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POLICY BRIEF

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Challenges of the Calamansi Industry in Oriental Mindoro: Pests and Diseases Management

Background

Calamansi (*Citrofortunella microcarpa*) market-value cannot be set aside because it is one of the 21 major crops (together with palay, corn, coconut, sugarcane, banana, pineapple, coffee, mango, tobacco, abaca, peanut, mongo, cassava, sweet potato, tomato, garlic, onion, cabbage, eggplant, and rubber) that aggregately share more than 95 percent of the Philippine total crop production (Philippine Statistics Authority, 2020). Its potential as one of the country's agricultural commodities with high economic importance is very promising and financially rewarding. In the last five years, there was a substantial increase in the volume and value of exports in calamansi (Philippine Statistics Authority, 2020) which can be attributed to its multiple uses in fresh, dried, and juice forms (Pabuayon I. M., 2000).

The Philippine total calamansi production from April to June 2021 is 7.8 percent lower than the total production in the same months of 2020. From 14.51 thousand metric tons, it dropped to 13.38 thousand metric tons. Zamboanga peninsula ranked number one with 2.69 thousand metric tons of produced calamansi which is equivalent to 20.1 percent of the country's total production. MIMAROPA and Central Luzon (the seat region of Nueva Ecija) followed second and third with 15.5 percent and 14.9 percent share in the country's total production, respectively (Philippine Statistics Authority, 2021).

As the potential of calamansi in the world market soars to its new height, various challenges are being met. This policy brief, which focuses on pests and diseases of calamansi in Oriental Mindoro, has relevance to the problems in the calamansi industry in the Philippines as well. Oriental Mindoro is one of the major industry players in the country and has been experiencing a decline in calamansi production since 2008 (Amparo, et al., 2017).

The seesaw status of calamansi production in Oriental Mindoro is associated with various factors including pests and diseases though there is limited available published literature (mostly not peer-reviewed ones) on this matter. Though several problems have been identified in the past most of which are related to price, off-season production, poor planting materials, and infrastructural support systems (Amparo, et al., 2017), the problems being posed by pests and diseases require immediate and proper attention.

This policy brief is based on a study supported by the World Bank through the Department of Agriculture's Philippine Rural Development Project (PRDP). The study entitled "Study on Pest and Diseases of Calamansi: Paving Ways for the Sustainability of Calamansi in Oriental Mindoro" is a one-year project that aims to help accelerate the institutionalization of mechanism that will sustain the production of disease-free calamansi products in Oriental Mindoro and to help advance the province's reputation in the national calamansi market as prime producer and supplier of this product. Relevant activities in this study include field surveys, farmers' interviews, software development, greenhouse and scion grove establishment, and pest clinic via the web forum.

This policy brief focuses on the (1) status of calamansi pests and diseases infestation in Oriental Mindoro; (2) the capacity of the farmers to address the calamansi pests and diseases problem; and (3) policy recommendations to address the calamansi pests and diseases problem and protect the calamansi industry of Oriental Mindoro.

Findings

Status of calamansi pests and diseases infestation in Oriental Mindoro

The top occurring pests found in most calamansi farms in Oriental Mindoro are citrus rind borer (40.13% of sampled trees), followed by thrips, beetle, leaf miner, and mealybug. Citrus rind borer occurs the most in inspected trees indicating that the distribution of which is to a large extent or its impact on the trees has wider coverage compared to other insect pests found. Calamansi farms in Pola and Socorro have a high level of citrus rind borer infestation.

The most common calamansi diseases found in Oriental Mindoro include leafminer infection, citrus scab, huanglongbing (HLB)/citrus greening, Tristeza virus (CTV) symptoms, sooty mold, and leaf canker. Leafminer infection is prevalent in most of the farms surveyed. The other two diseases with at least 1,000 incidences are citrus scab and symptoms of HLB/CTV. Farms with a high level of leafminer infection are situated in Naujan, Victoria, and Gloria areas while citrus scab was found in Pola and Naujan.

The capacity of the farmers to address the calamansi pests and diseases problem

The Municipality of Victoria has the highest number of farmers considering its largest area devoted to calamansi farms. It is followed by Naujan, Pola, Roxas, Socorro, and Pinamalayan, respectively. Males who are mostly aged 50 years old and above and married have dominantly engaged in calamansi farming than females. This also means that calamansi farming is one of the preferred agricultural ventures of households as an additional source of income.

Most of the calamansi farmers from major calamansi-producing municipalities have acquired basic education only. The majority of calamansi farmers use their own money to support and finance their farm inputs and other operational expenses. Such money is earnings from the sales of their calamansi harvest.



The majority (about 72.84%) of the calamansi farmers in Oriental Mindoro have more than six years of experience in calamansi farming. Experience is the unique advantage of calamansi farmers, but they appeal for assistance when it comes to addressing the pests and diseases on their farms. This provides an avenue for better academe-farmers collaboration, especially in matters relevant to research, development, and extension with the inclusion of technology among other things.

Policy Recommendations

These recommendations were made based on the previous study mentioned in this policy brief.

1. Strengthening partnerships to transform calamansi production into a vital industry

Sustaining the calamansi industry vis-à-vis various risks including pests and diseases requires a proper support system. Calamansi is a highly important fruit crop that must also be given utmost priority like rice, corn, and banana. Calamansi compared to these crops is left far behind in terms of support.

Linking all stakeholders, policymakers, academic and R and D institutions, and industry players particularly calamansi farmers and business sectors, to connect knowledge, expertise, and resources will boost the calamansi industry. Addressing the agricultural challenges and their attached impacts is a very complex undertaking that requires the critical decisions of involved agencies or institutions. It could not be solved by policymakers or local stakeholders alone.

A Calamansi Commodity Technical Working Group (CCTWG) must be organized to conduct or facilitate the regular monitoring of the calamansi industry performance, market dynamics, and challenges. The same group will also lead or facilitate the implementation of programs or interventions that will address the problems of pests and diseases in calamansi through technological interventions and at the same time protect this industry from various threats (like imposition of strict quarantine protocols at various entry and exit points in the province). Lastly, the group must recommend the proper approach to assist the farmers while empowering them to develop and sustain themselves (Pabuayon, Catelo, Rola, & Paris, 2013)

2. Institutionalization of local insurance support system for calamansi farmers

Calamansi is a climate-resilient crop. Unlike rice, corn, or banana it could withstand strong typhoons, for instance. However, some seasons are not favorable for the calamansi crop. Extreme hot or rainy seasons may trigger a poor fruiting stage that will result in a low yield. Aside from the privileges being offered by the Philippine Crop Insurance Corporation (PCIP) as the implementing agency of the government's agricultural insurance program that currently operates under the supervision of, and as an attached agency to, the Department of Finance, by virtue of Executive Order 148 (September 14, 2021), there must be a local insurance support system for calamansi farmers in the local government units acting as a swift alternative to PCIP. This recommended system must function as immediate subsidiary financing and insurance institution for smallholder calamansi farmers who needs funding assistance or financial support (Amparo, et al., 2017).

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Challenges of the Calamansi Industry in Oriental Mindoro: Marketing Management and Postharvest Handling¹

Macario B. Masagca, Jr.², and Flordemae V. Ines³



Background

The inherent appealing physical attributes of calamansi (*Citrofortunella microcarpa*) from Oriental Mindoro are the same attracting features for its consumers in the Philippine local markets. According to consumers, the calamansi of Oriental Mindoro has a thicker rind, more robust taste, longer shelf-life, and resists weight loss (Department of Agriculture, 2012).

Calamansi is one of the easy-to-find condiments used almost in every popular dish prepared in the Philippines (Morte & Acero, 2017). It is a valuable agricultural product that is converted into various forms, raw, juiced, or processed (Pabuayon, 2000), and fruit that has various contributions to human health (Singh, Singh, Kaur, & Singh, 2020), (Husni, Yeni, & Dachriyanus, 2021), (Siner, Sevanesan, Ambomai, Wahab, & Lasem, 2020).

Notwithstanding the economic value of calamansi in broad facets, this product still lacks support in terms of marketing management and postharvest handling, which could redound to extra benefit in the form of additional revenue if given proper attention by the various concerned agencies. In addition, the need to provide new markets and agribusiness technologies for calamansi products, such as cooperatives, processors, commercial establishments, and restaurants, will help in value-adding, especially during peak season (Quijano, Quijano, & Diaz, 2021) is very apparent.

¹ This policy brief is based on the master's thesis entitled "**Profile, Status and Prospects of Calamansi Enterprises in Oriental Mindoro: Basis for Proposed Intervention of Stakeholder Agencies**" (Ines, 2018).

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This policy brief is based on the master's thesis of Flordemae V. Ines entitled **“Profile, Status, and Prospects of Calamansi Enterprises in Oriental Mindoro: Basis for Proposed Intervention of Stakeholder Agencies,”** a study that determined the profile, status, and prospects of calamansi enterprises in Oriental Mindoro that serve as the basis for intervention of stakeholder agencies. She works as Research Assistant at Mindoro State University (formerly MinSCAT) for the SEARCA project Upgrading the Calamansi Value Chain Towards Improving the Calamansi Industry of Oriental Mindoro while writing the thesis in 2018. Currently, she is a faculty member of the College of Business and Management.

This policy brief focuses on (1) the status of calamansi enterprises in terms of farm practices, post-harvest practices, volume of production, and distribution channel; (2) the extent of prospects of calamansi enterprises in terms of expansion, processing, and enterprise development; and (3) policy recommendations to address the gaps in marketing management and postharvest handling.

Findings

Status of calamansi enterprises in terms of (1) farm practices; (2) post-harvest practices; (3) volume of production, and (4) distribution channel

- (1) Most calamansi farmers of Oriental Mindoro preferred budded calamansi as planting materials using calamandarin as rootstock. Calamansi farms are rainfed-dependent, and irrigation is not introduced. Intercropping with banana, lanzones, and coconut with the spacing of four (4) meters apart is a usual practice. To increase the production yield, calamansi farmers practice pruning at least once a year, apply inorganic fertilizer most of the time, manually remove the weeds and control the infestation of pests and diseases through their traditional practices. Fruit pickers are hired during the harvest period and dispose of or sell their produce later on the same day;
- (2) Calamansi enterprises in Oriental Mindoro have a good post-harvest practice done manually without machines. These practices include cleaning, sorting, and grading to help ensure and maintain the buyers' preferred quality, improve its marketable appearance, reduce storage losses, prolong the shelf life, and command a higher price. In addition, they prefer to use “kaing” (a large woven bamboo basketlike container designed to contain calamansi and other citrus products for transport) to maintain bruise-free calamansi fruits;
- (3) During peak season in Oriental Mindoro, the average production volume of calamansi per hectare reaches 3,261.08 kilograms, while 761.82 kilograms per hectare during the lean season. In 2015, the average production volume reached 3,026.31 kilograms. A marked decrease of 850.58 kilograms per hectare in 2016 was noted as an after-effect of typhoon Nona and infestation of pests and diseases. In 2017, the average production of calamansi was 2,968.14 kilograms per hectare;
- (4) The majority of 68% of calamansi farmers in Oriental Mindoro are selling their produce to an assembler (not a middleman per se but a person who gathers or buys calamansi and transports the product to large markets outside the province) with the average price of Php 11.47 per kilo during peak season and Php 24.82 during the lean season. Assembler delivers the calamansi in Divisoria, Manila, and Tanauan, Batangas.



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Extent of prospects of calamansi enterprises in terms of expansion, processing, and enterprise development

Based on the study results, calamansi farmers can still expand their business prospects in the calamansi production area. There are bare lands in the province that are left uncultivated, which could be converted into calamansi farms. They may also explore value-adding techniques in their business prospects concerning processing ventures because there are plenty of opportunities for calamansi enterprise development.

Policy Recommendations

These recommendations were made based on the previous study mentioned in this policy brief.

1. Development of coordinated approaches to sustain calamansi enterprising

The non-farmer stakeholders in the calamansi industry, primarily composed of government agencies, should provide solid support to calamansi farmers and their households. Young members of these families should be encouraged to explore the enterprising opportunities in calamansi by first teaching them to appreciate and support it as a sustainable agricultural industry, given the business opportunities and avenues for expanding production areas. Youth should be encouraged to take Agriculture or Entrepreneurship courses to keep the tradition and fashion of farming families for agricultural ventures.

Calamansi farmers, on the other hand, are aware of their limited capacities. Therefore, they acknowledge the importance of various related interventions that are not limited to helping them access credit opportunities for ventures, technical training, and extension support (Amparo, et al., 2017) which some government agencies and the academe could provide.

Extension support through training and seminars should focus on avoiding wastage and post-harvest losses through calamansi processing and other value-adding techniques, especially during peak season.

2. Entrusting special support functions to government agencies

Concerned government agencies should assist in the production, processing, and marketing of calamansi. The Department of Agriculture (DA), through the provincial office and municipal offices, should refocus its concern on the local calamansi industry by conducting a regular review of the industry performance, redesigning programs and interventions that are not fitted to the current situation, and encourage farmers to utilize uncultivated lands for calamansi farming. The Department of Trade and Industry (DTI) should facilitate or recommend training based on current technology and market trends, particularly those that integrate good manufacturing practices (GMP). The academe or Mindoro State University (MinSU) as an academic and R, D, and E institution should advance in developing more calamansi



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byproducts and development of technology support. Regular conduct of capacity needs assessment to accelerate the calamansi value chain. Local government units (LGUs) should include calamansi industry support in their Annual Investment Plan (AIP) and provide or secure funds for its implementation.

3. Development of support mechanism for locally produced calamansi byproducts

The local government units of Oriental Mindoro should implement a strict policy on the consumption of locally produced calamansi byproducts – a *“tangkilikin ang sariling atin”* approach. Implementation of this will spur up local calamansi enterprising and development. This protectionist strategy needed to elevate and expand the calamansi value chain to a greater height.

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