - G)

• 11. Subsidy Ratio to Producer : SRP = L / E

• 12. Nominal Input Coefficient Protection : NPCI = B / F

• 13. CNP Coefficient Protection Nominal Output : NPCO = A / E

From the data in the PAM table above, it can then be analyzed with various indicators as follows:

(1) Analysis of Private Profitability (PP): D = A - (B + C);

Information:

D = Profit or Profit based on the actual price (Private Profit).

A = Receipt (Actual price). Revenue is obtained by multiplying the results of the average

the amount of production per hectare (kg / ha) multiplied by the selling price (Rp).

B = Tradable Input Costs based on actual prices.

C = Domestic factor costs (non-tradable input costs) based on actual prices.

If the private profit is negative (D <0), the farmer suffers losses or is not worth the effort. Otherwise D > 0 means onion farming

3. Result

A. Management of Shallot Plants

1. Land Management

At the beginning of planting, onion farmers carry out activities to clear the area or land. The initial stage in land management is to clear the land from existing weeds or weeds. In general, farmers directly pull the weeds or weeds that grow until clean. After the cleared land from the weeds is hovered around 20 cm deep to make the soil loose and improve soil aeration. Then the beds are made in the same direction with 1.2 meters width, 20 cm height and length adjusted to the land conditions. Then in each bed the trench is 50 cm deep. Furthermore, the process carried out is to adjust the spacing and make planting holes. And the distance between beds commonly used by onion farmers is

50 cm. In general, land management and spacing arrangements conducted by farmers are in accordance with the literature.

2. Planting

Spacing made by sample farmers is 15 x 20 cm, and 20 x 20 cm, with 20 cm high beds, and 1.2 cm wide beds, there is a depth of planting holes that make 4 cm, 5 cm, and 6 cm, the depths of the trenches are 50 cm. In each planting hole, only 1 seed is inserted per hole. Before planting, farmers must prepare the onion seeds. The seed preparation phase is usually carried out by buying seedlings to farm shops or production input shops that provide the seeds needed by farmers. All sample farmers in the field use beds and mulches for planting.

3. Plant Maintenance

a. Weeding

The form of onion cultivation carried out by respondent farmers included cleaning up weeds or weeds in the crop area. The clearing of the plantations and parasites begins twice, namely at the age of the plants 15 days (2 weeks) after planting (15 DAP). The method used by the respondent farmers in weeding is by pulling the weeds manually only.

b. Fertilization

Based on data obtained from the field, onion farmers generally fertilize routinely (3x Per Planting Season), ie when the plants are 2 weeks old (15 days after planting), the second when the plants are 30 HST and the last 45 HST. Fertilization activities carried out by the sample farmers in the field are not all the use of fertilizers and their dosage is in accordance with the recommendation from the referral source, such as administering manure as much as 15-20 tons / ha, while in the field the average amount of manure 102 kg and compost as much as 5-10 tons / ha, while in the field the average amount of compost fertilizer is 53.13 kg, Urea fertilizer with a dose of 75-100 kg / ha, ZA 150-250 kg / ha, Kcl 75-100 kg / ha, TSP 120-200 kg / ha and SP-36 120-200 kg / ha are also recommendations from referral sources that are also used by farmers in the field, but at different dosages, in the farmer's field farmers use these fertilizers with an average dose of ZA 28.97 kg / ha, Kcl 65.21 kg / ha, TSP 30.79 kg / ha, SP-36 29.09 kg / ha, and Urea 60, 39 kg / ha.

c. Pest and Disease Control

The pests that attack onion plants in the study area include Langau, Trip, Grayak Caterpillar, Caterpillar and Wereng Pests. The pesticides used by shallot farmers to eradicate pests and diseases

that attack their plants are Antracol fungicide as much as 6.14 (kg / ha), confidor insecticide 3.07 (kg / ha), and insecticide insecticide as much as 4.53 (liter / ha). Spraying is done after the plants are 2 weeks old (15 days after planting). Spraying frequency is generally 1 time a week. If the pest attack is very severe, spraying can be done 3 times a week or 24 times per planting season.

d. Irrigation

Watering is done twice a week at the beginning of growth, and then the frequency of watering can not be determined. If dry, watering can be done 2-4 times a week. Try to keep the soil moist until the age of the plant is 50 days by doing regular morning and evening watering, the water used for watering with attention. Watering is usually done in the afternoon. Irrigation activities on plants carried out by sample farmers in the field are not in accordance with the recommendation from the reference source, i.e. the first irrigation at the age of the plant is 0-10 days, with a frequency of watering 2x a day, whereas in the research area the farmers do watering the plants only at the beginning of growth and subsequently the frequency of watering can not be determined by farmers. And according to the second source of irrigation reference is done at the age of plants 11 to 35 days, with a frequency of watering once a day, while the sample farmers in the field do watering in the event of a long drought, so that the frequency of watering is done 2-4 times a week.

4. Harvest

Harvesting is done after the age of the plant 60 HST. There are differences in the age of plants ready for harvest in the rainy season and dry season. Age of harvest in the rainy season between 50-55 days, while in the dry season 60-65 days. In the rainy season the harvest is relatively shorter than the dry season because of the abundant water availability so that plant growth is relatively faster than the dry season. Harvesting activities using transportation equipment, namely wheelbarrows and motorized rickshaws. Farmers usually harvest in the morning and afternoon, because in the morning and afternoon the weather is still fresh and the energy is still strong and vibrant. Harvesting is done during sunny weather and dry soil harvesting is done by pulling the plants. Harvesting activities on plants carried out by sample farmers in the field in accordance with the recommendation from the reference source, namely harvesting onions is carried out by farmers at the age of the plant 60 days after planting. Then the characteristics of plants that can be harvested are at the base of the leaves are weak, 80 percent of the leaves are yellow, the tubers are above the surface of the soil and the appearance of a deep red color, and a distinctive odor. Harvesting is carried out when the weather is sunny, by pulling each plant. Then the plants are bound together in the leaves.

5. Post Harvest

All activities that existed after the harvesting of shallots farming in Nagari Alahan Panjang and Nagari Air Dingin, Lembah Gumanti District, Solok Regency, were carried out by the respondent farmers, namely from cleaning the onion veins after all the onions were harvested from the field, then after all the onion veins clean, the onions are dried in the sun (dried) to dry in the yard of each farmer's house, after all the onions are dry, then the onions are put into sacks that have been prepared in advance and tied well and strong, then the last step is transporting the onions that have been put into these sacks to the motorized becak or to the farmers' respective motorbikes which will then be brought to the local market / district / district and district markets, as well as brought to collectors or traders the big traders they will market.

Post-harvest activities on plants carried out by sample farmers in the field in accordance with the recommendation from the reference source, namely onions that have been harvested and then hung using a hanging rack. The onions are not dried directly facing the bright sunlight, the onions are dried in a protected place.

B. Competitiveness of Shallot Farming

1. Analysis of Shallot Farming Competitiveness

Table 2 below shows the costs per hectare in shallot farming which is obtained from the total cost sharing of these inputs and then divided by the total area of all available land.

Table 2. Tradable and Non-Tradable Input-Output Costs per Hectare on Shallot Farming

Input / Output	Amount	Unit	Price (Rp/kg)	Value (Rp/ha)	Social Price (Rp/kg)	Value (Rp/ha)
Input Tradable:						
1. SP36 Fertilizer	29,09	kg	6.982,64	203.131,31	5.000	145.454,55
2. KCL fertilizer	65,21	kg	8.691,14	566.767,68	6.000	391.272,73
3. SS fertilizer	14,26	kg	9.314	132.824,02	10.000	142600
4. NPK Fertilizer	201,09	kg	2.100,00	422.290,91	2.100	422.290,91
5. Urea fertilizer	60,36	kg	6.240,29	376.686,87	500	30.181,82
6. Fertilizer ZA	28,97	kg	6,539.75	189,46	3.100	89.807,00
7. Fertilizer TSP	30,79	kg	7337	225.898,99	2.400	73.890,91
8. Pesticides - pesticides:						
1. Anthracol	6,14	kg	141.611,84	869.696,97	29.950	183.935,35
2. Confidor	3,07	kg	33.223,68	102.020,20	7.000,00	21.494,95
3. Dursban	4,53	liter	38.584,82	174.606,06	47.300,00	214.044,44
Seeds	528,69	kg	16260	8.596.323,23	3500	1850404
Infrastructure:						

- Cutter knife	9	unit	583,73	5.000,00	27,557	236
- Hoe	1	unit	129.226	161.858,59	124,871	156
- Handsprayer	1,21	unit	1.335,67	1.616,16	1.210,70	1.464,95
- Wheelbarrow	1,78	unit	20.302,56	36.093,43	480.205	853.696,97
- Bucket	8	unit	42.920,62	343.364,95	43.140	345.120,00
- Motorcycle pedicab	0,40	unit	15.520.000,00	6.208.000,00	5.173,34	2.069,34
- Mulch	122,83	unit	138.338,82	16.991.919,19	53,683	6.593,79
Total			16.082.387	33.490.499	617.685	3.479.216
Input Non – Tradable :						
1. Land	1,00	Ha	10.290.000,00	2.572.500,00	2.572.500,00	2572500
2. Manure	102,00	karung	13.586,00	1.385.772,00	13.586,00	1385772
3. Compost Fertilizer	53,13	karung	33.650,00	1.787.824,50	33.650,00	1787824,5
4. Labors:						
- Land Processing	59,27	HKP	111.615,00	6.615.421,05	111.615,00	6615421
- Planting	34,30	HKP	77.420,00	2.655.506,00	77.420,00	2655506
- Fertilizing	14,92	HKP	86.821,00	1.295.369,32	86.821,00	1295369,32
- Weeding	31,97	HKP	94.458,00	3.019.822,26	94.458,00	3019822,26
- Plant Pest and Disease Control	95,50	HKP	78.916,00	7.536.478,00	78.916,00	7536478
- Harvest	78,67	HKP	120,62	9.488,78	120,62	9488,78205
-Post harvest:	1,88	HKP	98,99	186,49	98,99	186,493392
a. Clean up veins			10.786.686	26.878.368	3.069.186	26.878.368
b. Drying Onions						
c. Put in a sack						
d. Transporting Onions						
Total			37.655.759	87.247.236	6.756.056	57.235.953
Output	5.640,61		10.839,00	61.138.529	17.000	95.890.303

The results of the analysis using the PAM matrix can be seen in Table 3 below.

Table 3. Matrix of Shallot Farming Policy Analysis

Description	Revenue (Rp / ha)	Cost (Rp / ha)		Profits (Rp / ha)
		Tradable Input	Non Tradable Input	
Private Prices	61.138.529,00	33.490.499	3.479.216	34.269.456,00

Social Prices	95.890.303	26.878.368	26.878.368	92.203.432,00
Policy Impact	-34.751.774	15.464.702	7.717.500,00	(57.933.976,00)

It can be seen in Table 20 above the results of the Shallot Farming Policy Analysis in Solok Regency are as follows:

(1) Private revenue (61,138,529.00) is obtained from the output generated in the business, at the private selling price, that is, the product of production times the selling price.

(2) Social Revenue (95,890,303) is obtained from the output generated in the business, at the social selling price, ie the product of production times with its selling price.

(3) Tradable Private Input Costs (33,490,499) are obtained from the sum of all costs, inputs used in business which are also traded on international markets (import-export) where private prices are obtained directly on the domestic market when buy the inputs, among others: urea fertilizer, kcl fertilizer, sp36 fertilizer, NPK fertilizer, urea fertilizer, SS fertilizer, tsp fertilizer, za fertilizer, antracol pesticide, confidor pesticide, dursban pesticide, and infrastructure used in the infrastructure

(4) Social Tradable Input Costs (3,479,216) obtained from the sum of the total costs on inputs used in the business are also traded on the international market (import-export), where the social price is the price on the export market Imports include urea fertilizer, Kcl fertilizer, SP36 fertilizer, NPK fertilizer, urea fertilizer, SS fertilizer, TSP fertilizer, ZA fertilizer, antracol pesticide, confidor pesticide, dursban pesticide, and infrastructure used.

(5) Non-Tradable Private Input Costs (26,878,368) are obtained from the sum of all costs on inputs used in farming that are not traded on the international market (import-export), including: land used for farming shallots, labor use ranging from land processing to post-harvest activities, and also the facilities and infrastructure used by farmers to cultivate shallots.

(6) Non-Tradable Social Input Costs (26,878,368) obtained from the sum of the total costs of inputs used in farming that are not traded on international markets (import-export), including land used for onion farming red, the use of labor ranging from land processing to post-harvest activities, and also facilities and infrastructure used by farmers to cultivate shallots.

(7) Private Profitability obtained is Rp. 34.269.456.00, this is obtained from = A - (B + C), so that it produces D> 0, ie the commodity system generates a profit above the normal cost which means the commodity is financially feasible.

(8) Social Profitability obtained is Rp. 92,203,432.00, this is obtained from = E - (F + G), resulting in H> 0, which is a commodity system worth developing because it provides a comparative advantage.

(9) Private Cost Ratio (PCR) obtained which is equal to 0.24 is obtained from = C / (A - B), so as to produce PCR <1, ie farming has a competitive advantage (farming ability to pay domestic costs or non-tradable inputs such as land, tax and labor).

(10) Domestic Resource Cost Ratio (DRCR) obtained is equal to 0.04, this is obtained from = G / (E - F), resulting in DRCR <1, which means the smaller the value, means the system is more efficient and has advantages comparative (can be saved to produce one-unit foreign exchange).

(11) Output Transfer (OT) obtained is equal to Rp. 34,751,774 is obtained from = (A-E), this positive result means that government policy on output gives incentives to producers. That is, the price paid by consumers to producers is higher than it should be.

(12) Nominal Protection Coefficient Output (NPCO) obtained, which is equal to 0.64, is obtained from = A / E, resulting in NPCO <1, which means that the level of government protection against output is low, causing the price of output received to be lower than actual price.

(13) Transfer Input (J) received is Rp. 15,464,702, this is obtained from = B - F, which means the government provides subsidies for tradable inputs, so farmers do not need to pay in full the tradable (social) inputs that should be paid.

(14) The obtained Nominal Protection Coefficient Input (NPCI) of 26.04 is obtained from = B / F, resulting in NPCI> 1, which means that the level of government protection against tradable inputs is low, so farmers pay lower prices for tradable inputs than the price should be.

(15) Transfer Factor (K) obtained is Rp. 7,717,500, this is obtained from = C - G, which means there is a negative subsidy on non-tradable inputs. Farmers pay non-tradable inputs higher than the actual price.

(16) Net Transfers (L) obtained are in the amount of Rp. 57,933,976.00, this is obtained from = D - H, so that it produces L> 0, which means that there is a producer surplus caused by government policy on inputs and outputs.

(17) Effective Protection Coefficient (EPC) obtained is equal to 0.47 obtained from = (A - B) / (E - F), resulting in EPC <1, which means the level of government protection against domestic production is low .

(18) Subsidy Ratio to Producer (SRP) obtained which is equal to 0.60, this is obtained from = L / E, resulting in SRP <1, which means that government policy causes producers to issue production costs lower than the counterparty cost to produce.

4. Discussion

The Difference of Shallots Farming in Research Locations with Other Locations (In Aspects of Farming)

1. Land Management

Land management activities carried out by sample farmers in the field are clearing land from weeds or weeds that are on these lands. Before the beds are made, the soil is first loosened by hoeing it until the soil becomes loose. By making beds in each land in the same direction and length of beds adapted to the conditions, beds are made with a width of 1-2 meters, with a height of 25 cm, and also the distance between the beds is 20-30 cm, different from research in other locations (in the districts of Cirebon, Brebes and Tegal), the initial stage in land management is to clear land from grass or weeds. Farmers generally use herbicides to clear weeds. After the land is cleared of weeds, the land is buried about 30 cm deep to make the soil loose and improve soil aeration.

In contrast to research in other locations (in the districts of Cirebon, Brebes and Tegal), after hoeing the land is then made beds in the same direction with a width of 180-200 cm and length adjusting the land. In each bed trenches are 40 cm wide and 30-40 cm deep. After that, the beds are given with manure about 3 tons / ha. The beds are then left for one week. After one week the beds in the hoe return to make the soil more loose. The land is left again for 7 days and then the land is ready to be planted.

2. Planting

The planting activities carried out by the sample farmers in the field are the spacing made by the sample farmers which is 15 x 20 cm, and 20 x 20 cm, using beds and mulch for planting, with a height of 20 cm, and 1.2 cm wide beds, some planting hole depth makes 4 cm, 5 cm, and 6 cm. Before the land is planted, the remnants of the previous plants in the land must be cleaned up first. In each bed trenches and drains are also made. The depths of the trenches are 50 cm. In each planting hole, only 1 seed is inserted per hole. The seeds used by farmers to grow shallots vary.

In contrast to research in other locations (in the districts of Cirebon, Brebes and Tegal), namely after the land is ready for planting, the next step is the planting process. Before planting, farmers must prepare the onion seeds. The stage of seed preparation is usually carried out by poges or cutting the tip of the red onion benig. This is done so that the onion seeds grow quickly. Farmers also mix onion seeds with fungicides so they don't rot when planted. After the seed preparation is complete, the next step is planting.

Onion planting is done by immersing the onion seeds into the planting hole that has been prepared one by one. Shallot seeds are buried three quarters with the buds not covered with soil and facing up. Spacing between lines 15-20 cm. And planting spacing in rows of 10-15 cm. Planting is done in the morning or evening to reduce evaporation.

3. Plant Maintenance

Plant maintenance consists of fertilizing, weeding, controlling pests and diseases, and irrigation.

a. Fertilization

Farmers in the field generally fertilize three times, namely when the plants are 10 HST, and 30 HST fertilization is done by spreading fertilizer directly on the field. The use of fertilizers and their dosage, ie the average amount of manure 102 kg, the average amount of compost fertilizer is 53.13 kg, but with different dosages, farmers also use fertilizers in the field aftershocks with an average dose of ZA 28.97 kg / ha, Kcl 65.21 kg / ha, TSP 30.79 kg / ha, SP-36 29.09 kg / ha, and Urea 60.39 kg / ha.

It is different from research in other locations (in Dolok Martumbur Village, Muara District, North Tapanuli Regency), where fertilization is first carried out before farmers make land preparation. The amount and use of fertilizers is determined by farmers based on land area, capital and soil fertility. Fertilizer requirements for each land vary depending on the condition of the shallots and the knowledge of the farmers. Fertilizers commonly used by farmers are Compost, Urea, Ponska (NPK), Za, KCl, Mutiara, and TSP. The average use of labor for fertilizing activities is ± 20 HKO / Ha and usually uses labor in the family (tkdk).

b. Weeding

Weeding activities on plants carried out by sample farmers in the field, ie weeds that need to be weeded, how to weed them is by pulling out all the weeds there. Weeding activities carried out by farmers in the field 2 times, namely at the age of plants 15 days before planting and 2 weeks after planting (15 Days After Planting). Weeding is done by farmers every week before fertilizing 2. But if weeds grow fast from the specified time, weeding will certainly continue, so as not to inhibit the growth of shallots. In contrast to research in other locations (in the districts of Cirebon, Brebes and Tegal), weeding is done 2-3 times during one planting season, namely at the age of plants 15 and 30 DAP. The purpose of weeding is to reduce weed attacks.

c. Pest Control

Pest and disease control activities in plants carried out by sample farmers in the use of spraying pests that usually carried by farmers on their backs, using effective pesticides to eradicate pests and diseases that attack on the onion plant, namely insecticides and fungicides in accordance with the HPT that is in the plant. Farmers in the field only use three types of pesticides, namely Antracol with an average dose of 6.14 kg / ha, Confidor at a dose of 3.07 kg / ha, and Dursban at a dose of 4.53 liters / ha. Spraying is done after the plants are 15 days after planting. Spraying frequency is generally 1 time a week. If the pest attack is very severe, spraying can be done 3 times a week or 24 times per planting season. Spraying will continue until the shallots are ready for harvest.

It is different from research in other locations (in Dolok Martumbur Village, Muara District, North Tapanuli Regency), which is usually onion farmers in the study area using pesticides such as Antracol, BM Lamda,

Curacron, Drusban, Ripcot, Ompilor, and Trinep. The average use of labor for fertilizing activities is ± 22 HKO / Ha and usually uses labor in the family (tkdk).

And in other locations (in the districts of Cirebon, Brebes and Tegal), namely pest and disease control activities carried out manually and chemically. Eradication of pests manually using female labor that is by doing pruning shallots that contain caterpillars in it. This activity is carried out as needed. If a caterpillar attack is severe, this activity can be done up to 30 times. In general, onion plants are very susceptible to pests in the dry season. In this season, more pests develop than the rainy season. Meanwhile, in the rainy season the development of diseases mainly caused by fungi is relatively more than the dry season.

d. Irrigation

Irrigation activities on plants carried out by sample farmers in the field are the first irrigation at the age of plants 0-10 days, with a frequency of watering 2x a day, in the study area farmers do watering plants only at the beginning growth and subsequent frequency of watering can not be determined by farmers. If dry, watering can be done 2-4 times a week. Whereas sample farmers in the field irrigate if there is a long drought, so that the frequency of watering is done 2-4 times a week. Water sources for watering are prioritized from rain water, but during the dry season, water is sourced from well water and irrigation. Watering is usually done in the afternoon.

In contrast to research in other locations (in the districts of Cirebon, Brebes and Tegal), watering is done every day at the time of initial growth until the age of the plant is approximately 7 DAPs. After 7 HST watering adjusts to the needs, can be every day or an interval of one day. Watering is usually done in the afternoon.

4. Harvesting

Harvesting activities on plants carried out by sample farmers in the field, namely harvesting onions carried out by farmers at the age of the plant 60 days after planting. There are differences in the age of plants ready for harvest in the rainy season and dry season. Age of harvest in the rainy season between 50-55 days, while in the dry season 60-65 days. In the rainy season the harvest is relatively shorter than the dry season because of the abundant water availability so that plant growth is relatively faster than the dry season. Then the characteristics of plants that can be harvested are at the base of the leaves are weak, 80 percent of the leaves are yellow, the tubers are above the surface of the soil and the appearance of a deep red color and a characteristic odor. Harvesting is carried out when the weather is sunny, by pulling each plant. Then the plants are bound together in the leaves.

In contrast to research in other locations (in the districts of Cirebon, Brebes and Tegal), namely Harvesting is done after the age of the plant 55-60 HST. There are differences in the age of plants ready for harvest in the rainy season and dry season. Age of harvest in the rainy season between 50-55 days while in the dry season 60-65 days. In the rainy season the harvest time is relatively shorter than the dry season because of the abundant water availability so that plant growth is relatively faster than the dry season. For the highlands, the age of harvesting shallots is longer that is 90 days after planting.

The onion plants that are ready to be harvested are marked by their fallen leaves, yellowing, empty stem necks, and bulbs of the onion surfacing. Harvesting is done by carefully pulling the onion bulbs from the soil.

After being extracted, the shallots are bound approximately 15 clumps per bunch and collected in one place. This shallot is then left on the ground while being dried for 7-12 days. After the onion is dry enough, then the onion is cleaned of dirt and is ready to be sold or brought home for storage.

5. Post Harvest

Post-harvest activities on plants carried out by sample farmers in the field are harvested shallots which are then hung using hanging racks. The onions are not dried directly facing the bright sunlight, the onions are dried in a protected place. In contrast to research in other locations (in Dolok Martumbur Village, Muara District, North Tapanuli Regency), the red onions that have been harvested and dried are sold directly to large traders in Muara District. Then the big traders will distribute shallots to several sub-districts in North Tapanuli and Tobasa districts, namely Siborong-borong, Balige, Tarutung, Humbang Hasudutan and Parapat districts.

5. Conclusion

Based on the results of research on Competitiveness Analysis of Shallot Commodities in Nagari Alahan Panjang and Nagari Air Dingin Lembah Lembah Gumanti, Solok Regency, the following conclusions can be obtained:

1. The description of onion agribusiness carried out by the respondent farmers in the study area in accordance with the recommendations from the referral sources, activities that are not in accordance with the recommendations from the referral source only on the irrigation / watering activities on the shallots.

2. Shallot farming in Solok Regency has competitiveness, because it has a Private Advantage of 34,269,456.00 (Competitive Advantage) and has a Social Advantage of 92,203,432.00 (Comparative Advantage), and has a competitive advantage with PCR results 0, 24 (Private Profitability), and comparative advantage with DRCR 0.04 (Social Profitability) results.

3. The results of the analysis using the PAM method show that the SP value for onion farming is Rp.92,203,432 / Ha / Year. This shows that onion farming is feasible to be cultivated and has a comparative advantage. Social Profitability (SP) is the profit gained in the event of a perfectly competitive market, where there is no government interference and market failure.

References

Aldila, Haris Fatori. "Shallot Competitiveness in the Production Center Area in Indonesia". Thesis M.A., Bogor Agricultural University. Bogor.2016

[BPS] Statistics Indonesia. 2015. Foreign Trade Statistics (Exports and Imports). Jakarta.

[BPS] West Sumatra Province Central Statistics Agency. 2015. West Sumatra in 2015 Figures.

[BPS] Solok Regency Statistics Agency. 2017. Solok District in Figures 2017.

Jorong Rimbo Animal Husbandry and Fisheries Counseling Center Data Nagari Sungai Nanam Kecamatan Lembah Gumanti Solok Regency.

Directorate General of Domestic Trade, 2013. Directorate General of Domestic Trade.

Handewi P.S, Rachman, Supriyadi, Saptana, Benny, R. 2001. Efficiency and Competitiveness of Horticultural Farming. Bogor Agricultural Socio-Economic Research and Development Center. Bogor. 50 - 85 pages.

Handewi, P.S., Rachman., And Ariani, M. 2008. Diversification of Food Consumption in Indonesia: Problems and Implications for Agricultural Policy Analysis Programs and Policies 6 (2): 140-154

Husodo, S.Y. Independent Agriculture. Jakarta: Swadaya Spreaders, 2004.

Jakiyah Ulpah. "Analysis of Organic Rice Cultivation Competitiveness in Tasikmalaya Regency, West Java". Thesis M.A., Bogor Agricultural University. Bogor. 2016

Kadariah, Lien Karlina and Clive Gray. Introduction to Project Evaluation. Jakarta: Publisher Institute: Faculty of Economics, University of Indonesia, 1978.

Kurniawan, Ahmad Yusuf. "Analysis of Corn Farming Efficiency and Competitiveness on Dry Land in Tanah Laut Regency, South Kalimantan". Thesis M.A., Bogor Agricultural University. Bogor. 2008.

Mawardi, Nanang Kusuma. "Analysis of Competitiveness of Shallot Commodities in the Special Region of Yogyakarta". Thesis M.A., Gadjah Mada University. Yogyakarta. 2016

Murtiningrum, Fery, "Analysis of Robusta Coffee (Coffia Conep Hora) Farming in Rejang Lebong District". Thesis M.A., Postgraduate Masters in Agribusiness Faculty of Agriculture, Bengkulu University, Bengkulu. 2013.

Monke, E. A. and S. R. Pearson. Policy Analysis Matrix for Agricultural Development. Ithaca. London: Cornell University, 1989.

Nasir, Mohammad. Research methods. Jakarta: Ghalia Indonesia, 1989.

Nurasa T, Darwis V. 2007. Analysis of Farming and Performance of Shallot Marketing Margin in Brebes Regency: Agrosia Deed Journal 10 (1): 40 - 48

Nolasary, Mega Putri. "Analysis of Competitiveness and the impact of Government policies on Shallots in Solok Regency". Thesis M.A., Postgraduate of Andalas University. Padang. 2017

Pusdatin, 2015. Agricultural Data and Information Center Center (Pusdatin)

Rukmana Rahmat and Yudirachman Herdi. Success of Shallot Cultivation in Yard and Plantation. Yogyakarta: Lily Publisher, 2017.

Rahmadona Lola, Fariyanti Anna and Burhanuddin. 2017. Competitiveness of Shallot Commodities in Majalengka Regency, West Java. Bogor. Indonesian Horticulture Journal. 8 (2): 128 - 135. August 2107.

Ministry of Agriculture Strategic Plan. 2015 - 2019.

Suharyati, Anita. "Analysis of Organic Rice Competitiveness in Karanganyar Regency". Thesis M.A., Postgraduate Faculty of Agriculture, Gadjah Mada University. Yogyakarta. 2016

Saputro, Wahyu Adhi. "Analysis of Sugarcane Farming Competitiveness in Central and East Java". Thesis M.A., Postgraduate Agricultural Economics, Gadjah Mada University. Yogyakarta. 2017.

Simanjuntak SB. "Analysis of Competitiveness and the Impact of Government Policy on the Competitiveness of Indonesian Palm Oil Companies" Dissertation of P.hd., Postgraduate Program, Bogor Agricultural University. Bogor. 1992.

Suhardedi Cecep. "Competitiveness of Rice Farming in Sragen Regency". Thesis M.A., Postgraduate Agribusiness Management, Gadjah Mada University. Yogyakarta. 2017.

Saptana, Sunarsih, Indraningsih, KS. 2006. Turning Comprehensive Advantage into Competitive Advantage through the Development of Horticultural Business Partnerships. Agro Economic Research Forum. 24 (1): 61-76.

Taufik M. 2012. Strategy for Vegetable Agribusiness Development in South Sulawesi. Agricultural Research and Development Journal. 31 (2): 43-50.

UPTD Lembah Gumanti District, Solok Regency. 2017

Wijaya, Pandu Aji. 2017. Holidays for Shallot Farming in Bantul Regency. [Thesis]. Agribusiness Study Program Department of Agriculture Socio-Economic Faculty of Agriculture. Yogyakarta (ID): Gadjah Mada University.

Yadjid, Muhamad, 2011. Analysis of Sugarcane Farming Competitiveness and Structural Adjustment of Sugar Industry in East Java. [Thesis]. Bogor (ID): Bogor Agricultural Institute Graduate School.