ABSTRACT: Citrus Nobilis, known as Siamese Orange, is one of the strategic fruits commodities for West Sumatera because of its high productivity, approximately 6 - 9 tons per hectare. However, this commodity faces a fluctuated demand both in domestic and international markets.

This is a serious problem due to its impact on farm income as well as in its comparative advantage. The aim of this study was to analyze the comparative advantage level of siamese orange farming. Eighty four Siamese Orange farmers are selected using simple random sampling to get orange farming data.

The comparative advantage level is measured with Policy Analysis Matrix (PAM) approach. The results show that siamaese orange farming has a high comparative advantage, indicating by more than zero value of social profitability and less than one domestic resource cost ratio.

This comparative advantage could be sustained if domestic resources are efficiently utilized through the improvement of labor skills and the use of Siamaese Orange farming modern technology. Keywords: Comparative advantage, siamexe orange farming, PAM Citation to this paper should be made as follows: Romdhon, M. M., A. Andani, and W. F. Nasari. 2018. Comparative advantage of Siamese Orange (Citrus Nobilis) Farming in District of 50 Kota, West Sumatera.
INTRODUCTION Siamese Orange is the main local commodity of Lima Puluh Kota District, with productivity range from 6 to 9 tons/ha and total land area of ??570.89 ha in Gunung Omeh Sub district (Dinas Pertanian Sumbar, 2015). Siamese Orange production in this area is marketed to Sumatra, Java and abroad such as Malaysia.

The current transportation infrastructure has facilitated the flow of Siamese Orange to Padang City through Teluk Bayur Port and Minangkabau International Airport. However, in 2006–2015, the export of Siamese Orange decreased due to the unstable economic condition. Meanwhile, the competition in the global horticultural commodity market is getting tighter, which in turn affects the competitiveness of Siamese orange produced in Gunung Omeh sub district.

Those Impact on small niche market occupation and farm income Farming competitiveness is defined as the ability of producers to produce a commodity with a relatively low cost so that prices in the international market is profitable (Novianti, 2003). The commodity competitiveness can be measured with the comparative advantage indicators, such as the labor and land productivity.

According to the Asian Development Bank (1992 in Aprizal, 2013), the comparative advantage is the ability of a region to produce with a relatively low cost. Comparative advantage can also be measured with the social value of cost of production by using the shadow price of input and output. Dewanata (2011) shows that exchange rate changes have greater effect on the Siamese Oranges with modern technology than that with traditional technology in Garut.
Regency. In addition exchange rate, output price, and price of subsidized fertilizer also
significantly influence impact farm profit.

The results of Wiji (2007) indicate that the Siamese farming system in Pontianak is highly
competitive so that it’s commodity produce can compete in the international market
and be able to finance its domestic cost. Sayekti (2011) and Husaini (2012) also
concluded that Siamese Orange farming has both competitive and comparative
advantages.

This study focuses on the comparative advantage of Siamese orange farming in the
highlands compared to previous researchs which analyzed the comparative
competitiveness of Siam Orange Farming in lowland and Agroclimate Differences
(Husaini, 2010), Differences in Production Technology (Dewanata, 2011), and Feasibility
and Competitiveness business.

This study aims to analyze the comparative competitiveness of Siamese Orange Farming
in Kanagarian Koto Tinggi District of Gunung Omeh District of 50 Kota West Sumatera.
The results of this study are expected to provide an overview of Siamese Orange
farming competitiveness for decision making in order to design policies for Siamese
orange agribusiness development in Kanagarian Koto Tinggi District of Gunung Omeh
District of 50 Kota West Barat.

RESEARCH METHODS This research was conducted in Kanagarian Koto Tinggi of
Gunung Omeh Sub-district, Lima Puluh City, West Sumatera Province, which is the
largest production center of Siamese Orange. 84 Siamese Orange farmers are selected
using Simple Random Sampling to collect data on farm cost, production quantity and
selling price, fertilizer distribution cost, export, the shadow price of input and output.
Assumptions used in the analysis include: (a) Rp 13.450 of USD-IDR, (b) 6.28% of
inflation rate, and (c) 12.5% of interest rate. Input and output are set at two types of
price, namely private price and shadow price.

The private price is determined at the output market price or the price of the paid
production inputs. The shadow price, according to Gitingger (1986), is the inputs’ and
outputs’ prices that occur in the perfectly competitive market and equilibrium condition.
The price is determined on the basis of prevailing market prices. The shadow price of
the tradable production inputs equals the shadow output price, i.e.,

the FOB (Free On Board) price and for the imported commodities using the CIF (Cost
Insurance Freight) price. The shadow price of non-tradable production inputs using the
prevailing domestic price in the research area. Data analysis method used is Policy
**Analysis Matrix (PAM)** (Monke and Pearson, 1989; 2003).

The PAM model has also been applied to analyse the profitability and competitiveness of Bengkulu Lobster, by Sukiyono (2011). The comparative competitiveness from private profits and the ratio of private costs with PAM Model can be calculated as follows: Table 1. Comparative advantage calculation with PAM Model Description _Revenue _Costs _Profits _ _ _ _ Tradable _Non-tradable _ _ _ _ Private Price _A _B _C _D _ _ Social Price _E _F _G _H _ _ Divergence _I = A-E _J=B-F _K=C-G _L=I-J-K _ _ Sumber: Monke and Pearson, 1989 where is: (A) farm revenue based on private price, (E) revenue based on social price, (I) output transfers, (B) tradable input cost based on private price, (F) tradable input cost based on social price, (J) input transfers, (C) domestic input cost based on market price, (G) domestic input cost based on social price, (K) factor transfers, (D) private profits, (H) social profits, (L) net transfers.

The criteria of comparative advantage of Siam Gunung Omeh citrus farming are: Social Profit (SP) i.e., \( H = E - (F + G) \). Social profit is an indicator of comparative advantage. If \( H > 0 \) then the farm is worth

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developing. Conversely, if $H = 0$, it means that commodities cannot compete without or intervene by the government. Domestic Resource Cost Ratio (DRCR).

If $\text{DRCR} < 1$, then the commodity system has a comparative advantage, which means the commodity exploitation has an efficient. Conversely, if $\text{DRCR} = 1$, the commodity system does not have a comparative advantage, meaning that commodity exploitation does not have efficiency.

RESULTS AND DISCUSSION

The results show that tradable input costs are greater than those of non-tradable. Tradable input costs are dominated by the cost of importing fertilizers, pesticides, and fuels, while non-tradable inputs are dominated by labor, land and local fertilizers. Labor inputs are low mobility due to its local skills. The study also indicates that the input market of Siamese orange production in research area connects to output and input international market as an example pesticide is an importing inputs from multinational company. Their market covers all agricultural countries all over the world, and the product price is also dollars standards.

Since, the price of product when it was imported to Indonesia based on the CIF (Cost Insurance Freight) price as presented in Appendix 1. The comparative competitiveness of orange farming system in the global market or not can be examined from the structure of tradable and non-tradable input costs. The PAM results indicated that orange farming in Kanagarian Koto Tinggi, has a comparative advantage characterized by Domestic Resource Cost Ratio (DRCR) and Social Profits (PS) as presented in Table 1. The DRCR value of Siamese Orange Farm in Kanagarian Koto Tinggi is 0.11. The value indicates that to profit US$100, farmers must spend the cost for domestic resource approximately US $11. In terms of trade in the international market, the 0.11 value of DRCR indicates the high comparative advantage (0 to = 1) of Siamese orange farming. The lower the DRCR value, the higher the comparative advantage of the Siamese orange farm in Kanagarian Koto Tinggi.

This result also informs that this farming is able to survive even without government intervention. The reason is that this farming has the necessary domestic resources (i.e. land) for its development. The high comparative advantage is supported by suitable land and climate conditions for orange farming and the abundance of labour for a more efficient utilization of domestic resources. This value also indicates that efficiency of domestic resources used (i.e. labour and fertilizers) will have a comparative advantage.

This conclusion is also supported by the value of PS, i.e., Rp 439,166,360/Ha/Year. The social profits (PS) are gained in perfectly competitive markets, when there is no
government policy intervention and market failures in the form of subsidies on production inputs, particularly production of tradable inputs.

The comparative advantage of Siamese Orange in Kanagarian Koto Tinggi is higher than the Garut Orange (Dewanata, 2011), the Pontianak Siamese Orange (Wiji, 2007), and Sambas Siamese Orange with DRCR 0.70, 0.17 and 0.15, respectively.
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However, the Siamese orange comparative advantage in Kanagarian Koto Tinggi is lower than those in Jember Regency, in which DRCR only 0.05. Orange farmers in Jember District allocate and utilize domestic resources more efficiently.

In general, the comparative advantage of Siamese orange farming in Kanagarian Koto Tinggi is higher, as also found in a number of orange centres in Indonesia. This high comparative advantage is due to the abundance of domestic resources, particularly non-tradable inputs such as labour, land, and suitable agro-climate. However, the efficiency of domestic resources such as labour and land needs to be improved.

This is to anticipate the increase of labor cost and land rent in Kanagarian Koto Tinggi due to competition of labour and land use with other commodity farming (Romdhon, 2004). Efforts can be done by improving management skills of Koto Tinggi’s Siamese orange farmers. The introduction of modern technology in Siamese orange farming in Jember District could improve competitiveness of Siamese orange.

The support of farming infrastructure (farm road) can also optimize efficiency of domestic resource utilization so the cost of input and output transport can be minimized. Farmers can directly deliver their products to large collectors or exporters, so they can gain a maximum of twice the profit gained today. This effort will increase Siamese orange export, as the competitiveness of Indonesian orange exports compared to three ASEAN countries (Malaysia, Philippines, and Thailand), is lower in the international market (Hanani, 2009).

POLICY IMPLICATIONS Siamese Orange farming system in Kanagarian Koto Tinggi has a high comparative advantage and efficiency in domestic resources utilization as indicated by the private profits and social benefits. The policy should be implemented for sustaining the comparative advantage was the improvement of labor skills, and the use of postharvest modern technology.


Appendix 1. Private and economic analyses of Citrus Nobilis Farming at Kanagarian Koto Tinggi-West Sumatera Description _unit _Volume _Mean per ha _Private (Rp) _Social (Rp) _Price _cost _price _cost _Output _Kg _1,563,333 _18,611 _15,030 _79,747,024 _31,781 _591,479,722 _Input Tradable _Urea _Kg _50,070 _596 _5,000 _9,075,902 _5,386 _9,784,239 _TSP _Kg _40,404 _481 _7,500 _10,789,637 _10,623 _15,450,724 _KCl _Kg _48,811 _581 _15,000 _25,714,107 _16,727 _29,043,433 _Za _Kg _42,529 _506 _5,000 _7,392,798 _6,265 _9,440,341 _Ponska _Kg _36,993 _440 _2,952 _4,613,226 _4,613,226 _3,831,243 _Pesticide _Alika _Litre _36 _0 _519,881 _5,258,520 _519,881 _5,258,520 _Score _Litre _19 _0 _667,679 _3,927,752 _667,679 _3,927,752 _Marshal _Litre _6 _0 _47,560 _279,629 _47,560 _279,629 _Atonik _Litre _3 _0 _26,190 _78,952 _26,190 _78,952 _Agrimax _Kg _4,0 _496,429 _1,813,810 _1,813,810 _Lonate _Kg _3 _0 _12,000 _4,800,000 _Organ.Fertilizer _Kg _2,085,333 _24,825 _249 _6,349,206 _249 _6,349,206 _Family labour _Fertilization _day _902 _11 _50,357 _2,589,747 _50,357 _2,589,747 _Weeding _day _902 _11 _50,357 _2,589,747 _2,589,747 _Spraying _day _413 _5 _50,238 _9,445,595 _50,238 _9,445,595 _Harvest _day _186 _2 _50,000 _3,636,190 _50,000 _3,636,190 _Maintenance _day _123 _1 _31,548 _1,827,560 _31,548 _1,827,560 _Non-family labour _Fertilization _day _269 _3 _50,357 _936,146 _50,357 _936,146 _Weeding _day _269 _3 _50,357 _936,146 _936,146 _Spraying _day _100 _1 _50,357 _1,858,937 _50,357 _1,858,937 _Harvest _day _90 _1 _50,119 _1,159,457 _50,119 _1,159,457 _Maintenance _day _79 _1 _31,548 _3,244,357 _31,548 _3,244,357 _Hoe _Unit _133 _2 _47,798 _59,482 _59,482 _519,881 _5,258,520 _519,881 _5,258,520 _Cleaver _Unit _85 _1 _54,167 _166,090 _54,167 _166,090 _166,090 _Basket _Unit _287 _3 _102,738 _35,465 _102,738 _35,465 _Scoops _Unit _287 _3 _102,738 _35,465 _102,738 _35,465 _Drum _Unit _106 _1 _140,952 _112,880 _140,952 _112,880 _Grass-cutting machine _Unit _54 _1 _683,333 _683,333 _683,333 _683,333 _683,333 _683,333 _Sancin _Unit _41 _0 _2,283,333 _2,283,333 _2,283,333 _2,283,333 _2,283,333 _2,283,333 _fruit basket _Unit _287 _3 _102,738 _35,465 _102,738 _35,465 _Scoop _Unit _77 _1 _9,212 _9,212 _9,212 _9,212 _Land _Hectare _1 _1 _14,687,500 _9,255,319 _14,687,500 _9,255,319 _Tax _year _53 _1 _5,031 _99,405 _5,031 _99,405 _Total Non-tradable cost _2,111,748 _2,111,748 _2,111,748 _2,111,748 _2,111,748 _2,111,748 _Total cost _126,083,163 _126,083,163 _126,083,163 _126,083,163 _126,083,163 _126,083,163 _Profit _439,166,360 _439,166,360 _439,166,360 _439,166,360 _439,166,360 _439,166,360

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