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Shallot Value Chain Study Executive Summary



Locations: East Java, West Nusa Tenggara (NTB)

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Executive summary - Shallot

This study was conducted to inform pro-poor interventions in the shallot value chain under a new Australian Government's Department of Foreign Affairs and Trade (DFAT) program: the Australia-Indonesia Partnership for Decentralisation - Rural Economic Program, or AIPD-Rural. A wide range of issues deemed important for a characterisation of the shallot sub-sector in Indonesia and an understanding of its potential as a vehicle for poverty reduction are covered. The shallot value chains in two AIPD-Rural target districts are analysed, gender and environmental issues discussed, and possible entry points for pro-poor chain innovation proposed.

Socio-economic importance

In Indonesia, between 90,000 and 110,000 hectares of shallots are harvested every year. Only two other vegetables have a larger cultivated area: chilli and cabbage. Between 100,000 and 200,000 households earn an income from shallot farming.

Illustrative data collected from a small sample of farms shows that shallots provide significant income to growers and on-farm labour. In Bima, a district with a cultivated area of about 7,000 hectares, shallots are the main cash crop: in a normal year, they generate around US\$ 40 million as net farm and wage income. A large number of households in Bima also grow shallots on rented land in Sumbawa Besar district.

In Sampang, shallot cultivation is largely confined to Sokobanah sub-district, which has a cultivated area of 2,000 to 3,500 hectares, depending on the year. Shallot farms in Sokobanah are less profitable and employ less labour per unit of land than those in Bima. Still, in Sokobanah, the crop generates between US\$ 9 million and US\$ 16 million as net farm and wage income per annum.

In 2011, the farms surveyed generated on average 290 person-days of employment per hectare. Hired labour represented about 90% of total farm employment. Women accounted for nearly 40% of total farm employment and half of the labour hired. Women consistently earned lower wages than men.

Production trends

Shallot production peaked in 2010, after several years of continuous growth. That year Indonesia produced nearly 1.05 million tonnes. Production contracted sharply in 2011 following a significant reduction in harvested areas. It recovered in 2012.

Productivity

In recent years, shallot yields have fluctuated around 9.5 tonnes per hectare. Central Java and West Java have the highest farm productivity. Average yields in Nusa Tenggara Barat (NTB) exceeded the national average in 2009 and 2010, but not in 2011. While East Java experienced the most significant increases in productivity, its average annual yield for the 2009-11 period was still 20 percent lower than the national average.

Seasonality

Shallots are mainly grown during the dry season, between April and October. More than half of the crop is harvested between June and September, with a clear peak in August and

September. Growing shallots during the rainy season is problematic because of slow plant growth and high incidence of pests and diseases.

Varieties

A large number of varieties are grown across Indonesia. These are chosen by farmers on the basis of local agro-climatic conditions, planting season, availability of planting material, and their own knowledge of the relative strengths and weaknesses of different cultivars. Significant differences in varietal adoption across locations suggest that local agro-climatic conditions and local seed bulb distribution networks have significant influence on varietal choices.

In Indonesia, shallots are vegetatively propagated. Two true seed shallot varieties from East West Indonesia have been recently evaluated. Sanren is the more promising of the two varieties, outperforming Tuk Tuk in terms of planting density requirements, tolerance to rain, disease resistance, earliness, yield, bulb storability, and bulb quality. However, Sanren seed is not yet commercially available.

Despite several potential advantages, including lower planting material costs, reduced transmission of seed-borne diseases, and higher yields, there has been very little adoption of true seed shallot in Indonesia. This is due, in part, to the fact that Tuk Tuk has a very long growing cycle, performs poorly under rainy conditions and does not store well. It appears that this variety is not particularly appreciated by consumers.

Cultivation

Shallots are often grown as a mono-crop, although in some areas inter-cropping is common. In major production districts, farmers may grow up to three consecutive shallot crops, a system that results in a high incidence of seed-borne virus diseases, leading to crop losses across cultivation cycles.

Farmers typically plant around 1 tonne of seed bulbs per hectare. Fertilisers are applied on the basis of local experience and norms, often with poor understanding of impacts on crop yield and quality. Pests and diseases pose significant risks to farmers: *Fusarium sp.* and *Alternaria porri* are the main shallot diseases; *Spodoptera exigua* and *Liriomyza* the major pests. Excessive and inappropriate use of chemicals is widespread. Farmers use no personal protective equipment.

Demand

Shallots are a key condiment in the Indonesian cuisine. Consumers generally prefer bulbs that are not too small and have a strong, pungent taste. Consumers also show a preference for round and bright red bulbs.

The demand for shallots is income-inelastic. Future growth in domestic consumption will have to come from population growth, a decline in the price of shallots, or both. In a context of sluggish and relatively price-inelastic demand, significant increases in production will result in stagnant or declining prices for farmers, unless there is significant growth in exports, a reduction in marketing costs, or both. A reduction in cultivation costs will be critical for maintaining or improving farm profitability in a scenario of declining or stagnant prices.

Exports

Exports remain too small to have any significant impact on domestic market conditions. Shallots are mainly exported in September and October. Thailand and Vietnam are the two main destination markets, followed by Malaysia and Singapore. Probolinggo is the main supplier of shallots for export. Within NTB, exporters source shallots mainly from Sumbawa Besar.

Imports

Indonesia imports significant quantities of shallots. Some imported bulbs are used as planting material. The contribution of imports is particularly significant during the first five or six months of the year, a period when domestic production cannot meet consumer demand. Thailand, the Philippines, and Vietnam are the main sources of imported shallots. They are generally sold in the market for a lower price than local bulbs.

The Indonesian government has recently introduced a series of legislation aimed at reducing horticultural imports. During the first three months of 2013, the price of shallots skyrocketed following the introduction of a temporary import quota. Most shallot farm households did not benefit because they do not grow shallots during that period. The new legislation will only encourage significant import substitution if managed to ensure exceptionally high prices that can compensate growers for high off-season average production costs. Moreover, any price benefits to Indonesian producers will have to be weighed against higher planting material costs due to an increase in seed bulb prices.

Prices

During the past five years, the real price of shallots in Indonesia followed no clear trend. Significant increases in domestic production have kept prices low, especially during the peak harvesting months. Since late 2010, however, shallot prices have become much more erratic. Weather conditions and short-term volatility in the arrival of overseas consignments are two possible explanations.

Within the year, shallot prices are lowest during the peak harvesting months, i.e. between mid-July and September. Storage by farmers and traders plays an important market stabilisation role during the October-December months. In the first six months of the year, market prices will be heavily influenced by the level and price of imports.

The shallot value chain in Sampang

In Sampang, most shallot farms range from 0.2 to 1 hectare. At least 2,500 households in the district grow shallots as their main crop during the February-April months. Shallots are mainly cultivated in Sokobanah sub-district, in areas without irrigation, which explains why they are grown much earlier than in other parts of Java.

Manjung is the main variety in Sokobanah. In one village, farmers grow Bima Curut. Both cultivars show good resistance to pests and diseases, a very important trait for local farmers, who are reluctant to invest significant resources in the purchase of agro-chemicals. Farmers in Sokobanah have had limited exposure to other cultivars.

Local farmers producing seed bulbs late in the year and farmers and traders bringing in seed bulbs from Pamekasan and Brebes are the source of planting material. Traders sometimes supply seed bulbs on credit, but prompt payment is more common.

The productivity of shallot farms in Sokobanah is low. Yields typically range from 4 to 8 tonnes per hectare, compared to a national average of 9.5 tonnes. Low productivity reflects the fact that shallots are grown during the rainy season, often in poor soils, with relatively limited use of external inputs.

Farmer-to-farmer exchanges remain the main vehicle for transmission of information about shallot cultivation. Agro-chemicals are mainly bought on a cash-and-carry basis from stores in Sampang town and neighbouring Pamekasan district. Shops in Sokobanah offer a limited product range and are therefore a secondary source of inputs. A few village traders may at times supply fertiliser to farmers on credit. At least one local extension officer supplies agro-chemicals to farmers.

Farmers normally sell to local collectors, although some send shallots directly to Surabaya, often sharing a small truck. Most farmers are aware of spot market prices in their area. Transactions are usually carried out by men. Prompt payment is the norm.

Collectors act on behalf of local assembly traders, from whom they receive funds and a fixed commission. These traders typically handle between 50 and 200 tonnes of shallots per annum. Margins will vary from one year to the next, depending on market prices. Assembly traders have small storage facilities for product assembly. Storing shallots for several weeks or months is not advantageous because Sampang supplies the market during the off-season. Storage for a few days could be justified if prices suddenly dip, but traders cannot hold inventories because of limited storage space.

Most shallots from Sampang are consumed within Java. Surabaya is the main destination. Larger village traders usually sell to a selected number of buyers in two or three locations with whom they have been doing business for many years. Gains from short-term spatial arbitrage are likely to be limited because markets in Java are spatially integrated. Smaller traders usually supply Surabaya. The sharing of truck loads by small traders is not uncommon.

Local traders normally supply mixed grades to urban wholesalers. Selling graded shallots is uncommon because in the off-season many wholesalers and retailers are reluctant to sell grade A, which is too expensive for most consumers. Buyers will pay upon delivery of the bulbs or a few days later. Surabaya wholesalers do not advance funds to Sampang traders. In other locations, some may occasionally provide partial advances. On the whole, however, Sampang traders tend to operate with their own funds. Some also rely on bank loans for working capital.

Shallots from Sampang are retailed through traditional channels. The modern retail segment has a marginal share of the Indonesian retail market, estimated at less than 1.5%. In any case, Sampang shallots do not meet supermarket requirements regarding bulb size, colour, shape, and shelf-life. During the Sampang marketing season, supermarkets in Surabaya mainly sell imported shallots. It is possible that some of the Sampang harvest is absorbed by the processing industry, which buys the lowest-grade bulbs and has the least stringent requirements regarding moisture content.

Sampang shallots have a poor reputation in the market. The Manjung variety has a strong taste, but lacks other attributes favoured by consumers, i.e. medium to large size bulbs, with round shape and bright red colour. Cultivation during the rainy season and premature harvest also affect quality. Finally, the bulbs have a short shelf-life as a result of wet weather conditions at harvest time and poor post-harvest drying. Despite a poor reputation, there are

no shortage of buyers for Sampang shallots, which are marketed at a time when there are few alternative sources of supply.

The shallot value chain in Bima

Bima is known as the main shallot production centre outside Java. Around 10,000 households grow the crop in an area of about 7,000 hectares. Shallot farms in the district typically range from 0.1 to 0.5 hectares. On most farms, the crop is grown between April and September, during two consecutive seasons. During that period, many local households are also involved in shallot cultivation in Sumbawa Besar district, either as renters or farm labourers.

Super-Philip is the main variety in those two districts. There appears to be considerable differences in farm yields, even within the same village, in part because of significant variations in seed bulb quality. Farmers reported 8 to 15 tonnes per hectare and 13 to 20 tonnes per hectare as the normal yield range for Bima and Sumbawa Besar, respectively.

Farmers retain some of their harvest for use as planting material and also buy seed bulbs from other farmers, local traders, and some input retailers shops. Other inputs are purchased from local stores, which often provide in-kind and cash loans, especially to larger growers. These also access seasonal loans from local traders, the bank, and/or pawn shops. Small growers have much poorer access to credit.

Farmers in Bima rely on other farmers as the main source of information about shallot cultivation. Government extension or chemical companies are not considered major sources of new technical knowledge. Input retailers may at times provide information contained on product labels or received from chemical companies.

Product assembly is coordinated by inter-island traders in Bima and Lombok. Many handle 1,000 tonnes or more of shallots per annum. These traders fund the activity of village collectors working on a small commission. They usually pay farmers upon collection of the crop. The quality of the crop will influence the prices paid.

Most shallots are marketed at harvest time. Some of the September-October harvest may be sold in November or December, but the volumes are small. Farmers and traders face liquidity constraints, have limited storage capacity, and want to avoid excessive exposure to price risks.

Bima and Sumbawa Besar supply Lombok, Bali, Java, Kalimantan, Sulawesi, Flores, Maluku, West Timor, and Papua. Inter-island traders often supply more than one location. Market diversification strengthens their bargaining position vis-à-vis buyers, makes it easier to sell produce of heterogeneous quality, provides opportunities for spatial arbitrage, and reduces exposure to price risks. Volumes and quality are agreed over the phone, but the exact price will be determined once a consignment reaches its destination, as buyers are reluctant to commit to a fixed price in a volatile market.

The bulk of the harvest is sold through traditional channels. Inter-island traders rely on wet market wholesalers with whom they have been doing business for a long time for most sales. Still, inter-island traders rarely receive advances from buyers, relying instead on their own funds, bank loans, and pawn shops for working capital.

Some of the shallots are sold to the processing industry. Processors provide an outlet for low-grade bulbs. These account for about 20-25% of the Bima harvest and are the most

difficult to sell. About 15 traders in Bima have contracts with Indo-Food. Most other traders have no interest in supplying the company because of low market prices and delayed payment procedures.

Small volumes are channelled to companies in Brebes and Cirebon involved in the export and import trade. Most of the bulbs for the export market come from Sumbawa Besar, which produces better-quality shallot than Bima. Exporters offer a premium, low-risk outlet for top-quality shallots. Arrangements between suppliers in NTB and companies linked to the export trade are in many ways similar to those in the traditional channel: transactions are coordinated informally, over the phone and by SMS, and buyer finance is either rare or non-existent. The main difference lies in the fact that prices are determined a few days before a consignment is sent rather than at the time of delivery. The relationship between inter-island traders and exporters is often based on a two-way product flow: during the June-August period traders in NTB sell local shallot; between January and June they buy imported bulbs for sale in Lombok, Sumbawa, and other eastern islands.

Problems and constraints

In Sampang, shallot farm households face a wide range of problems and constraints, including: poor access to water; an undeveloped local input retail network; poor knowledge of varieties and areas such as fertilisation, pest management, and disease control; high labour costs; and limited capital. Village traders also have limited working capital. Additionally, they may be missing profitable marketing opportunities because they have no contact with buyers outside Java.

In Bima, shallot farm households have limited availability of agricultural land, use planting material of variable quality, and have to cope with high incidence of pests and diseases. Smaller farmers face particularly acute financial constraints, with some having no option but to borrow from local moneylenders. Interestingly, the traders interviewed did not place much emphasis on their own capital constraints. Some complained about the regularity and delays in ferry services at Lombok and Bali.

Opportunities for pro-poor chain upgrading in Sampang

The research team identified two chain upgrading opportunities in Sampang that could be supported by AIPD-Rural: the adoption of more productive, higher-value varieties and the development of inter-island trade linkages.

Local experience shows that farmers in Sokobanah are receptive to new varieties. AIPD-Rural could consider working with some local traders to test various rain-tolerant cultivars and develop linkages between local traders and outside suppliers of quality planting material. Between 2,000 and 3,000 farm households could benefit from the mainstreaming of more productive varieties. A series of participatory, on-farm trials are proposed to determine whether cultivars such as Bima Curut, Katamocha, Bauji, Batu Iju, Biru Lancor, and Maja Cipanas perform better and are more profitable than Manjung. Selected traders should be responsible for managing the demo-trials with advisory input from the project.

Inter-island trade may offer opportunities for improving farm-gate prices and the profits from shallot trading. Diversion of supplies to other islands could also lead to an increase in prices in Surabaya, which currently absorbs most production from Sampang. At the moment, Sokobanah traders cannot explore inter-island trading opportunities because they lack the links to buyers outside Java. AIPD-Rural is in a position to lower the costs and risks

associated with the development of direct supplies to different islands through the implementation of market trials. Mobilisation of village traders for participation in trial shipments is likely to require some form of risk sharing. Possible trial locations include Banjarmasin in South Kalimantan, Kupang in West Timor, Denpasar in Bali, and Mataram in Lombok. If inter-island trade from Sampang develops successfully, AIPD-Rural could consider implementing a similar intervention in Pamekasan and Sumenep districts.

Successful development of inter-island trade would create demand for drying and storage capacity. AIPD-Rural could consider subsidising investments in drying yards and storage facilities by traders and exposing them to good drying and storage practices.

Opportunities for pro-poor chain upgrading in Bima

Possible interventions in Sumbawa Island include the promotion of true seed shallot, an upgrading of conventional seed bulb chains, and the development of storage. Improvements in seed chains can impact positively on farm productivity and profitability, while the development of storage activity has potential to improve farm profits through higher prices.

AIPD-Rural will be partnering with East West in Bima and a large shallot farm enterprise in Sumbawa Besar for the promotion of true seed shallots. Selected growers will be supported to establish nursery farms and provide technical advisory services to other farmers. In Bima, the focus will be on the Tuk Tuk variety. Maserati, a Dutch variety, will be promoted in Sumbawa Besar. It is still unclear, however, whether a significant number of farmers will shift from conventional bulbs to true seed shallots. They do not fit well with current crop rotations, so farmers will need to be rewarded with significant increases in yield. Tuk Tuk is also very sensitive to rain, and therefore a risky option, while some questions about its marketability remain. It is therefore recommended that AIPD-Rural considers adding a market research and linkage component to the intervention. Furthermore, regular monitoring of outcomes and impacts will be important, as business models and targeting strategies may need to be refined over time.

Given these caveats, it is recommended that AIPD-Rural considers implementing a parallel strategy aimed at upgrading the structure, conduct, and performance of conventional seed bulb chains. This could include the facilitation of linkages between traders in Bima and outside suppliers of certified or good quality Super-Philip seed bulbs, support to the development of certified producers of Super-Philip seed bulbs within Bima, or both.

At the moment, few farmers store part of their September-October harvest. Many cannot afford the investment and risk, while also facing liquidity constraints. AIPD-Rural could consider developing a co-funding scheme similar to the one proposed for Sampang in order to overcome farmers' reluctance to invest in storage. Inclusion of traders as beneficiaries should be conditional on their willingness to provide storage services to farmers and the development of mechanisms for addressing likely conflicts around weight and quality losses.

Research gaps

Past research on the shallot sub-sector in Indonesia has focused on varietal choices and pest management practices in Brebes and to a lesser extent Cirebon. No major studies on shallot production and marketing have been carried out in other key locations, such as Nganjuk, Probolinggo, Madura Island, Bima, and Sumbawa Besar.

A study such as the present one cannot provide complete answers to many critical questions. Understandably, many of the intervention opportunities identified have a strong action-research or learning component. The feasibility of true seed shallots and an upgrading of conventional seed bulb chains in Bima or Sumbawa Besar, of new conventional varieties in Sampang, and of trade from this district to markets outside Java can only be properly understood through carefully-designed pilot interventions involving local and other chain actors.

No interventions in the export chain are discussed, despite the strategic importance of export development in a context of stagnant price trends. This is because a proper understanding of the true potential for export growth and the type of interventions likely to address key bottlenecks or constraints is missing.