



PHILIPPINE
ONION
INDUSTRY
ROADMAP 2021-2025





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**ONION
INDUSTRY**
ROADMAP 2021-2025



Department of Agriculture
**HIGH VALUE CROPS
DEVELOPMENT PROGRAM**

The Philippine Onion Industry Roadmap (2021-2025)

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ACRONYMS

ACPC	Agricultural Credit and Policy Council
AEC	ASEAN Economic Community
AFMA	Agriculture and Fisheries Modernization Act
AFTA	ASEAN Free Trade Area
AMAD	Agribusiness and Marketing Assistance Division
AMAS	Agribusiness and Marketing Assistance Service
APCO	Agricultural Program Coordinating Office
ASEAN	Association of Southeast Asian Nations
ATI	Agricultural Training Institute
AVRDC	The World Vegetable Center
BAFS	Bureau of Agriculture and Fisheries Standards
BAR	Bureau of Agricultural Research
BCA	Biological Control Agents
BPI	Bureau of Plant Industry
CLSU	Central Luzon State University
DA	Department of Agriculture
DAP	Development Academy of the Philippines
FAFFOGA	Federation of Aritao Farmers Onion, Garlic, and Ginger Growers Association, Inc.
FAO	Food and Agriculture Organization
FNRI	Food and Nutrition Research Institute
FPA	Fertilizer and Pesticide Authority
GAP	Good Agricultural Practice
GATT	General Agreement on Tariffs and Trade
HVC	High Value Crops

HVCDP	High Value Crops Development Program
HVCRC	High Value Crops and Rural Credit
IPB	Institute of Plant Breeding
KASAMNE	Katipunan at Samahan ng Magsisibuyas ng Nueva Ecija
LBP	Land Bank of the Philippines
LGU	Local Government Unit
NAFC	National Agricultural and Fishery Council
NCPC	National Crop Protection Center
NEDA	National Economic and Development Authority
NOAT	National Onion Action Team
PCAARRD	Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
PCAF	Philippine Council for Agriculture and Fisheries
PCIC	Philippine Crop Insurance Corporation
PDP	Philippine Development Plan
PhilMech	Philippine Center for Postharvest Development and Mechanization
PHTRC	Postharvest Horticulture Training and Research Center
PSA	Philippine Statistics Authority
RFO	Regional Field Office
SEA	Southeast Asia
SP	Selling Price
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UGAT	Union of Growers and Traders of Onions of the Philippines
UPLB	University of the Philippines Los Baños
VIEVA	Vegetables Importers, Exporters, and Vendor Association of the Philippines
WTO	World Trade Organization

MESSAGE

In the wake of unprecedented events and emerging crises, the Department of Agriculture (DA) launched the Plant, Plant, Plant Program to ensure that all Filipino families would have adequate supply of nutritious, healthy, accessible and affordable food to meet the demands of these challenging times.

As a testament of our firm resolve to triumph over this formidable foe, the DA was re-energized to act as one, but is committed at the same time to delivering results from various projects under the different major programs of the Department.

In light of this, I wish to congratulate all the principal actors who paved the way for the crafting and updating of High Value Crops Development Program (HVCDP) Roadmap. Through the completion and publication of this HVCDP Roadmap, we enshrine the spirit of excellence, collaboration, and resilience as inherent characteristics of our agricultural inheritance and legacy.

The progressive cross-cutting and continuing collaboration among all stakeholders in pursuit of attaining competitive advantage and relevant growth is an output designed into the pages of this roadmap.

I am proud and grateful that such a focused work on this commodity could be undertaken to ensure that a brighter future for the industry can reasonably be expected and attained because this blueprint already exists to assure it.

Marami pong salamat at Mabuhay!



WILLIAM D. DAR, Ph.D.
Secretary
Department of Agriculture



FOREWORD

The Covid-19 pandemic that ravaged life and livelihood in the country for almost 2 years now proved to be an existential threat to our way of life. On the positive side, it elicited generosity and a sense of community in all of us, and became a catalyst of change in many areas of our lives.

It is in these multi-faceted circumstances that the High Value Crops & Rural Credit (HVCRC) of the Department of Agriculture (DA), working collaboratively with various stakeholders and industry experts, undertook the needed updating of this industry roadmap as an integral part of the Secretary of the Department of Agriculture, Dr. William D. Dar's 18 transformative strategies, and formulated in alignment to his **One-DA to Transform Vision** of Philippine Agriculture, in order to achieve a Food Secure and Resilient Philippines, with empowered and prosperous farmers and fisher-folk. While this industry roadmap is the handiwork of many minds and multi-stakeholders, in its core it subscribes to the interdependent and inter-related approaches of **Industrialization, Farm Consolidation, Mechanization, and Professionalization** as pillars of its foundation.

This roadmap is envisioned to serve as a guide to all industry stakeholders for the realization of the targets set in it for 2021 – 2025. It is an embodiment of how the industry will achieve its goals of transformative growth through the value chain approach, as well as increase in quality and sustained yields and incomes. It is with pride and pleasure that I express my heartfelt gratitude to everyone both in the private sector and government, who unselfishly lent their time and talent for this timely and necessary endeavor. More than the lofty legacy and memorable milestone we shall leave behind because of this worthwhile work, it is more the comfort in the knowledge that the entire industry would have a clear pathway to follow in the years ahead to realize its vision that is truly more meaningful to remember us all by. Thank you.



EVELYN G. LAVIÑA

**Undersecretary for High Value Crops and Rural Credit
Department of Agriculture**



PREFACE

Recent developments have shown us that we can be self-sufficient with onion in the short term. Discussions within the Onion Industry Roadmap Development Team (OIRDT) indicate that, by the end of 2025, we may not have to import some of our requirements. In addition, stakeholders are optimistic that, with enough investments we can corner a larger chunk of the export market for shallots.

I am confident that the stakeholders will continue to contribute to the success of the onion industry. Much of what we will achieve in the coming years will depend on synergy involving farmer organizations, cooperatives, research bodies, the academe, the private sector, policy makers and development workers in and out of the government.

As the Team Leader of the Roadmap Development Team (RDT) for onion, I sincerely hope that the industry roadmap we had completed, can guide us in the coming years. Consider it a living document that we will revisit from time to time as we integrate new realities that can affect the onion industry.



ENGR. CESARIO L. TABAGO., Sapang Multipurpose Cooperative
Team Leader
Onion Industry Roadmap Development Team





EXECUTIVE SUMMARY

The Onion Industry Roadmap is part of the High Value Crops (HVC) Subsector Roadmap which outlines how the Philippines can address three major challenges: achieving self-sufficiency while lifting farmers from poverty, preparing for the advent of the ASEAN Economic Community (AEC), and adapting to climate change.

This Onion Industry Roadmap seeks to address the following: (a) Where are we? (b) Where do we want to go? and (c) How do we get there? It provides a situational assessment of the industry and its competitiveness as well as an analysis of the supply and value chain, market trends and prospects, goals, and objectives. These questions flesh out the shared vision and targets and strategic recommendations to achieve the set goals and targets.

This document was built using roadmapping exercises and validation through a series of multi-stakeholder consultations conducted online as well as consultations with the national agencies. The draft roadmap was presented to representatives of industry groups, key officials of concerned national agencies, and DA-Regional HVCDP Coordinators last September 2021 to socialize the programs and solicit further inputs that would enhance the effectiveness of the program implementation.

Where are we?

The Philippines produces two types of onion: bulb onion (red and yellow onions) and shallot (native onion). In 2020, the total onion production is **229,539** metric tons (mt). Of this, bulb onions have a volume of 190, 975 mt while shallots reached 38, 564 mt.

The vast majority of about 35,000 farmers grow onion in about **18,391 hectares (ha)** or an average of **0.5 hectares** per family, in a few regions of the country. With such area, farmers mostly rely on family labor with about **PHP 5,100** per man-day return to labor for bulb onions and **PHP 2,100** per man-day for shallots. In comparison with other commodity producers, the onion farmers are more adaptive to modern practices recommended by the government and their financiers. The practices they are currently applying in the field are the recommended package of technology with some deviations depending on their situation and market preference.

Based on PSA data for 2020, the country's major producing regions are **Ilocos, Cagayan Valley, Central Luzon,** and **MIMAROPA**. By type, bulb onions comprise 79% of the total area (14,453 ha) while shallots take up 21% (3,938 ha). From 2011 to 2020, the average annual growth in production is **10.72%** (128,837 mt to 229,539 mt) while area planted has an average annual growth of **4.91%** (14,641 to 18,391 ha).

From 2011 to 2019, onion production in the Philippines has shown improvements but not quite as much as Indonesia having almost doubled their harvest volume and area within the timeframe considered for this roadmap. In terms of actual yield, however, we are at par. For 2019, despite having the lowest total production and area harvested among onion-producing ASEAN countries, Thailand's yield values are impressive at 26.23 mt per ha followed by Myanmar (14.46 mt/ha), Philippines (11.13 mt/ha), Indonesia (9.93 mt/ha), and lastly, Vietnam (4.02 mt/ha).

For the past 10 years, domestic onion producer prices followed world price movements. However, it is noted that prices in the Philippines join the higher values in the spectrum. Prices offered by top onion producing countries are cheaper at US\$ 0.11/kg to US\$ 0.43/kg while we have an average price of US\$ 0.79/kg in 2019.

Farm gate price has been on an increasing trend with an annual average growth rate of 2% to 7% from 2015 to 2019. PSA reported a Return on Investment (ROI) of 147% for shallot and 197% for red onion in 2019. Farmer's income after deducting the cost of production from the farm gate price is PHP 40.37 and a high Return to Cost (RTC) of 292.04%. Onion gets to the consumer at a high price due to several layers from the farm to the retail stores that add to the inefficiencies. The red bulb onion gets to the consumer at an average price of PHP 120.00/kg even the farm gate price is PHP 54.20/kg.

Where do we want to go?

The roadmapping exercises and validation workshops conducted by stakeholders have set the vision, mission, and goals for the Philippine onion industry.

VISION

A modern, competitive, and profitable onion industry providing high quality, safe, affordable, and sustainable supply of onion to meet increasing domestic and export demand

MISSION

- Ensure the production of and access to high quality, safe, and affordable onion throughout the year
- Provide quality support services to improve the lives of onion growers and enhance their global competitiveness
- Provide responsive regulatory and crop protection services
- Implement proactive R&D programs in support of stakeholders especially small producers
- Support farmer – empowered marketing systems
- Enhance climate resiliency of the onion sector
- Strengthen the gender-responsiveness of the onion industry

Corresponding goals accompany each mission which include the following: increase total production, increase production of yellow onion and shallots by 10% per year for targeted niche market, ensure food safety, enhance off-season production and improve storage facilities, enhance seed systems, enhance post-production and logistics facilities, strengthen marketing linkages/systems and support services, minimize production cost and postharvest losses, strengthen analytical service laboratories, enhance pest and disease forecasting capability, ensure balanced supply, develop more varieties, develop crop protection systems and decision-support tools, improve processing and value-adding systems, organize the production sector, protect onion growers from losses due to disasters, pests, diseases, and other climate impacts, and ensure equitable access to resources and opportunities.

How do we get there?

To achieve self-sufficiency, the Philippines needs to increase production from 229,539 mt to **279,270 mt** in five years by increasing area planted and productivity. This may be achieved by sustaining initial efforts in enabling producers' groups to export quality and competitive onions and shallot. It would entail advocating and enforcing stricter compliance with recommended technology packages through prudent use of inputs, mechanization of planting, and gradual shift to bigger and higher yielding varieties appropriate to local conditions. Expansion will start with encouraging existing growers to increase their cropped areas. This will be supplemented with new target areas, especially those with a different harvest period to support year-round supply. Irrigation facilities will help increase potential areas for onion.

Interventions will be through the farmer clusters. The organizations of small producers will be strengthened and federated for group procurement and marketing up to export, for efficient delivery of support services, and for greater efficiency in the operations. The trading activities will be streamlined by eliminating unnecessary layers for exports and minimizing marketing cost. The production support will be in the form of seeds for shallots and rain shelters for off-season and early seedling production in Mindanao. There should also be a machinery pool in key areas for planting, land preparation, harvesting,

and sorting/packaging to ensure timely planting and lower production costs. The cold storage facilities will be matched with the production targets and additional facilities will be constructed as needed.

Most of the traditional growing areas of onion are degraded due to the excessive use of inorganic fertilizers. The support for organic fertilizer production and biological control agent (BCA) production plant will help rejuvenate the production areas and minimize the use of hazardous pesticides. Growers willing to go organic will be assisted through trainings, organic certification and marketing as provided in the law RA 10068 or the Organic Act of 2021 amended as RA 11511 in July 2020.

Efforts will be exerted to ensure incremental increases in allocations. Any increases won through support from both the DBM and the legislative branch will go to a) capacitating producers and their organizations; b) production support services such as seed support systems, machineries and equipment; irrigation, rain shelters, input subsidies; c) postharvest support (e.g., hangers and cold storage); d) common infrastructure; and e) systemic intervention to strengthen regulatory services and R&D activities.

The program will enable increase supply of cheaper and affordable onions for the local consumers. Within the first three years, production is aimed to reach 258,200 mt. Further increase of up to 279,270 mt for 2025 is projected.

INTRODUCTION

Rationale

Recent developments indicate that the onion industry can achieve self-sufficiency within the short-term. With greater focus by the national government and the cooperation of the private sector, this project can be pursued to stabilize the price of onion, improve the lot of onion farmers and benefit private sector stakeholders.

In varying degrees, stakeholders are committed to contribute to building a more dynamic onion industry. This roadmap will serve as a guide in giving direction to related efforts, more specifically in redirecting investments to achieving self-sufficiency and enhancing the potential of the industry in terms of exports.

This **Onion Industry Roadmap** is part of the **High Value Crops (HVC) Subsector Roadmap**. The latter outlines how the Philippines can address three major challenges, to wit:

The Department of Agriculture (DA) is complying with the guidance of crafting a roadmap and has initiated activities among its agencies. This document follows the DA Memorandum Order No. 37, Series of 2021 which is ultimately anchored to RA 8435 Agriculture and Fisheries Modernization Act of 1997, NEDA's Ambisyon Natin 2040, the Philippine Development Plan, and the United Nation's Sustainable Development Goals.

This **Onion Industry Roadmap** is part of the **High Value Crops (HVC) Subsector Roadmap**. The latter outlines how the Philippines can address three major challenges, to wit:

- achieving self - sufficiency while lifting farmers from poverty,
- preparing for the ASEAN Economic Community (AEC), and
- adapting to climate change.

The purpose of the onion industry roadmap is to forge strategic partnerships with industry stakeholders, particularly among DA, other government agencies and the private sector, in achieving the industry's vision, mission, and goals by outlining the (a) strategies for the short-, medium-, and long-term growth of the industry, (b) required interventions from government to reach the industry's goals, and c) investment guide for the private sector. It will serve as a blueprint for onion development developed jointly and therefore co-owned by the government and the private sector. It will cover different varieties of onion, including their processed forms. The private sector will take the lead in setting targets that will guide investments in the short-, medium-, and long-term.

The Onion Industry Roadmap shall be guided by the following:

1. The New Thinking for Agriculture to level up the Philippine agriculture and fisheries, to wit:
 - 1.1. Modernization must continue. Support for increased use of science-based farming and good agriculture practices and promotion of better access to technology in the production, processing and handling of agriculture and fisheries produce;
 - 1.2. Industrialization of agriculture is key. Adoption of technological innovation to promote entrepreneurship and enhance financial management of farm organizations and transfer them into viable and globally competitive agripreneurs;
 - 1.3. Promotion of exports is a necessity. Development of exports for more segments and improving access to domestic and foreign markets to raise the level of competitiveness of agriculture and fisheries;
 - 1.4. Consolidation of small- and medium-sized farms. Encouraging farmers and fisherfolk to combine/consolidate/cluster and synchronize farming and fishing activities in order to realize economies of scale through the promotion of big brother-small brother partnerships and organized community enterprises;
 - 1.5. Infrastructure development would be critical. Support for the development of infrastructure and common service facilities that will redound to cost savings and higher margins for the farmers;

- 1.6. Higher budget and investment for Philippine agriculture. Work for higher budgetary support for food security and enhanced support to the development of more farm-based enterprises as well as community projects for the fisherfolk;
 - 1.7. Legislative support is needed. Continue to seek legislative support at the national and local levels and engage/partner with policymakers in sustaining reforms; and
 - 1.8. Roadmap development is paramount. Provide a more consistent and coherent basis for the Department's policy and program support, long term plans and strategies for the agriculture and fisheries sector.
2. The approved Food Security Framework has a vision of a food secure and resilient Philippines with empowered and prosperous farmers and fisherfolk. The Department shall now focus on enabling the sector to continuously recover socially and economically and be resilient under the "new normal." This state shall be attained if food is available, accessible and affordable, sustainable, safe, and nutritious as well as food prices are stable.
 3. Pursuing the "One DA" approach - a holistic approach to agriculture and fisheries transformation - that highlights the following key strategies:
 - 3.1. Inclusive approach at farm-level;
 - 3.2. Implementation of Province-led Agriculture and Fisheries Extension System;
 - 3.3. Establishment of Agri-Industrial Business Hubs;
 - 3.4. Consolidation and mapping out of infrastructure investments;
 - 3.5. Strengthen postharvest, processing logistics, and marketing support;
 - 3.6. Upscaling of Digital Agriculture;
 - 3.7. Intensify implementation of climate change adaptation and mitigation measures;
 - 3.8. Mobilize and empower partners to attain scale in implementation and more significant outcomes;
 - 3.9. Strategic communication support.
 4. Private Sector Participation and Ownership. To promote ownership and commitment, concerned DA units shall ensure that the stakeholders from the private sector are

actively involved in all the process of review and updating including the approval of the draft roadmap.

5. Agriculture and Fisheries Modernization Act of 1997
6. Philippine Development Plan (High Value Crops Development Program)

Objectives

By updating the Onion Industry Roadmap, the onion industry is continuously supported towards competitiveness and modernization by reviewing current economic performance and milestones.

In detail, the objectives of this roadmap are to:

- a. a. Provide information about the current industry situation and prospects
- b. b. Analyze and improve the value chain
- c. c. Set the directions and priorities through multi-stakeholder consultations and decision-making
- d. d. Recommend strategies and lay down the required investments to meet increasing domestic and export demand
- e. e. Anchor the policies and programs to the food security framework following the “One DA” and “One Nation” approach with the vision of a food secure and resilient Philippines with empowered and prosperous farmers and fisherfolk



INDUSTRY SITUATION AND OUTLOOK

As a commodity, onions have unique properties that influence their production, handling, and trade. Onions are short-season crops. After harvest, the bulbs are air-dried to extend shelf-life. In temperate countries, they are kept in cellars. In arid regions, they are hung to dry. But in the humid tropics, they need well-ventilated conditions for short-term storage and refrigeration for long-term storage.

Onions are relatively high value but require simple packaging. Commonly used are string bags or wide mesh sacks that can be shipped over long distances in bulk. They have a good shelf life and need no refrigeration if for household consumption. Fresh onion bulbs can last at most six months under refrigerated storage.

Beyond that, sprouting starts and the desired culinary qualities are lost. Hence, if fresh onions are needed in daily food preparation, even the top producing countries import part of their seasonal requirements from other parts of the globe with a different planting season and harvest period as influenced by latitude and elevation.

The popularly traded onions in the Philippines are the yellow bulb onion (e.g., Yellow Granex), red bulb onion (e.g., Red Creole), and shallots. Bulb onion belongs to *Allium cepa* while shallot is classified under *Allium cepa* var. *aggregatum*. Most Asian countries prefer the more pungent shallots over the bulb onions.

Just like garlic, onion has many medicinal properties in addition to its flavoring use. Onion is rich in thiosulfinates, sulfides, sulfoxides, and other odoriferous sulfur compounds. The cysteine sulfoxides are primarily responsible for the onion flavor and produce the eye-irritating compounds that induce lacrimation. Thiosulfinates exhibit antimicrobial properties. Onion is effective against many bacteria including *Bacillus subtilis*, *Salmonella*, and *E. coli*. However, onion is not as potent as garlic since the sulfur compounds in onion are only about one-quarter the level found in garlic.

Structure

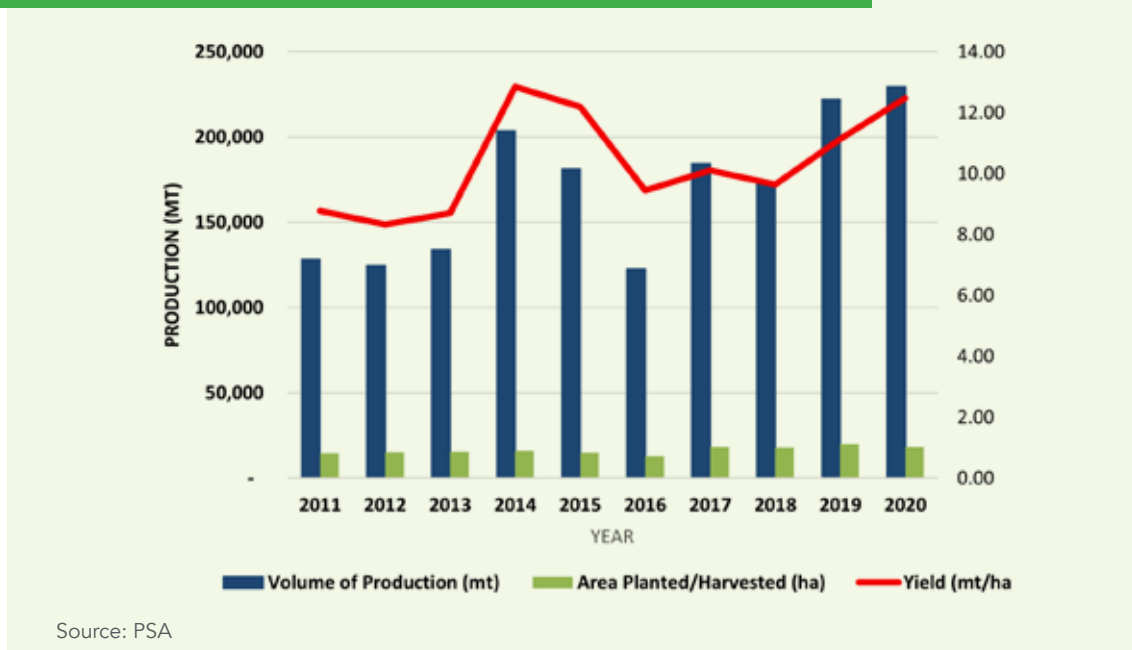
In 2020, about 35,000 farmers grew onion in the country. Few entrepreneurial onion farmers rent and cultivate several hectares of onion. As an internationally traded commodity, the development and performance of the local onion industry are influenced by the broader global community. As an annual crop, the industry can respond to market signals within a year.

Industry Performance and Outlook

Volume of Production, Area, and Yield

The onion production and area planted in the Philippines have been erratic. On the average, annual growth in production from 2011-2020 is 10.72% while annual growth in area planted is 4.91%. As for the steep falls observed, crop stands were adversely affected by Typhoon Lando and Typhoon Nona in 2015. Aside from damage caused by bulb rot disease and weevil infestations, an outbreak of onion armyworm in Nueva Ecija, Pangasinan, and Tarlac occurred in 2016.

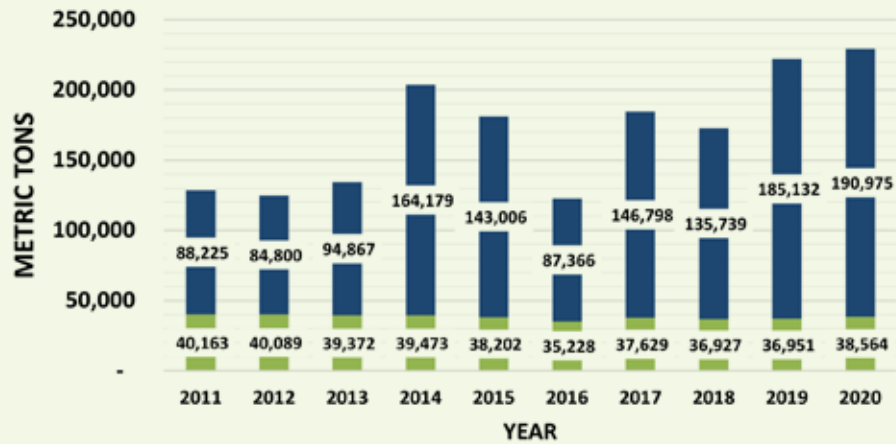
FIGURE 1. TOTAL VOLUME OF PRODUCTION, AREA PLANTED, AND YIELD (2011-2020)



Onion yield per hectare was able to bounce back starting 2017 and showed an upward trend in general. Bulb Onion production increased 14.37% annually on the average but shallots suffered a decrease of about -0.37% every year.

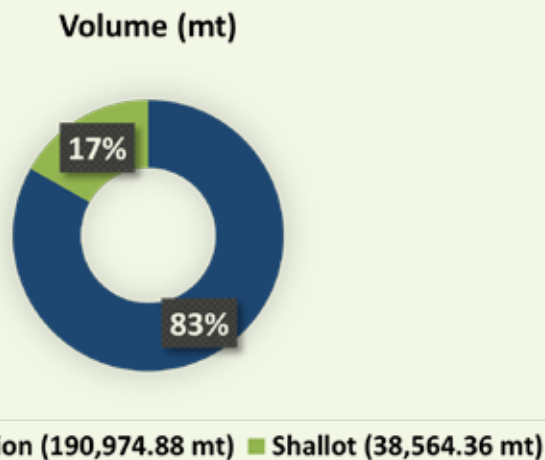
Based on Figure 2, total onion production in 2020 is 229,539 mt. Red and Yellow Onion comprised 83% (190,974.88 mt) while 17% were shallots (38,564.36 mt) as shown in Figure 3. The total area planted to Red and Yellow Onion in 2020 is 14,453.40 hectares (79%) while 3,937.97 hectares (21%) was planted to shallots (Figure 4)

FIGURE 2. VOLUME OF PRODUCTION BY TYPE (2011-2020)



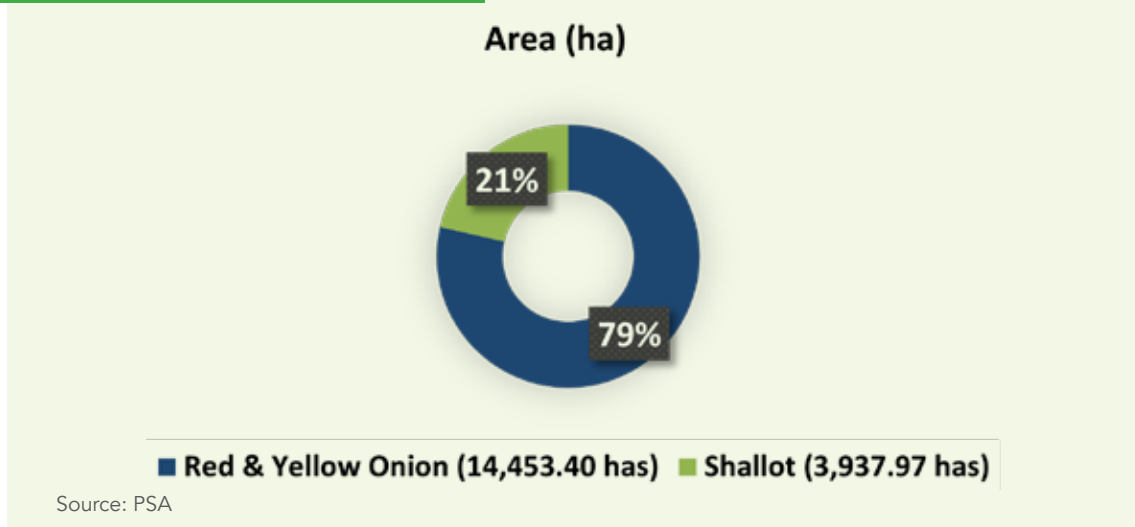
Source: PSA

FIGURE 3. SHARE ON VOLUME BY TYPE (2020)



Source: PSA

FIGURE 4. SHARE ON AREA BY TYPE (2020)



The biggest onion producing regions in the country have usually been Central Luzon, Ilocos Region, MIMAROPA, and Cagayan Valley both in terms of volume and total area planted to onion (Figure 5 and 6). About 64% of the country's total production for 2020 was from Central Luzon alone while the remaining came from Ilocos Region, MIMAROPA, Cagayan Valley, and other regions (432 mt).

FIGURE 5. TOP PRODUCING REGIONS BY VOLUME (2020)

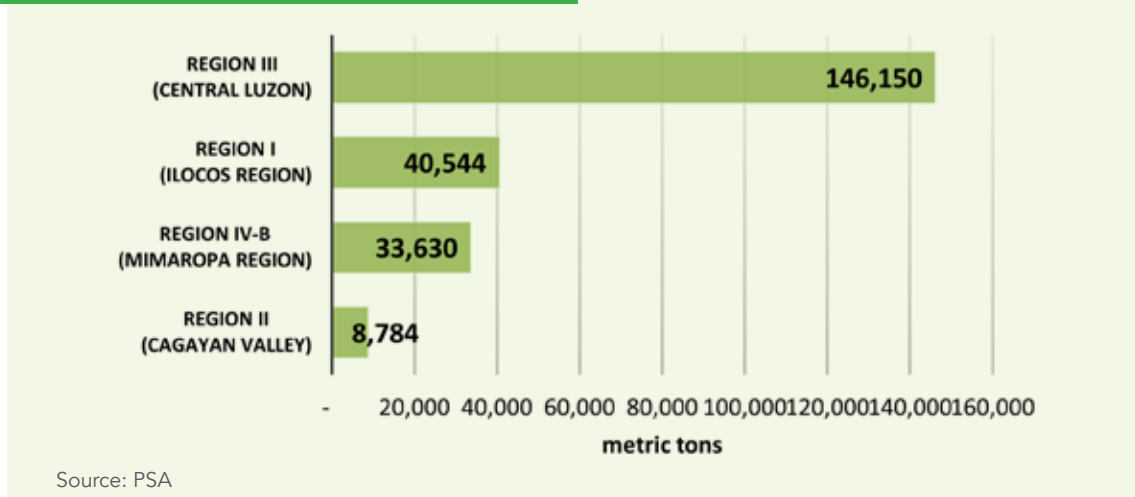
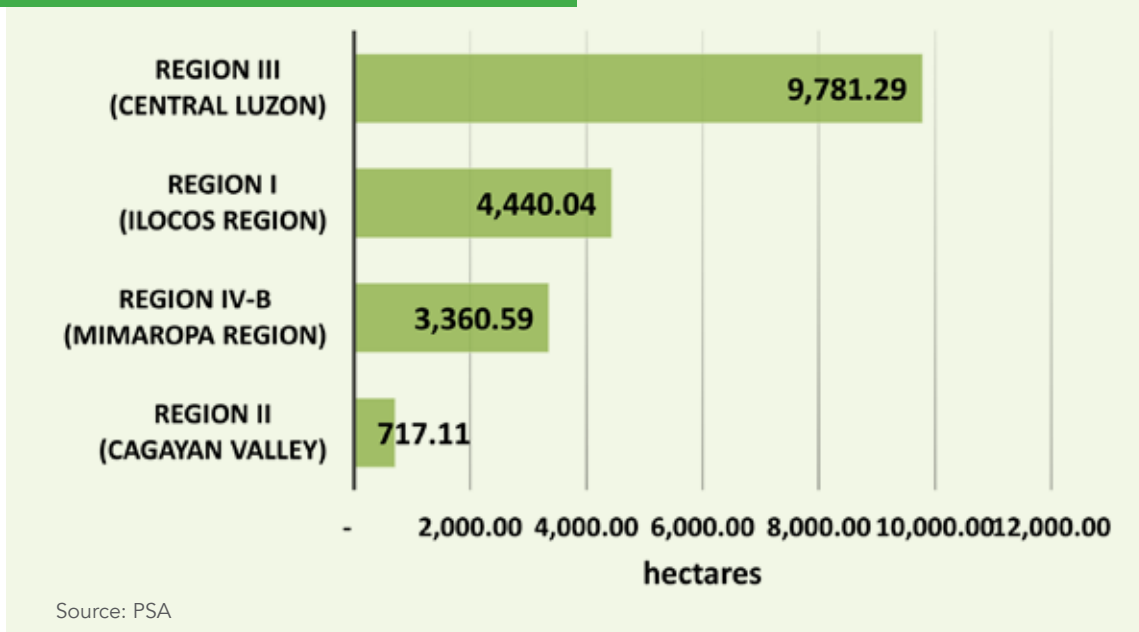
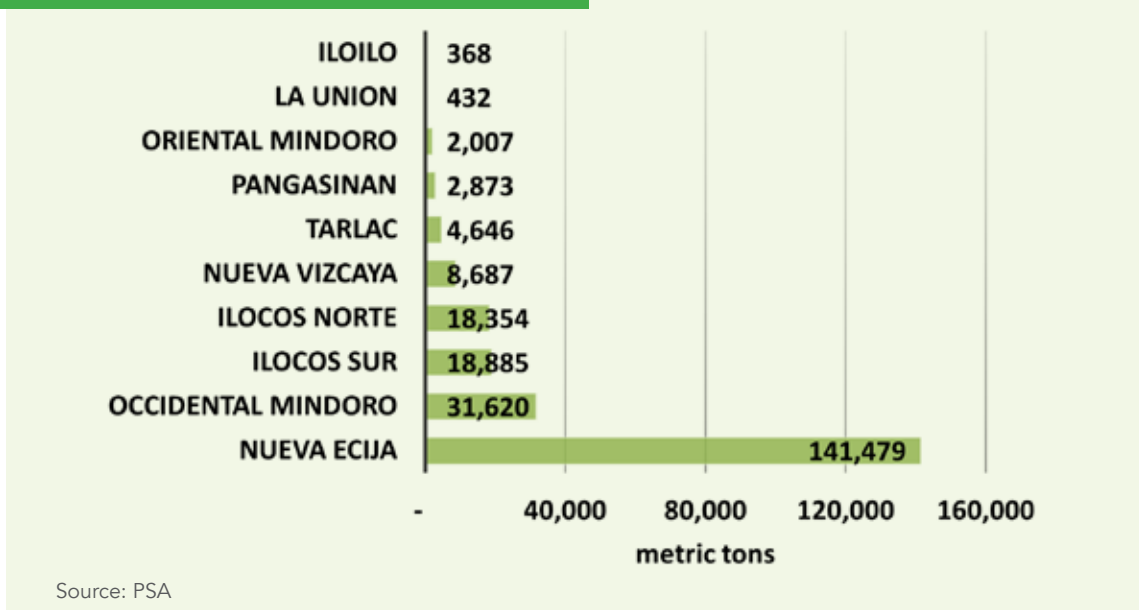


FIGURE 6. TOP PRODUCING REGIONS BY AREA (2020)



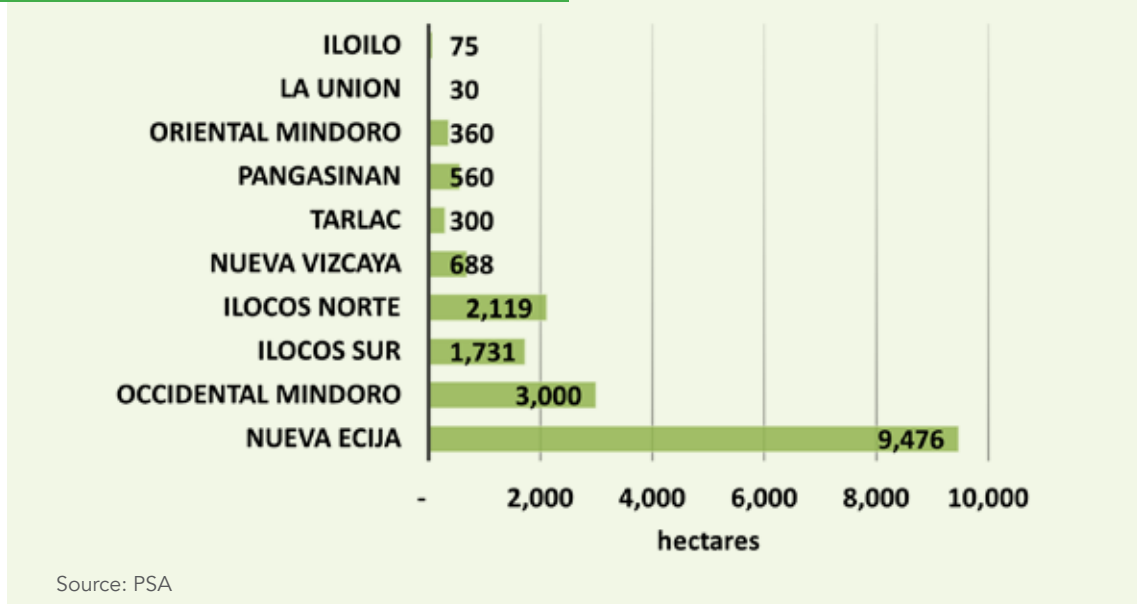
The top provincial onion producers for 2020 were Nueva Ecija (96.8% of Central Luzon’s production), Occidental Mindoro, Ilocos Sur, Ilocos Norte, Nueva Vizcaya, Tarlac, Pangasinan, Oriental Mindoro, La Union, and Iloilo (Figure 7).

FIGURE 7. TOP PRODUCING PROVINCES BY VOLUME (2020)



In 2020, Nueva Ecija had the highest productivity at 14.9 mt/ha followed by Occidental Mindoro at 10.54 mt/ha. Production was not maximized in 2020 as Central Luzon and Ilocos Regions reported Armyworms and Anthracnose to be the major reason that hampered the growth of onions. Central Luzon alone reported a loss of about 10% due to the abovementioned pest and disease. All these provinces also have the largest areas planted to onion (Figure 8).

FIGURE 8. TOP PRODUCING PROVINCES BY AREA (2020)



Consumption

The Survey of Food Demand (SFD) periodically conducted by the PSA showed that onion consumption in the country was 2.34 kg/year (Table 1). Cagayan Valley and Central Luzon had the highest per capita consumption in 2015 at 3.40kg and 3.24kg, respectively. This is followed by CAR (2.91kg) and CALABARZON (2.84 kg). All regions from Mindanao (except Davao Region and SOCCSKSARGEN) and Eastern and Central Visayas were the least onion consumers with per capita consumption of less than 2.00 kg.

TABLE 1. ONION: REGIONAL CONSUMPTION (KG/CAPITA) BASED ON PSA'S SFD

	1999-2000	2008-2009	2012	2015-2016
PHILIPPINES	1.92	1.92	2.37	2.34
National Capital Region (NCR)	2.03	2.34	3.00	2.75
Cordillera Administrative Region (CAR)	2.08	1.77	2.44	2.91
Region I (Ilocos Region)	1.77	1.56	2.21	2.45
Region II (Cagayan Valley)	2.24	2.44	3.22	3.40
Region III (Central Luzon)	2.13	2.55	3.22	3.24
Region IV-A (CALABARZON)	1.92	2.24	2.97	2.84
Region IV-B MIMAROPA Region	1.82	1.82	1.96	2.26
Region V (Bicol Region)	1.92	2.03	2.28	2.52
Region VI (Western Visayas)	1.66	1.51	2.14	2.64
Region VII (Central Visayas)	1.51	1.20	1.50	1.95
Region VIII (Eastern Visayas)	1.09	1.30	1.42	1.77
Region IX (Zamboanga Peninsula)	1.14	1.61	1.41	1.53
Region X (Northern Mindanao)	1.61	1.46	1.63	1.67
Region XI (Davao Region)	1.82	1.61	1.91	2.17
Region XII (SOCCSKSARGEN)	2.03	2.08	2.49	2.20
Region XIII (Caraga)	1.46	1.51	1.51	1.83
BARMM	1.40	1.35	1.56	1.60

Although bulk of the production and areas planted for onions are mainly situated in Luzon, the possibilities of growing this commodity in the Visayas and Mindanao regions are now being considered and acted upon to augment the production as the local and international demand is expected to increase in the coming years.

Trade (Import and Export)

The country mainly exports shallots (Table 2). The trend has been declining as neighboring countries such as Indonesia and Malaysia became competitors. Yellow onion produced in the country used to reach Japan. However, Thailand has displaced the Philippines in the export to Japan when the country's export prices exceeded theirs.

From 2011-2020, highest was in 2011 at 14,010 mt valued at US\$ 6.541 M or 10.91% of local production, but there is an observed steady decrease until 2020. Based on the trade matrix data from PSA in 2020, the primary destination of the country's export is Singapore.

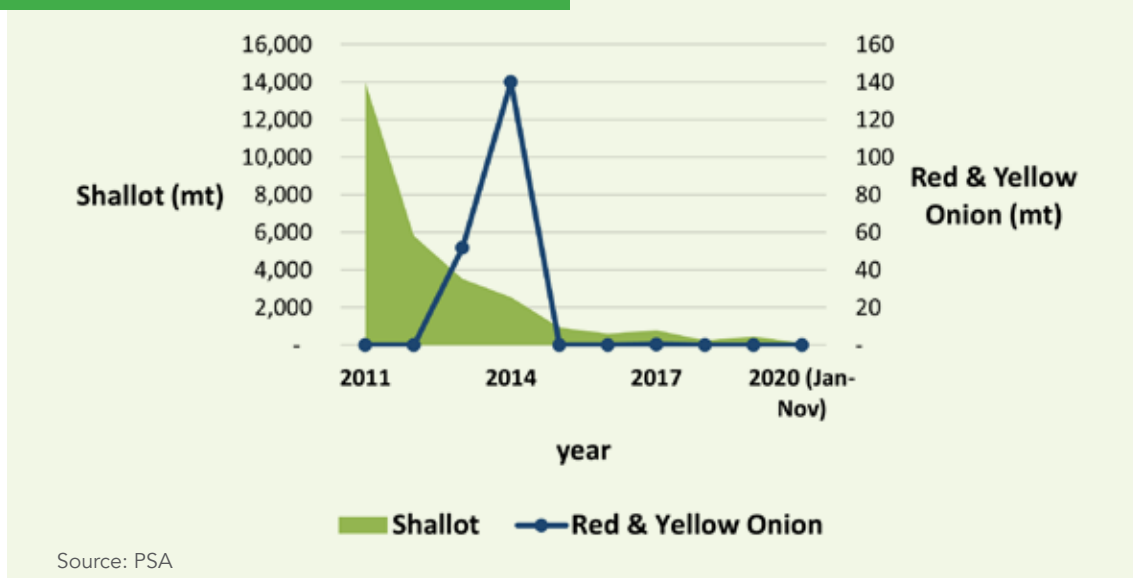
TABLE 2. EXPORTATION OF SHALLOT (2011 - 2020)

Year	Volume (mt)	Value (US\$)	Destination
2011	14,010	6,541,524	Indonesia, Malaysia, Singapore, and USA
2012	5,825	2,641,878	Indonesia, Malaysia, Singapore, Hongkong, and Korea
2013	3,519	1,542,431	Indonesia, Malaysia, Singapore, Thailand, and USA
2014	2,551	1,405,719	Indonesia, Malaysia, and Singapore
2015	922	608,743	Indonesia, Malaysia, and Singapore
2016	601	535,543	Indonesia, Malaysia, Singapore, Taiwan, and Vietnam
2017	776	732,596	Singapore, Malaysia, Vietnam
2018	252	325,855	Singapore and Malaysia
2019	459	574,644	Singapore and Malaysia
2020 (Jan-Nov)	121	175,275	Singapore

TABLE 3. EXPORTATION OF BULB ONION (2011 - 2020)

Year	Volume (mt)	Value (US\$)	Country of Destination
2011	-	-	
2012	-	-	
2013	52	23,005	Japan
2014	140	47,074	Malaysia
2015	-	-	
2016	-	-	
2017	0.41	498	USA and Japan
2018	0.01	45	Japan
2019	0.03	150	Qatar
2020 (Jan-Nov)	-	-	

FIGURE 9. VOLUME OF ONION EXPORTS (2011-2020)



Like other neighboring countries, we are not discounted from importing primary commodities including onions. A fluctuating trend on imports is shown in Figure 9. A higher volume of bulb onions is imported than of shallots (Table 4 and 5). One of the main reasons for importation are the tropical cyclones that pass through the archipelago within each year that damage the produce. Moreover, pests and diseases and damage the crop contribute to the decrease in the supply of good quality onions and shallots.

TABLE 4. IMPORTATION OF BULB ONION (2011 - 2020)

Year	Volume (mt)	Value (US\$)	Country of Destination
2011	4,636	625,752	China, Netherlands, UK, Ireland
2012	18,308	2,264,943	China, Hong Kong, Germany, India, USA
2013	8,306	1,097,247	China, India, Netherlands, Belgium, Ireland, UK
2014	8,897	1,569,340	China, Netherlands
2015	34,220	5,827,624	China, Netherlands, USA, India
2016	135,296	22,249,595	China, Netherlands, India
2017	34,084	6,148,690	China, Netherlands, India
2018	108,053	22,245,929	China, Netherlands, India, Switzerland, Malaysia
2019	23,590	5,056,567	China, Netherlands, India, France, Malaysia
2020 (Jan-Nov)	59,835	12,193,940	China, Netherlands, India, Switzerland, Hong Kong

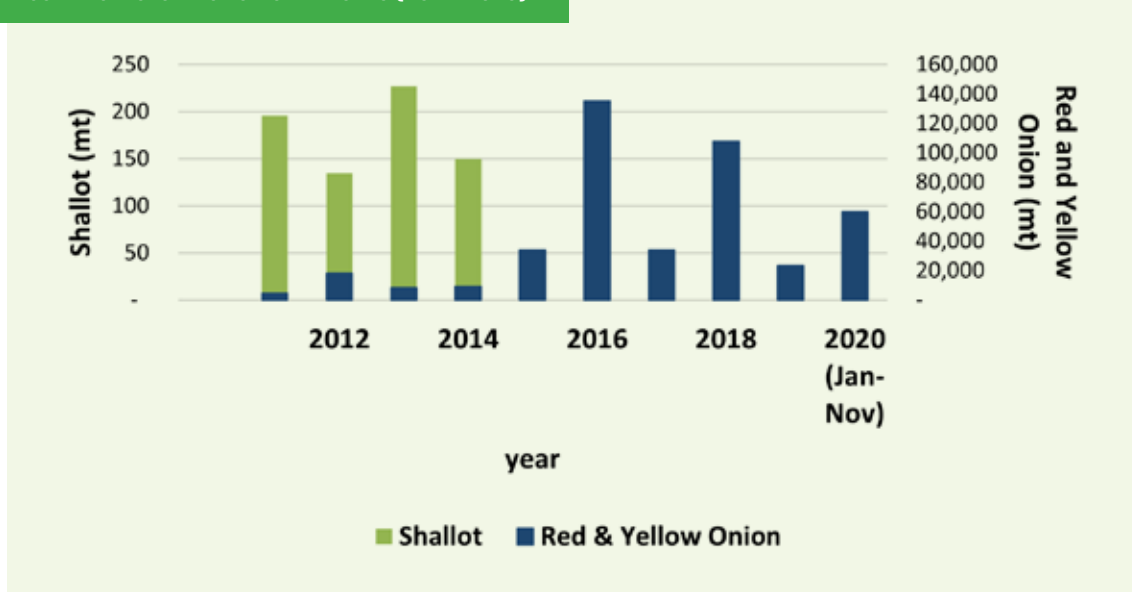
Source: PSA

TABLE 5. IMPORTATION OF SHALLOT (2011 - 2020)

Year	Volume (mt)	Value (US\$)	Destination
2011	196	78,969	Indonesia
2012	135	16,245	China, Netherlands
2013	227	44,995	Netherlands, China, Indonesia, Canada
2014	150	46,466	China
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	28	7,956	Indonesia
2019	-	-	-
2020 (Jan-Nov)	-	-	-

Source: PSA

FIGURE 10. VOLUME OF ONION IMPORTS (2011-2020)



Prices

The 10-year domestic prices of onion and shallots are shown in Figures 11-13. Farmgate prices remain at a close difference for the past 10 years. This can also be observed for retail prices but only until 2019. It is noticeable that there are improvements for 2020.

FIGURE 11. PRICE TRENDS OF RED CREOLE, 2011-2020

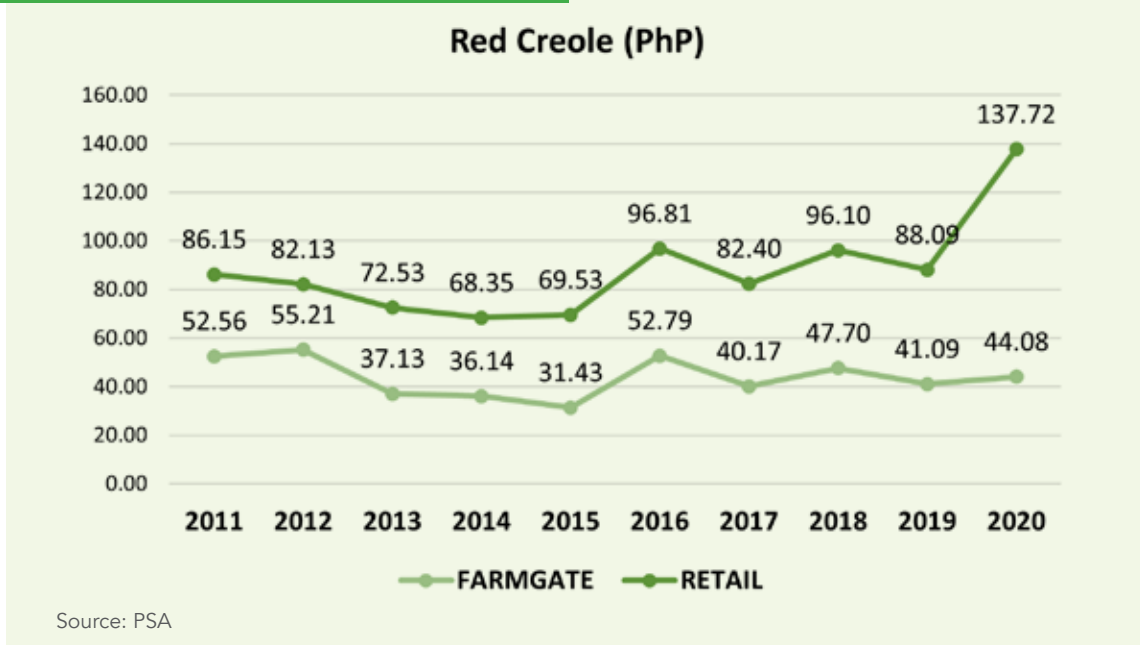


FIGURE 12. PRICE TRENDS OF YELLOW GRANEX, 2011-2020

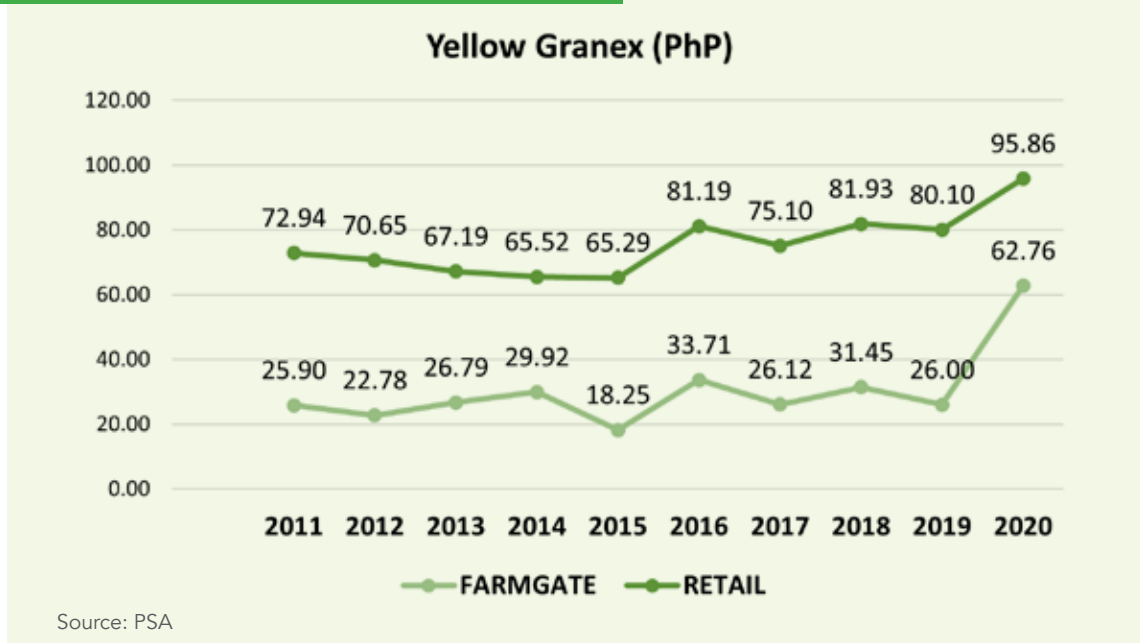
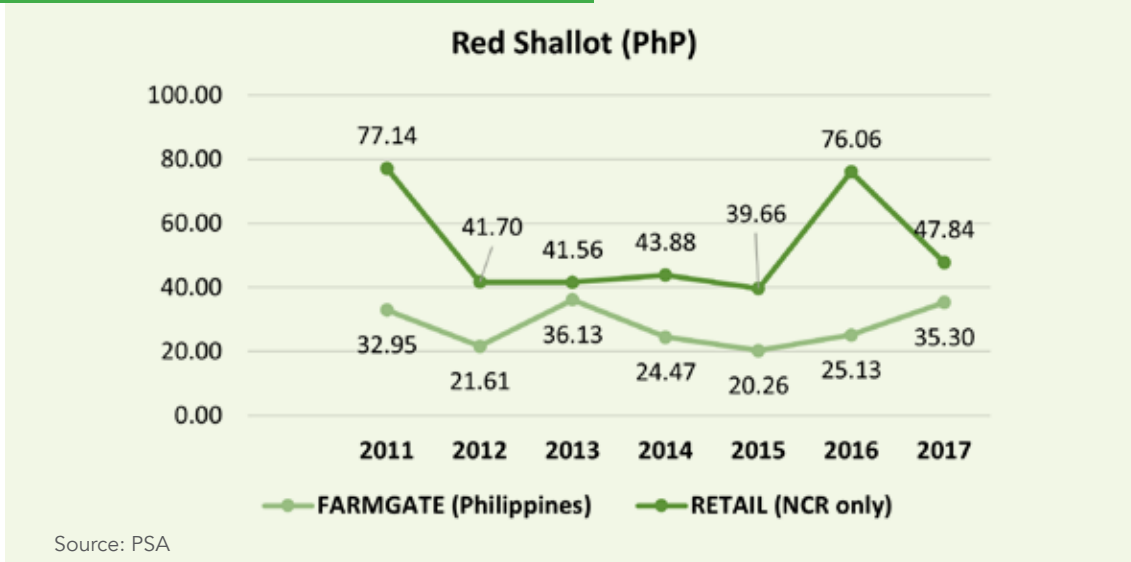
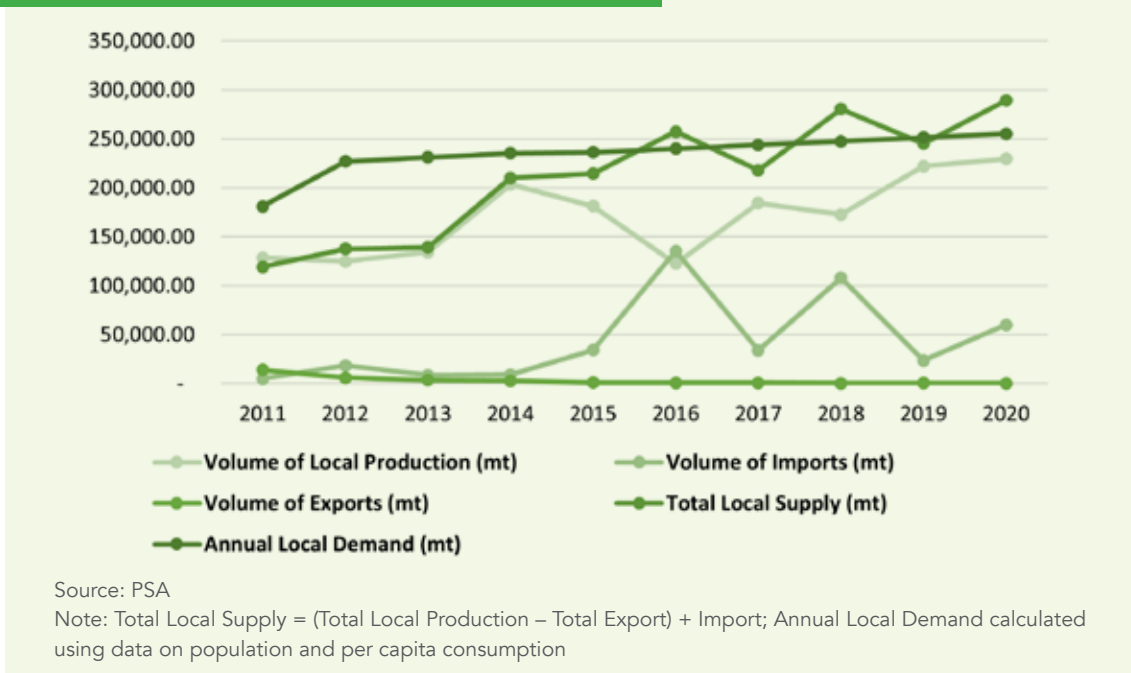


FIGURE 13. PRICE TRENDS OF RED SHALLOT, 2011-2020



The difference in the data on local supply and demand is used in setting the target for self-sufficiency (Figure 14). The higher demand compared with the available local supply has been the reason for the high price regime in the domestic market. Higher consumption is likely if the price is cheaper.

FIGURE 14. ONION SUPPLY AND UTILIZATION IN THE PHILIPPINES



ANALYSIS OF THE COMMODITY INDUSTRY

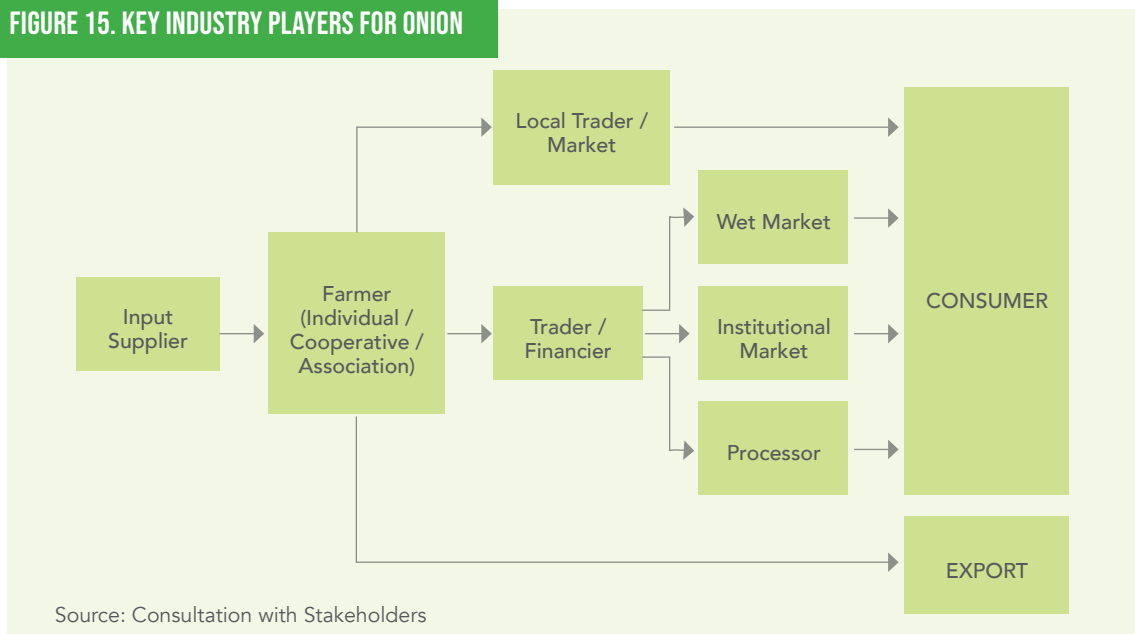
Value Chain Map

The onion industry is relatively simple as compared to other commodities. Its production is localized in only few areas and the supply chain is relatively short as described by industry players in Figure 15. Either the produce goes from the farms to the local trader or through trader-financiers who store and redistribute them without much processing to: a) retailers in wet markets in urban centers who in turn sell to consumers; b) institutional buyers; and small amount to c) exporters, and d) processors. Seventy five percent of locally produced onions are sold in wet markets while 35% head directly to supermarkets, fast food chains, hotels, restaurants, and processors (DA AMAS, 2020). Metro Manila is still the largest domestic market for onions.

Because of the compact production areas, many of the farmers are organized into various form of associations or cooperatives, some are specialized for onions. The coops for onions have also formed federations and have established tie-ups with vendors' or retailers' groups in major urban markets. They also have access to cold storage facilities. Some of the growers' associations are facilitating their own exports with some help from the government. The major traders are also assemblers who collect and store the produce, and gradually unload them into the market.

The onion industry is still very much dependent on financiers. They serve as input suppliers and buyers. They profit both from interest payments and exert influence on pricing as well. They finance groups of farmers as contract growers, supply or specify inputs even seed varieties, get all the harvest at pre-agreed prices, and take care of the storage and trading.

FIGURE 15. KEY INDUSTRY PLAYERS FOR ONION



The onion associations who were active participants in updating this road map are the following:

1. Katipunan at Samahan ng Magsisibuyas ng Nueva Ecija (KASAMNE)
2. Kalasag Farmers Producers Cooperative
3. Sapang Multipurpose Cooperative
4. Alcala Onion Rice Corn Growers Multipurpose Cooperative
5. Valiant Primary Multipurpose Cooperative
6. Federation of Aritao Farmers Onion, Garlic, and Ginger Growers Association, Inc. (FAFOGGGA)
7. Bagong Pag ASA Farmer's Association
8. Pesa Onion and Vegetable Farmer's Association
9. Bongabon East Farmer's and Fisheries Services Cooperative

It would be through these groups where initiatives for onion industry development can be fostered, and it would be through the same group where dedicated production of onions and shallots for export can be organized.

Cost Build up, Value Added, and Margins along the Market Channel

Depending on the harvest months and trading practices, and independent of the nature of the producing farms. The cost of handling, packing, and transport and other selling expenses and overhead were lumped together as marketing cost expressed per kilograms.

Figure 16 is based on PSA data and consultation with onion stakeholders reflecting the practice towards the end of the harvest season where most of the crop goes to cold storage for gradual release into the market. For red bulb onion, the assumed storage period was six months based on common space reservation contract even if some of the commodities would be sold earlier. For the farmer, the reported margin was for an area of 0.4 ha.

The cost of production for red bulb onion is PHP 13.83/kg while the farm gate price is 54.20. The high cost of production for the bulb onion is mainly attributed to labor cost which constitutes to 38% of the total cost. Farmer's income after deducting the cost of production from the farm gate price is PHP 40.37 and a high RTC of 292.04% among the value chain. Onion gets to the consumer at a high price due to several layers from the farm to the retail stores that add to the inefficiencies. The red bulb onion gets to the consumer at an average price of PHP 120.00/kg even the farm gate price is PHP 54.20/kg. The logistics cost, from farm to assembler to wholesaler to retailer, is usually shouldered by the trader. For supply after the harvest season that need to be put in cold storage, the additional cost is usually PHP 1.07/kg/month, but some traders' contract for the storage space for six months so PHP 6.42/kg is automatically added to the cost.

During the consultation with stakeholders, nine marketing systems were presented (Table 6). To encourage the clustering of farmers, improve prices (especially for the consumers), and optimize the system, a recommended marketing system was suggested (Figure 17). Some institutional buyers already practice a similar system as the recommendation (Figure 18).

FIGURE 16. RED BULB ONION VALUE CHAIN

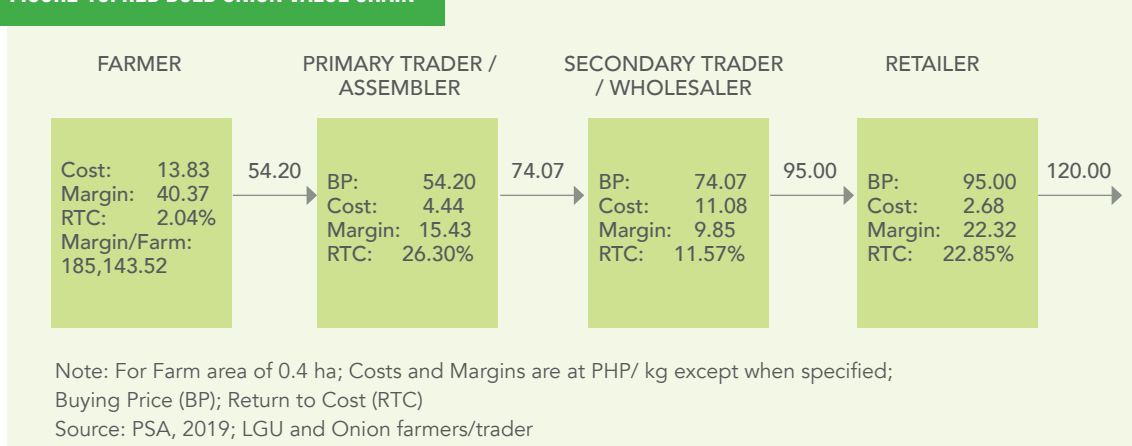


TABLE 6. PREVAILING MARKETING SYSTEMS

System 1	Farmer à Consumers
System 2	Farmer à Retailers à Consumers
System 3	Farmer à Buyers à Retailers à Consumers
System 4	Farmer à Traders* à Retailers à Consumers
System 5	Farmer à Village Buyers à Traders* à Buyers à Retailers à Consumers
System 6	Farmer à Village Buyer à Traders à Buyers* à Retailers à Consumers
System 7	Farmer à Transporter à Traders à Buyers à Retailers à Consumers
System 8	Farmer à Transporter à Bookers à Traders à Buyers à Retailers à Consumers
System 9	Farmer à Village Buyer (1) à Bookers à Traders à Buyer (2) à Disposer (Divisoria) à Buyer (3) à Retailers à Consumers

*Nueva Vizcaya Agricultural Terminal

FIGURE 17. RECOMMENDED MARKETING SYSTEM

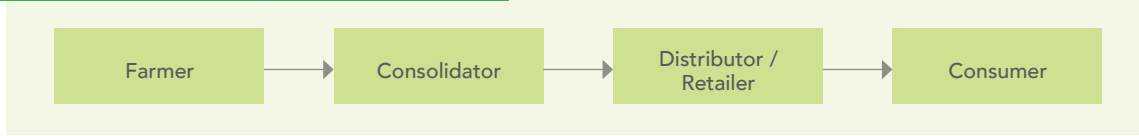


FIGURE 18. MARKETING SYSTEMS FOLLOWED BY SOME INSTITUTIONAL BUYERS

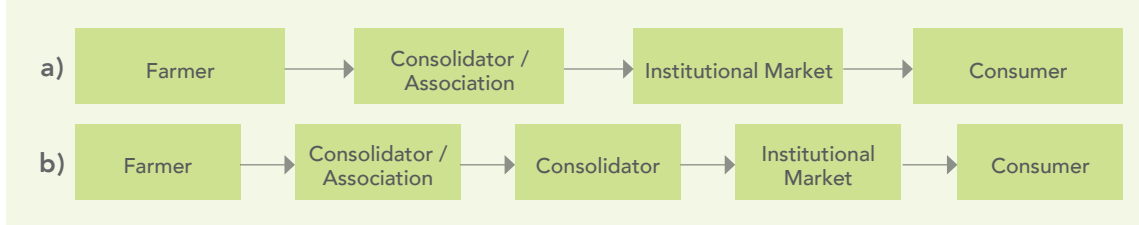
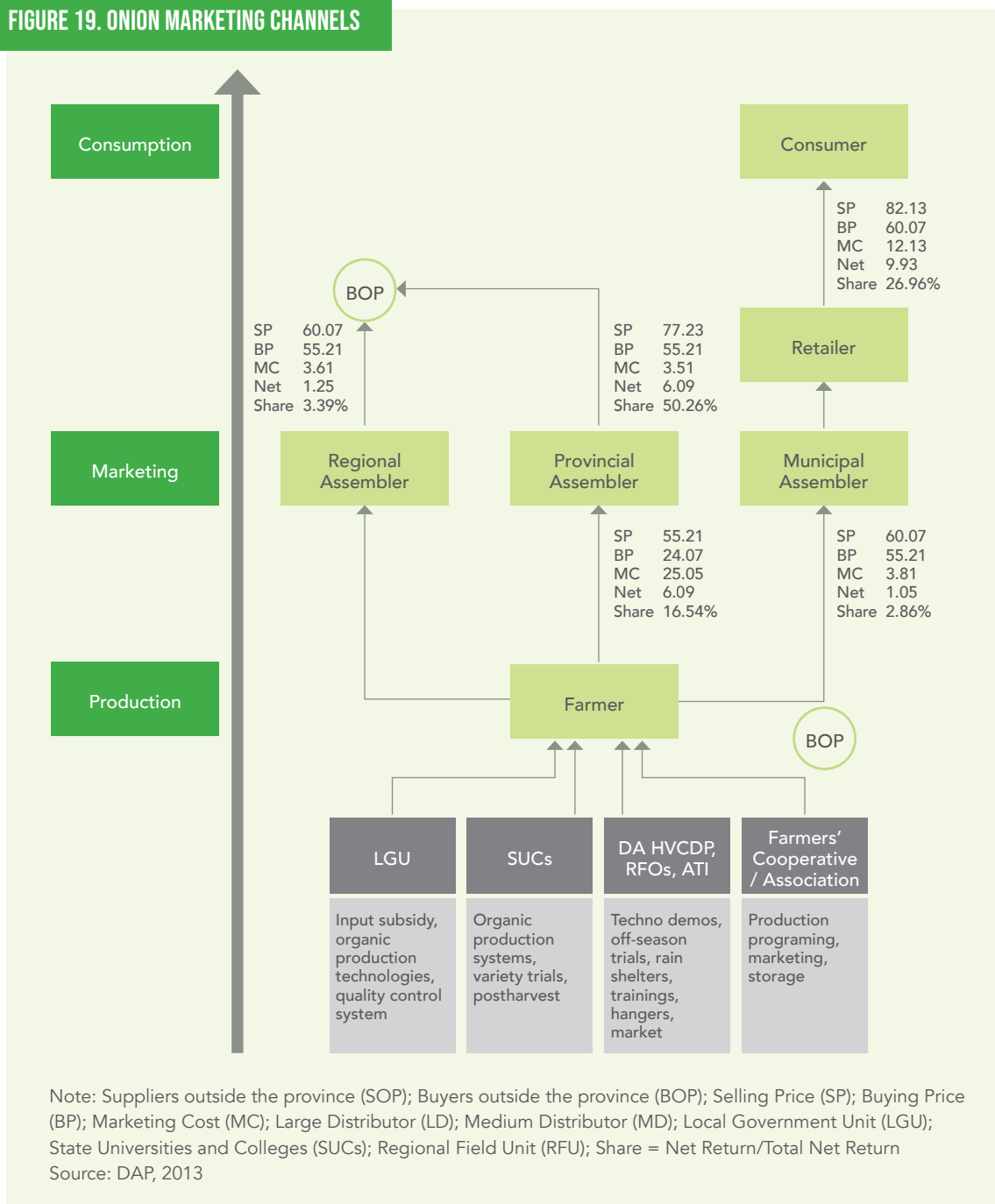


Figure 19 was based on a study conducted by the Development Academy of the Philippines showing the various channels through the produce goes from the farms to the consumers. Study subjects were Narvacan and Sto. Domingo, Ilocos Sur shallot growers wherein the storage was for three months and borne by the primary trader-assembler.

FIGURE 19. ONION MARKETING CHANNELS



Based on the preceding data and at prevailing high prices, onion production is very profitable investment for farmers especially if they can expand their production areas. However, due to serious problems on labor availability especially during the planting period, the onion farmers restrict their onion planting. If these inefficiencies were

addressed and the growers can consider onion production as a main livelihood instead of just add-on to rice, the data would suggest that the onion growers could be among the biggest earners in agriculture.

Support Industries

The support industries for onion are input suppliers such as seed, fertilizer (organic and inorganic) and pesticide (chemical or biological) companies as well as equipment and facilities providers like the cold chain industries.

Seed suppliers are usually private corporations including East-West Seed Philippines, Ramgo International Corporation, and Allied Botanical Corporation. They usually carry other farm inputs such as fertilizers and provide technical assistance to farmers regarding production technologies and management.

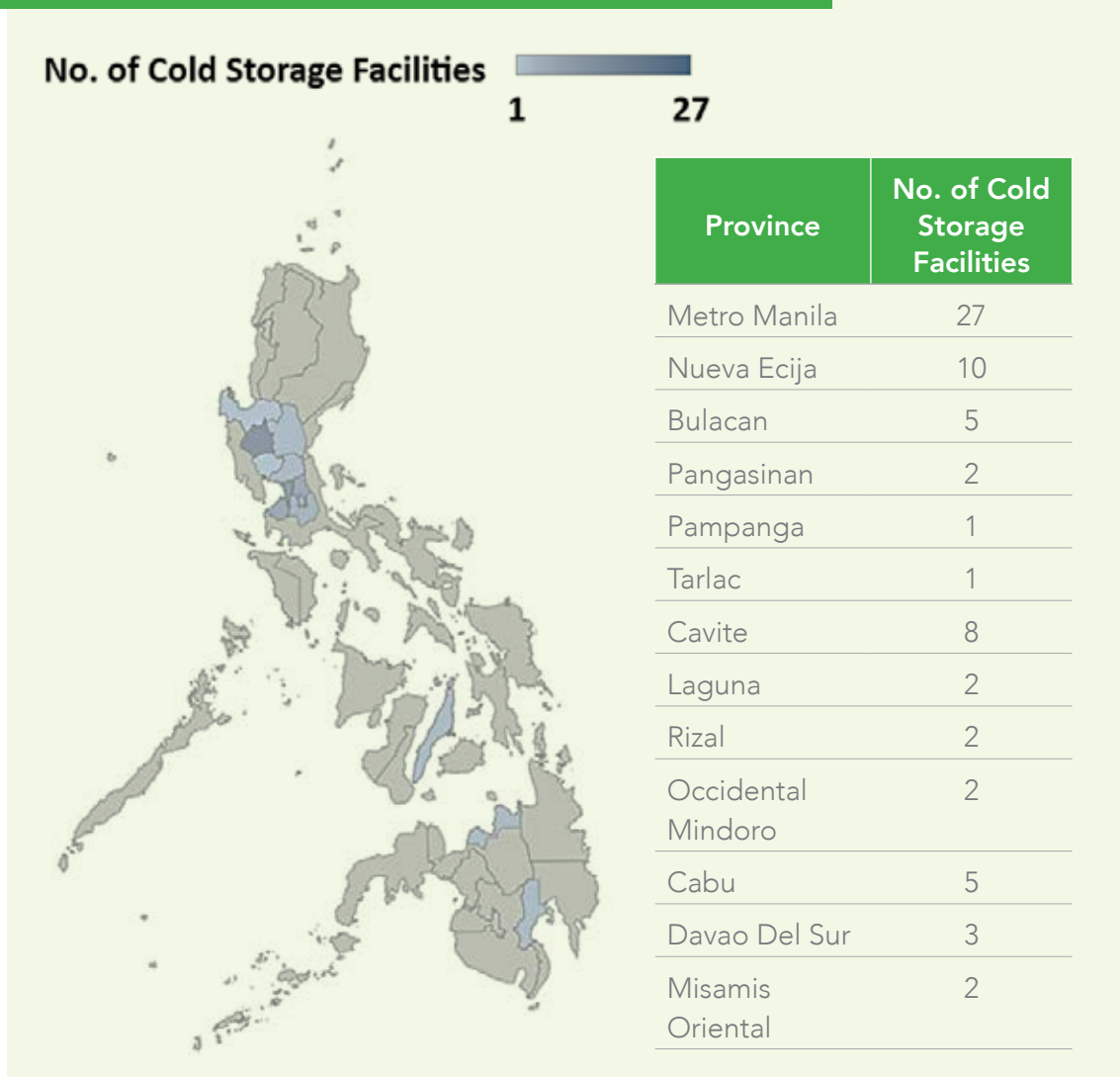
Onion farmers still tend to apply fertilizers more than the recommended rate. They use either organic or inorganic fertilizers or a combination of both. The common grades of inorganic fertilizers used are complete fertilizer (14-14-14), urea (46-0-0), muriate of potash (0-0-60), ammonium sulfate (21-0-0), and ammonium phosphate (16-20-0). Chicken manure is used as organic fertilizer in combination with Trichoderma as well as vermicast.

Onion farmers rely heavily on herbicides such as Ronstar, Onecide and Goal especially before planting. Manual weeding is practiced as the crop grows in the field. Fungicides like Nordox, Kocide, and Funguran are also usually used. Some farmers use organic fungicides such as Antica as well as Neem oil and Parker Neem Tonic (BAFS-registered) as botanical pesticide. The FPA should also consider easing regulations for pheromones as they are commonly used for lures and traps against the onion armyworm.

Postharvest facilities such as consolidation area, onion hanger storage and cold storage is necessary to balance the peaks and trough of onion supply. Some of these cold storage facilities were also being operated and part of the services of onion growers associations. In terms of cost-effectiveness, current technologies still point to a conventional cold storage facility over one that is solar-powered primarily due to the high cost of batteries.

Existing cold storage facilities must be well maintained, improved if necessary, to effectively decrease losses and ensure the quality of onion stocks (provided that proper curing is done to minimize shrinkage). Efficient cold air circulation is better achieved using plastic crates. Stocks should not be placed in the ante room since it is not designed to keep the same temperature as the storage area. A recording system for all activities in the facility must be established to identify gaps and how to further optimize the operations.

FIGURE 20. DISTRIBUTION OF COLD STORAGE FACILITIES (AS OF SEPTEMBER 2021)



Key Institutions and Programs

National

Various government agencies have been active in supporting the onion industry, as shown by their programs listed in Table 7. The issue is whether the results of the efforts are reaching and benefiting the growers and other stakeholders in the industry. With the functional nature of operations of the agencies, it is unlikely that the potential benefits are being maximized. The country needs wider application of recommended packages of technology so local producers can compete with ASEAN neighbors. Perhaps the HVCDP should support an impact study on the effectiveness of various on-going programs with the aim of enhancing their effectiveness.

TABLE 7. PROGRAMS OF GOVERNMENT AGENCIES RELATED TO ONION

Agency/ Institution/ Association	Project/R&D/Technology Initiatives
DA-HVCDP	<ul style="list-style-type: none">• Infrastructure, small scale irrigation projects (SSIPs) and Production and postharvest facilities (e.g., seed storage facilities, village level onion hanger, etc.)• Provision of onion planting materials (seeds) either thru grants or in partnership with LGUs• Conduct of Technology Participatory Demonstration, hands-on activities, trainings
Philippine Rural Development Project (PRDP)	<ul style="list-style-type: none">• Other infrastructure such as post-harvest facility (cold storage)

Agency/ Institution/ Association	Project/R&D/Technology Initiatives
DA-Bureau of Agricultural Research (BAR)	<p>Development of postharvest handling technologies</p> <p>Supporting R&D related to the onion industry</p> <p>Funded 2016-2021: Etiology, Physiological Characterization and Molecular Detection of Gibberella and Fumonisin and Management of Gibberella moniliformis Wineland causing “Twister Disease” of Onions in the Philippines</p> <p>Biological Studies of Onion Armyworm, Spodoptera exigua Hubner (Lepidoptera:Noctuidae)</p> <p>Early Detection and Warning: Surveillance and Monitoring of Different Crops/Areas Affected by Onion Armyworm, Spodoptera exigua Hubner (Lepidoptera:Nuctuidae)</p> <p>Detection, Spatial Tracking, Damage, and Yield Assessment and Mapping of Armyworm Infestation and Diseases of Onion Using Remote Sensing Technology</p> <p>Efficacy Test of Bio-pesticides and Microbials against Onion Armyworm, Spodoptera exigua Hubner (Lepidoptera:Noctuidae)</p> <p>Insecticide Management and Resistance Studies for Onion Armyworm, Spodoptera exigua Hubner (Lepitoptera:Noctuidae)</p> <p>Quality and Safety Assessment and Postharvest Behavior of Onion Grown under Integrated Pest Management Program against Armyworm</p> <p>Enhancing Cultural Management Practices in Reducing the Infestation and Damage of Onion Armyworm, Spodoptera exigua (Hubner) (Noctuidae, Lepidoptera)</p> <p>Quick Response, Surveillance, Monitoring and Management of New and Emerging Pests of Major Crops in the Philippines (Onion, Rice, and Coconut)</p>

Agency/ Institution/ Association	Project/R&D/Technology Initiatives
	<p>Surveillance and Detection of Microbe Utilizing Molecular Techniques and Associated Thrips Vector on Onion, Garlic, and Mango in Luzon</p> <p>Integrated Management of Anthracnose-Twister Disease and In Situ Detection of Fumonisin Contamination of Gibberella moniliformis Infecting Onions in Nueva Ecija, Pangasinan and Nueva Vizcaya</p> <p>Smart Pesticide Recommendation Application for You (SPRAY) – Smart Application for Insecticide Resistance Management of Fall Armyworm (<i>Spodoptera frugiperda</i> Smith) and Onion Armyworm (<i>Spodoptera exigua</i> Hubner)</p> <p>Remote Monitoring and Assessment of Plant Pests (ReMAPP): Unmanned Aerial System, Satellite and Artificial Intelligence-Based Technology for Crop Protection</p> <p>Varietal Development and Improvement of Shallot towards high yielding, pest, and diseases resistant/tolerant, and longer shelf-life varieties</p>
<p>DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD)</p>	<p>Industry Strategic S&T Program for Vegetables which was implemented to increase average yield of conventionally and organically grown vegetables including onion while reducing post-harvest losses. The availability of high-quality and safe vegetables is enhanced over time</p> <p>Development and Pilot Testing of Hand Tractor Driven Onion Harvester</p> <p>Development of an Early Warning System against Fall Armyworm, <i>Spodoptera frugiperda</i> through Population and Distribution Modelling</p>
<p>DA-Bureau of Plant Industry (BPI)</p>	<p>Preparation and updating of production guides, AP certification, Quarantine measures, Pest advisory</p> <p>Pesticide residue analysis</p> <p>Onion supply inventory</p>
<p>DA- Philippine Center for Postharvest Development and Mechanization (PhilMech)</p>	<p>National Cold Chain Program; postharvest handling technologies</p> <p>Small machineries: seeder, potentials for harvester, sorting/sizing/grading, weeding</p>

Agency/ Institution/ Association	Project/R&D/Technology Initiatives
DA-AMAS/AMAD	Marketing linkages, promotion, food lane, accreditation of delivery trucks, enterprise management trainings and preparation of business model/investment concept Conduct of Onion Festival
Bureau of Agriculture and Fisheries Product Standards (BAFPS)	Updating of PNS/BAFS documents related to the Onion Industry
Philippine Council for Agriculture and Fisheries (PCAF)	Strengthening capacities in Agricultural Policy and Agriculture and Fishery Trade Negotiations and Agreements; Established regular consultative mechanism involving policy makers and stakeholders dedicated to addressing production, trade, and other related issues and concerns on onion Expansion/activation of membership in cooperatives and associations
Philippine Crop Insurance Corporation (PCIC)	Provision of insurance protection extended to farmers against losses in high-value commercial crops including onion, due to natural calamities and other perils such as pests and diseases. Organizing promotional activities for farmers to enroll in DA lending programs over private financiers Strengthening associations/coops for them to qualify for government assistance (e.g., provision of professional financial/operations managers)
UPLB (especially IPB and PHTRC)	Onion breeding program, trials, and other research (e.g., value chain)
SUCs	Access/source of germplasm Technical assistance Training and workshop programs on postharvest technologies
DA- Agricultural Training Institute (ATI)	Training programs
TESDA	Training programs

Agency/ Institution/ Association	Project/R&D/Technology Initiatives
LGU initiatives	<p>Farmer Entrepreneurship Program which links farmers to corporate supply chain (e.g., San Jose, Nueva Ecija)</p> <p>Partnership between LGU and onion growers' cooperatives in the establishment of onion facilities (eg. San Narciso, Zambales and Onion Growers Multipurpose Cooperative)</p> <p>Provincial grant of farm inputs (seeds, fertilizers and tractors) through the Provincial Agriculture Office (e.g., Ilocos Norte)</p>
CREDIT PROGRAMS:	Credit assistance
ACPC (Conduit cooperatives and rural banks)	Production Loan Easy Access (PLEA)
ACEF (Land Bank Lending Center)	<p>Agro-Industry Modernization Credit and Financing Program (AMCFP) Loaning Facilities, which include: (i) Agri-Negosyo Loan (ANYO); (ii) Kapital Access for Young Agripreneur Loan (KAYA); and (iii) Survival and Recovery Loan (SURE)</p> <p>Support production and enhance loaning program</p>
AVRDC-The World Vegetable Center	<p>Technical assistance</p> <p>Access/source of germplasm</p>
Collaborative efforts among agencies	<p>Conduct of farmer's field days, training, and other technical assistance</p> <p>Implement related regulations for importation of onion and related inputs (e.g., FPA, Bureau of Customs)</p>

Initiatives from the Private Sector

The private sector in collaboration with the government agencies also has initiatives for the growth of the onion industry as shown in Table 8.

TABLE 8. PRIVATE SECTOR INITIATIVES RELATED TO ONION

Private Sector	Initiative/Project
Seed and chemical companies	Establishment of Onion Learning Centers and demo sites to showcase new technologies, varieties, farm inputs, etc.
	Provision of technical assistance and training programs on production in the form of training programs
	Provision of credit grant to growers (payment after harvest)
	Collection of empty chemical containers as well as expired products
Institutional market	“Bridging Farmers to the Jollibee Supply chain” which trained onion farmers in San Jose, Nueva Ecija, Ilocos Sur, Pangasinan, San Jose and Magsaysay, Occidental Mindoro to produce the quality and quantity Jollibee needs
	Dedicate shelves/area for produce/onion which are GAP-certified (separate from conventional produce)
Onion growers’ organizations	GAP certification
	Export market development
	Establishment of post-harvest facility and marketing enterprise
	Craft their operations manual
Importers/Exporters	Help local farmers by prioritizing local production
Cold storage owners/operators	Expand storage capacity
Financier-trader	Contract growing
	Inventory financing

Policy Environment

The operational macro policies are enunciated in landmark legislations and international agreements signed more than 15 years ago. The key legislations are the R.A. 8435 or AFMA and the R.A. 7900 or High Value Crops Law, which articulated national aspiration for modernizing the sector together with the desired strategies and for mainstreaming the

support for the development of high value crops which include onions for the benefit of the growers and the consumers, respectively. The international agreements are the GATT-WTO and AFTA which govern international trade with the aim of facilitating free trade, removal of quotas, reduction of tariff and fostering globalization with inherent assumption on the survival of the fittest.

The issue of smuggling, particularly for onion, has been raised during consultations. There has been a call to prevent smuggling. This coincides with the call of some quarters focused on other commodity groups to curb smuggling. Repeatedly, farmer leaders have echoed the request of onion farmers to more effectively manage the importation of onion.

Another policy conundrum is the mix of export and import volumes for self-sufficiency and trade parity and timing for each action. Does the country produce as much as it could during season and export surplus over immediate consumption needs? Or does the country store the surplus for off-season requirement and incurring high storage cost in the process instead of importing cheap supply at other times of the year? Related issue here is the production of off-season crop at high cost. A few month slide at the same production cost is preferable, but perhaps not counter season at high cost of production. The policy decision will have major implications on the investment for rain shelters and cold storage in new production areas. At the minimum, there should be investment to support the seed supply system, but investment for facilities for additional inventory should be left to market forces. Concerned government agencies and the private sector group should encourage debate and discussion on this particular issue so a consensus can be made and enable the country to prepare accordingly.

Other policy issues/considerations:

- There must be a strong policy regarding storage and market release of onion as it affects market pricing. Hoarders wait for higher market prices. They are not disincentivized to do this because payment for storage is fixed at six months minimum whether or not they fulfill the entirety
- There is need to strengthen inventory of available supply for a more informed decision on importation. The working situation is that the farmers waits for the trigger price.

- There is need to revisit the Warehouse Receipts Law for organized and well-managed transactions/activities for cold storages.
- Subsidy for pheromone lures has to be considered in controlling onion armyworm. Stakeholders urge the government to ease up importation; the product requires stricter protocols in procurement since it is not in the list of commonly used chemicals.
- A robust regulatory policy is needed to address the issues on smuggling. Close coordination with Bureau of Customs is also needed to prevent such issues from affecting the Onion industry.

SWOT Analysis

The opportunities in onion production are apparent. A plethora of dishes in various cuisines lists it as essential for flavor and aroma. Its health benefits are also very much recognized. The export market in Asia is mainly for shallot which the country can grow easily. The demand is year-round but production is seasonal thus the need for cold storage facilities. However, the high cost of power remains to be a burden. The timing of importation also adds to the challenge. These, among others, must be managed for the mutual benefit of all stakeholders. The industry must hasten to address its weaknesses, devote utmost focus and resources to its strengths and opportunities, and prepare for the anticipated threats. Identified strategies are discussed in the latter part of this roadmap. With these, the country will not only be self-sufficient but also become an export player. The complete analysis is in Table 9.

TABLE 9. SWOT ANALYSIS MATRIX

Strengths	Weaknesses	Opportunities	Threats
Input Supply			
<ul style="list-style-type: none"> Available high yielding and early maturing varieties 	<ul style="list-style-type: none"> Improper handling of seed pieces for shallots 		
	<ul style="list-style-type: none"> Absence of locally produced onion seeds (Yellow and Red Onion) Limited after-sales service from input providers 	<ul style="list-style-type: none"> Input financing 	<ul style="list-style-type: none"> Fluctuating value of peso affecting the price of imported farm inputs
Production			
<ul style="list-style-type: none"> Available matured technology 	<ul style="list-style-type: none"> Low adaptability of matured technology 	<ul style="list-style-type: none"> Improvement and adaptation of existing technology 	
<ul style="list-style-type: none"> Suitable soil and climatic conditions 	<ul style="list-style-type: none"> High production cost Low yield for red onions due to size preferences 	<ul style="list-style-type: none"> Increased quality and quantity Presence of companies to supply organic fertilizer Potential of organic technology to cut cost 	<ul style="list-style-type: none"> Depletion of soil nutrients Adverse effects of climate change
<ul style="list-style-type: none"> Presence of organized groups that are responsive to market signals 	<ul style="list-style-type: none"> Lack of interaction among the stakeholders through consultations Limited number of organized farmers' groups (cluster organizing and supply planning) 	<ul style="list-style-type: none"> Easy access of organized groups to government interventions 	<ul style="list-style-type: none"> Lack of interest of farmers

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> Potential areas for expansion 	<ul style="list-style-type: none"> Limited farm labor during periods of intensive labor requirement Low creditworthiness of smallholder onion farmers 	<ul style="list-style-type: none"> Available expansion areas in the south Farm mechanization Off-season production 	<ul style="list-style-type: none"> Displaced laborers due to mechanization
<ul style="list-style-type: none"> Available preventive and control measures for pest and diseases 	<ul style="list-style-type: none"> Susceptibility of varieties to pests and diseases 	<ul style="list-style-type: none"> Use of tolerant varieties 	<ul style="list-style-type: none"> Emerging pests and diseases
<ul style="list-style-type: none"> Compliance with GAP certification 	<ul style="list-style-type: none"> Low regard on the importance of soil analysis in reducing cost and protecting the soil Majority of onion growers are not yet GAP certified 	<ul style="list-style-type: none"> Availability of organic- certified fertilizers and Biocontrol Agents (BCA) 	
<ul style="list-style-type: none"> Year-round production 	<ul style="list-style-type: none"> Incomplete data from PSA Limited proof of concept for year-round production of onion (at a competitive cost) 	<ul style="list-style-type: none"> Available government credit and insurance programs Available off-season technology 	<ul style="list-style-type: none"> Easy access to informal lenders with high interest Rampant smuggling

Postharvest

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> • Availability of cold storage facility / technology • Availability of onion hanger facilities • Post-harvest facilities and equipment. 	<ul style="list-style-type: none"> • Increasing storage cost (high operational expenses) • High losses in storage facilities • Use of onion hanger facilities not optimized • Absence of farmers' group-operated cold storage facility • Cold storage agreements do not protect the produce of the farmers • Limited knowledge in value-adding technology 	<ul style="list-style-type: none"> • Government-funded projects for cold storages • Available loan programs for the establishment of a cold storage facility • Possible value addition for onions 	<ul style="list-style-type: none"> • Increasing storage cost (high cost of electricity) • Manipulation of storages

Marketing and Trading

<ul style="list-style-type: none"> • Presence of marketing agreement (PO) with assured buyers 	<ul style="list-style-type: none"> • Limited access to market • Non-compliant members to GAP as market requirement • Unstable price of onion • Limited registered organized groups • Limited cooperatives engaged in consolidation and trading • Limited credit support for marketing activities 	<ul style="list-style-type: none"> • Strategic thinking of key players to find niche window in the export market • Increasing local demand • Potential export for yellow and bunching onions • Institutional clients who are willing to purchase locally produced onions (e.g., Jollibee, Mang Inasal, Walter Mart) 	<ul style="list-style-type: none"> • Influx of cheaper imported onions • Unregistered entry of onion (smuggled) • Price manipulation • Untimely importation
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Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> Government initiatives in the promotion of onions through ASPIRE and other trade fairs 		<ul style="list-style-type: none"> High onion or shallot consuming neighboring countries /high export demand Presence of possible institutional markets 	
<ul style="list-style-type: none"> Presence of established trading centers 	<ul style="list-style-type: none"> Poor connectivity of onion producing island provinces to the mainland market 	<ul style="list-style-type: none"> Establishment of a centralized trading post 	

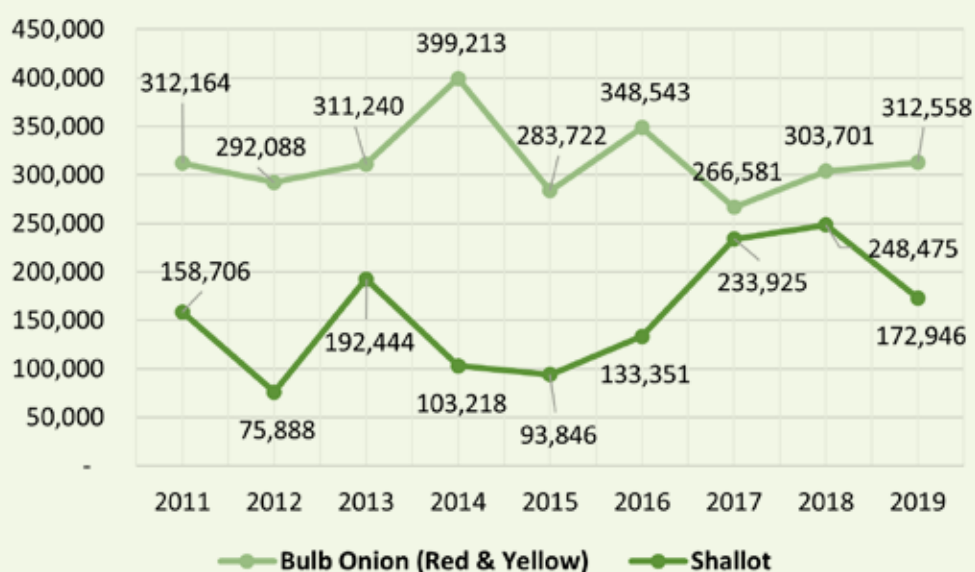
Costs and Returns Analysis

Some key production practices that affect cost are: overfertilization, eradication (instead of management) of weeds, and contract planting which leads to high labor cost. The range of cost and return profiles for bulb onion and shallot are summarized in Table 9. Some use a higher proportion of organic fertilizers and bio-pesticides to cut input costs. Because of this, they may command a better price premium. Improved varieties for yield and resistance to biotic and abiotic stress are preferred. Early plantings in Nueva Ecija and Pangasinan spend more for fungicides if there are late heavy rains. However, this is compensated by higher farmgate prices.

The costs recorded for onion-producing regions vary mainly due to manner of payment (e.g., contract planting, crop share, etc.) and regional wage rates. The resulting cost of production per unit depends on yield. Planting bigger varieties can significantly increase yield and can bring down the unit cost of production to competitive levels. For 0.4-hectare family farms, at least one family member works full-time for 2 to 2.5 months. The spouse usually assists few hours of the workday. The children also get involved during weekends and weekday afternoons during harvest.

At relatively high price regimes, growers enjoyed net returns which ranged from PhP 266,581.00 to PhP 399,213.00 for bulb onions (2011 to 2019) and PhP 75,888.00 to PhP 248,475.00 for shallots (2011 to 2019).

FIGURE 21. NET RETURNS FOR BULB ONION AND SHALLOT, PHP (2011-2019)



Source: PSA

TABLE 10. COST AND RETURNS ANALYSIS FOR ONE HECTARE (PSA, 2019)

	Bulb Onion (PhP)	Shallot (PhP)
CASH COSTS	123,322.00	64,967.00
Seeds/Planting Materials	15,955.00	1,984.00
Fertilizers	17,967.00	12,544.00
Mulching Materials	9.00	325.00
Pesticides	10,455.00	5,582.00
Hired Labor	47,389.00	24,304.00
Land Tax	446.00	97.00
Rentals	1,409.00	524.00
Fuel and Oil	7,534.00	5,513.00
Transport Cost of Inputs	483.00	389.00
Irrigation Fee	446.00	46.00
Interest Payment on Crop Loan	5,375.00	1,971.00
Food Expense	3,597.00	3,304.00
Repairs	2,821.00	2,480.00
Landowner's Share	7,366.00	3,613.00
Electricity	71.00	1,317.00

	Bulb Onion (PhP)	Shallot (PhP)
Storage Cost	888.00	-
Other Cash Costs	1,111.00	974.00
NON-CASH COSTS (Paid in Kind)	8,570.00	27,905.00
Seeds/Planting Materials	-	16,320.00
Fertilizers	58.00	14.00
Mulching Materials	399.00	3,446.00
Landowner's Share	319.00	7,738.00
Harvester's Share	6,211.00	-
Rentals	1,583.00	387.00
IMPUTED COSTS	26,598.00	25,310.00
Seeds/Planting Materials	216.00	66.00
Fertilizer	103.00	14.00
Mulching Materials	19.00	157.00
Operator Labor	8,829.00	11,046.00
Family Labor	4,126.00	5,906.00
Exchange Labor	483.00	486.00
Depreciation	2,587.00	1,385.00
Interest on Operating Capital	6,473.00	3,211.00
Rental Value of Owned Land	3,751.00	2,966.00
Transport Cost	11.00	73.00
ALL COSTS	158,490.00	118,182.00
GROSS RETURNS	471,048.00	291,128.00
NET RETURNS	312,558.00	172,946.00
NET PROFIT-COST RATIO	1.97	1.46
Cost Per Kilogram	13.83	12.00
Yield Per Hectare (kg)	11,464.00	9,727.00
Farmgate Price per kilogram	41.09	30.00

Adapted from PSA data (base period: 2000)

Benchmark Analysis

Local

In comparison with other commodity producers, the onion farmers are more adaptive to modern practices recommended by the government and their financiers. The practices they are currently applying in the field are the recommended package of technology with some modifications depending on their situation and market preference:

- a. Fertilization rate. Onion farmers generally over fertilize the production fields which contribute to high production costs and soil degradation. The recommended rates of 120-300 kg Nitrogen/ha, 60-150 kg Phosphorus/ha, 60-200 kg Potassium/ha or 2 - 5 T/ha of organic fertilizers will result to better yields and lower costs.
- b. Pest management. Onion farmers practice complete eradication of weeds in the field. This resulted to the serious leafminer problems previously encountered by the producers. Results of a study showed that some weeds will encourage build-up of natural enemies and thus, resulting to less pest problems (Maghirang et al, 2000).
- c. Contract planting. In Nueva Ecija, there is always rice farm nearby for harvest so available labor would prefer to harvest rice on crop sharing basis where they earn more for a few days' work. Thus, if onion growers in Nueva Ecija are forced to hire labor for planting or transplanting, they must contract on per square meter basis resulting in effective labor rate of about three times the daily wage rate. Even then labor availability is tight during normal planting season of onions, so most growers will rely on family labor. This is the main cause for small area planted per family.
- d. Onion varieties. Although farmers can produce bigger and with better quality onions that dictates a price per kilo, most still stick on growing medium-sized bulbs for red onions because this is what the end consumers prefer to buy more.

International

Figure 22 highlights 62 onion-producing countries with more than 100,00 mt volume reached in 2019. Consistent with the previous decade, China and India dominated 2019

global production in terms of volume as the USA ranks as a far third (Figure 23). The Philippines held the 49th place.

FIGURE 22. MAP OF TOP ONION PRODUCING COUNTRIES (2019)

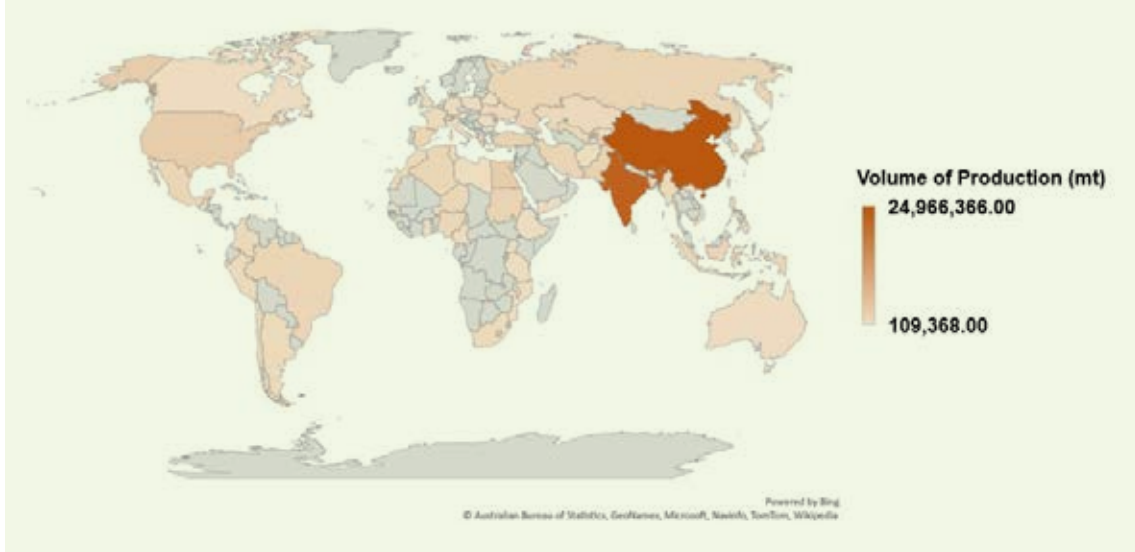
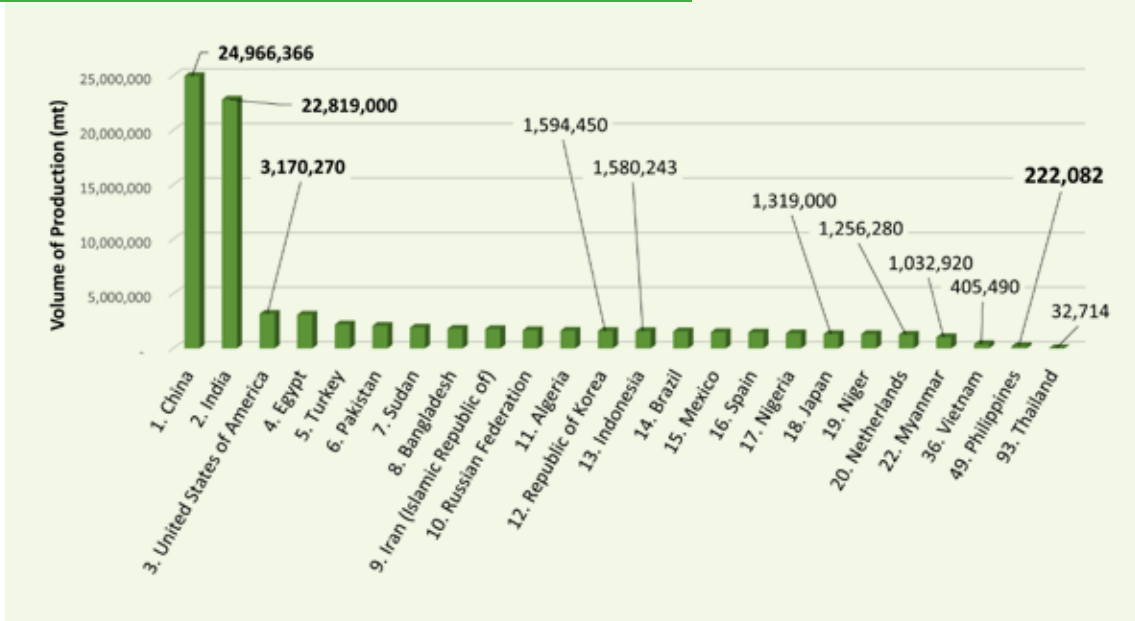
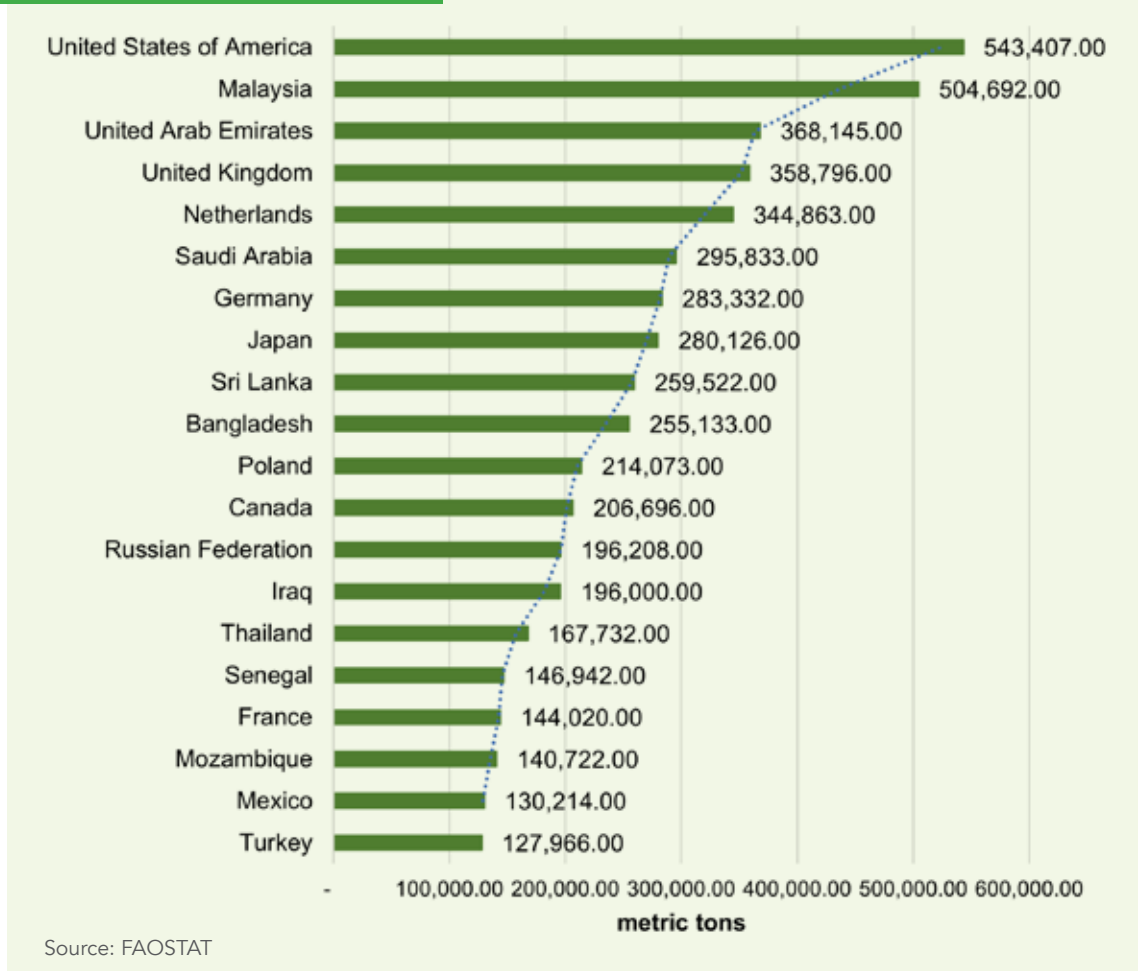


FIGURE 23. RANKING OF SOME ONION PRODUCING COUNTRIES (2019)



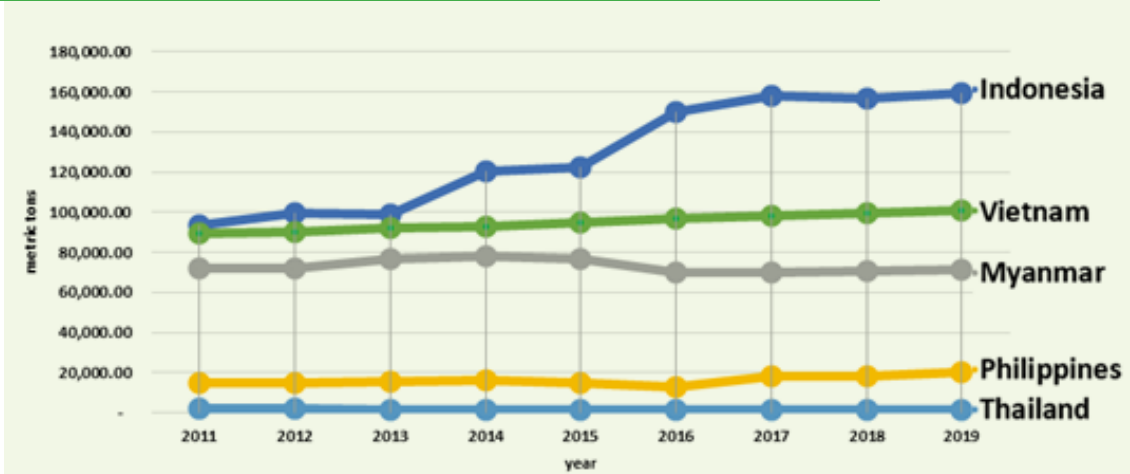
Top onion importers for 2019 in terms of quantity are seen in Figure 24. Some of them are current export markets for the Philippines while others may be viewed as lucrative potential partners.

FIGURE 24. TOP ONION IMPORTERS (2019)



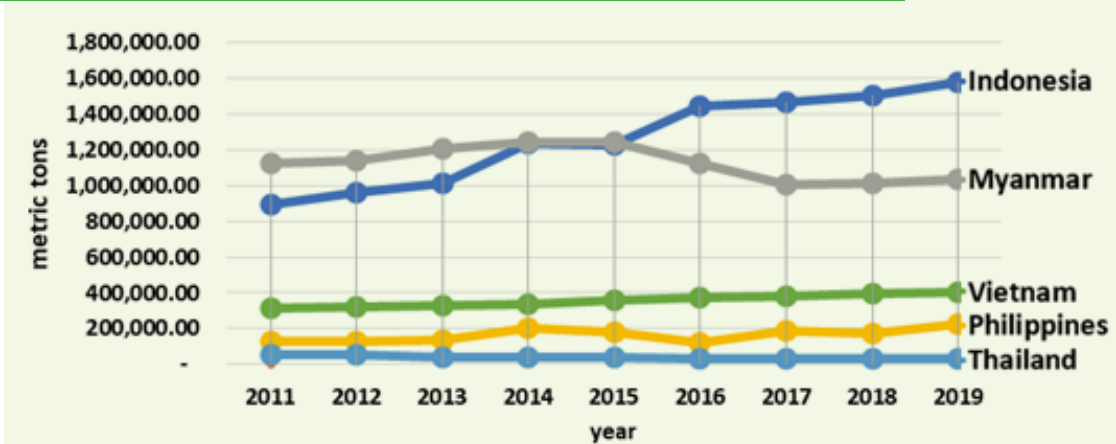
Among onion-producing ASEAN countries, Indonesia has the largest area planted which almost doubled from 93,667 hectares in 2011 to 159,195 hectares in 2019 (Figure 25). Indonesia and Myanmar switched ranking as the top onion producer in ASEAN since 2016 in terms of volume. The former exceeded the latter in 2019 with 1,580,243 mt and 1,032,920 mt, respectively (Figure 26). However, in terms of yield, Thailand has been consistently far above while Myanmar retains its place (Figure 27). Recorded yield in 2019 were 26.23 mt / ha and 14.46 mt / ha, respectively. Indonesia, Vietnam, and Thailand outperformed the Philippines in terms of exports in 2019 (FAOSTAT data unavailable for Myanmar).

FIGURE 25. HARVEST AREA (HA) OF ONION-PRODUCING ASEAN COUNTRIES (2011-2019)



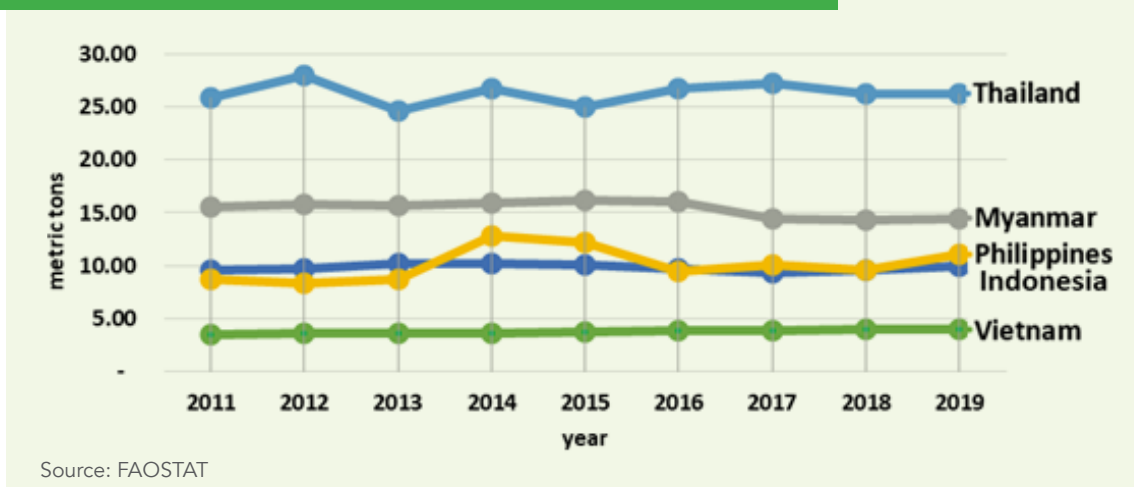
Source: FAOSTAT

FIGURE 26. HARVEST VOLUME (MT) OF ONION-PRODUCING ASEAN COUNTRIES (2011-2019)



Source: FAOSTAT

FIGURE 27. YIELD (MT/HA) OF ONION-PRODUCING ASEAN COUNTRIES (2011-2019)



Different crops have specific pests and diseases that threaten its success while growing. It is also known that some crops share the same pest or disease. This is also true when we talk about location. Countries or continents with the same weather or climate most likely have the same pests and diseases that jeopardize the crops' development. Shown in Table 11 are just some of these for the Asian countries.

TABLE 11. MAJOR PESTS AND DISEASES

Pest/Disease	Symptoms	Control measures
Insect Pests		
Onion armyworm (<i>Spodoptera exigua</i>)	<p>The larvae feed on the leaves at night by scraping the outside surface of the leaves.</p> <p>The adult bores holes, eats the entire leaves, and attacks bulbs. They cause drying of leaves or complete defoliation of the infested plant in severe cases.</p>	<p>Use of light and pheromone traps for adult insects (20 traps per ha at a distance of 50 m). Use of pheromone traps help determine the main flight periods for moths, then release trichogramma wasps to parasitize newly laid eggs.</p> <p>Allow beneficial insects, such as lacewing, ladybugs and minute pirate bugs to feed on army worm eggs as well as the young larval stage, Handpick armyworms that are found and drop them in a bucket of soapy water</p>

Pest/Disease	Symptoms	Control measures
		Spraying of neem and Bt-based bioinsecticides at recommended rate.
Thrips (Thrips tabaci)	<p>Infest the crop at early stage (transplanting to 45 days) and can be identified by curling and twisting of leaves.</p> <p>Typical symptom is the presence of white or silvery patches on the leaves. In severe infestation, whole plant looks blemished and turns white.</p>	<p>Overhead irrigation can suppress thrips population</p> <p>Apply dust of diatomaceous earth to control thrips, allow beneficial insects such as predaceous mites, minute pirate bugs and lacewings to feed on thrips</p>
Onion seed worm (Helicoverpa armigera)	A serious pest of onion seed crop in Northern India. The larva cuts the pedicel of the flower and feeds on the stalk. Single larva damages many flower stalks.	Spray Malathion 50EC at 1.5-2ml per liter of water.
Onion maggot (Delia antiqua)	The flies lay their eggs on old leaves or on soil and larva enters into soil and damage disc portion of onion bulb. Infested plants turn yellowish brown and finally dry up. The affected bulbs rot in storage.	<p>Regular crop rotation should be followed</p> <p>Phorate 10G at 20-25kg/ ha should be applied in the soil before transplanting.</p>
Cutworms (Agrotis ipsilon)	<p>The larvae of this insect are seen in nursery beds and newly transplanted onion fields. The tender plants are found damped at ground level during the night.</p> <p>Young larvae feed gregariously on foliage but later segregate and burrow into the soil. They cut the seedlings at ground level during night and hide during day.</p>	<p>Follow clean cultivation and break the big clods of soil. Spray the crop with Malathion 50EC at 1.5-2ml per liter water.</p> <p>Plan rotations to avoid row or hill crops following a grassy sod, plant a thick "trap crop" of sunflower, a favored host around the planting area</p>

Pest/Disease	Symptoms	Control measures
Eriophyid mite	Leaves do not open completely and whole plant shows curling. Yellow mottling is seen mostly on the edges of the leaves.	Spray Dicofol (0.2%) as soon as the symptoms appear in the field. Repeat the spray after 15 days, if necessary.
Diseases 1. Fungal		
Onion Anthracnose-twister (Colletotrichum gloeosporioides and Gibberella moniliformis)	Curling, twisting, and yellowing of the leaves; abnormal elongation of the necks and smaller bulb size are evident	Drench nursery beds with mancozeb at recommended rate. Spray the plants at the early onset of the disease with difenoconazole, pyraclostrobin and azoxystrobin. Regular crop rotation to reduce inoculum.
Purple blotch (Alternaria porri)	Initially small, elliptical lesions or spots that often turn purplish brown which are surrounded by chlorotic margin. If the spots enlarge, chlorotic margin extend above and below the actual lesion.	Destroy infected crops, remove or rotate cull piles, rotate non-host crops (e.g. carrot, celery and lettuce), monitor and control onion thrips levels, harvest onions during dry weather.
Stemphylium blight (Stemphylium vesicarium)	Small yellow to orange flecks or streaks develop in the middle of the leaf which soon develop into elongated, spindle shaped to ovate elongate diffused spots surrounded by characteristic pinkish margin. The spots progress from the tip to the base of the leaves.	Spray the crop with Dithane M-45 at 0.25% or Captan at 0.2% at 10-15 days intervals starting with the first appearance of disease.

Pest/Disease	Symptoms	Control measures
Downy mildew (Peronospora destructor)	The affected plants remain dwarf, distorted and pale green in color. The disease is systemic. The surface of the leaves bears the violet growth of mycelium and sporangia when humid weather prevails. If the weather is hot or dry, only pale white patches are seen. The affected leaves drop at the point of lesion and dry at the tip.	Use disease-free bulbs, sets and seeds, perform a 3-year rotation away from Allium crops in fields where disease has occurred, plant onions in areas where there is good air movement to promote rapid drying of foliage.
Onion smut (Urocystis cepulae)	Appears on the cotyledons of the young seedling soon after their emergence from soil. On the leaves dark colored, slightly thickened patches appear and due to this the leaves bend downwards. Numerous blisters may appear near the base of the scales and on rupture of the pustules of the black mass of spores is exposed. The entire plant may die within 3-4 weeks.	Treat the seeds with Thiram or Captan or Carbendazim+Thiram (1:1) at 2.5g/kg of seed before sowing. Treat the seed beds with Formalin at 2ml per liter of water and sow the seeds after 48 hours.
Onion smudge (Colletotrichum circinans)	Appearance on the scales and lower portion of the tender leaves. Dark colored stroma develops below the cuticle and in severe attack several such stroma or concentric rings which later on bear acervuli. The affected leaves dry and wither. In storage it causes rotting of bulbs. The acervuli produce enormous mass of spores. The disease attacks mostly the white onions and not red onion varieties.	Grow red onion varieties in disease prone areas. Dry the bulbs by hot air at 37-48°C before storage. Follow phytosanitary measures.

Pest/Disease	Symptoms	Control measures
Black mould (<i>Aspergillus niger</i>)	Black molds develop on the bulbs followed by rotting of scales. It occurs when bulbs stored at high temperature and humidity.	Store the bulbs in well ventilated, cool and dry place. Spray 0.2% Difolatan during storage.
Basal rot (<i>Fusarium oxysporum</i> f. sp. <i>cepae</i>)	Attacks the onion crop in field as well as storage. Leaves turn yellow, wilt, and die rapidly whereas; roots become pinkish as the plants approach maturity. Finally, the rotting of roots takes place. The bulbs become soft, and a semi- watery decay develop from the base of the scale leaves.	Follow long term crop rotation excluding bulb crops. Treat the seeds with Thiram at 2.5g/kg seed before sowing. Spray the crop with 0.2% Carbendazim.
White rot (<i>Sclerotium cepivorum</i>)	The fungus is soil borne and kills the stem plate, roots and leaf sheath. The leaves of infected plants become yellow and flaccid leading to death of whole plant.	Most effective controls are avoidance and sanitation, cessation of irrigation to minimize damage, and follow a long-term rotation schedule Spray the crop with 0.1% Carbendazim.

2. Bacterial

Stalk rot (<i>Pseudomonas gladii</i> pv. <i>Allicala</i>)	Basal portion of the lower stalk starts to rot before the formation of the resulting in partial to complete wilting of inflorescence. The bacteria also infect the bulb scales initially and later enter the bulbs through wounds. The affected bulbs become slimy and give a foul sulphurous smell.	Allow to soak the bulbs in the solution of Streptocycline at 0.1g/ litre of water for 2 hours before planting of the bulbs for seed crop.
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Pest/Disease	Symptoms	Control measures
Soft rot (<i>Erwinia carotovora</i> pv. <i>carotovara</i>)	The bacteria attack the green necked bulbs which are not cured. The rotting start from the neck of the bulb and reaches to the inner scales which becomes water soaked and soft. When neck is squeezed it gives foul odor.	Avoid any mechanical injury to the bulbs during harvesting. Store the properly cured bulbs when the neck become tight and scale leaves dry up. Avoid the storage of green necked bulbs. Spray the bulbs before storage with Carbendazim + Plantomycin, each at 0.5%.

3. Viral

Irish Yellow Spot Virus (IYSV)	Symptoms first appear as straw-colored, dry, tan, spindle or diamond-shaped lesions, with or without distinct green centers with yellow or tan borders on leaves. The symptoms are more pronounced on flower stalks. Infected leaves and stalks lodge during the latter part of the growing season. Transmitted through thrips.	Plant high quality transplants free from Iris yellow spot virus. Follow three years or longer rotation between onion crops. Eliminate volunteers, culls, and weeds in and around onion fields. Adopt control measures of thrips. Maintain good fertility and adequate soil moisture to reduce plant stress, practice good sanitation and remove and destroy infected plants along with cull piles, remove weeds in and around onion fields including volunteer onions and wild alliums.
Onion Yellow Dwarf Virus (OYDV)	Mild chlorotic stripes to bright yellow stripes, mosaic, curling of leaves and stunted growth. Vector is aphid.	Use virus free planting material. Rouge out infected plants. Use resistant cultivars. Foliar spray of insecticides like Imidacloprid 17.8SL at 0.5-0.6 ml per liter water to control aphids.

Competitive Analysis

Local

The earliest planting month in the Philippines is September and earliest harvest is early December. Harvesting in all regions is concentrated in the months of February to May. This means the country's export for northern neighbors would be in December and at the latest in January.

FIGURE 28. CROPPING CALENDAR FOR RED ONION

RED ONION	CROPPING CALENDAR																							
	PLANTING SCHEDULE												HARVESTING SCHEDULE											
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Nueva Ecija																								
Occidental Mindoro																								
Ilocos Sur																								
Ilocos Norte																								
Nueva Vizcaya																								
Tarlac																								
Pangasinan																								
Oriental Mindoro																								
La Union																								
Iloilo																								
Pampanga																								
Bataan																								
Bulacan																								
Negros Occidental																								

FIGURE 29. CROPPING CALENDAR FOR YELLOW ONION

YELLOW ONION	CROPPING CALENDAR																							
	PLANTING SCHEDULE												HARVESTING SCHEDULE											
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
PROVINCE																								
Nueva Ecija																								
Mindoro																								
Ilocos Sur																								
Ilocos Norte																								
Pangasinan																								

FIGURE 30. CROPPING CALENDAR FOR SHALLOT

SHALLOT	CROPPING CALENDAR																							
	PLANTING SCHEDULE												HARVESTING SCHEDULE											
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
PROVINCE																								
Ilocos Sur																								
Ilocos Norte																								
Nueva Ecija																								

With the above cropping schedule, obtaining off-season supply is an issue. The country's ideal trading partner are those with a complementary harvest season to that of the Philippines such as Indonesia. However, they grow mostly shallot and consume most of their local production. Out of their 1,580,243 mt production in 2019, only 561 mt was reported to have been for export.

International

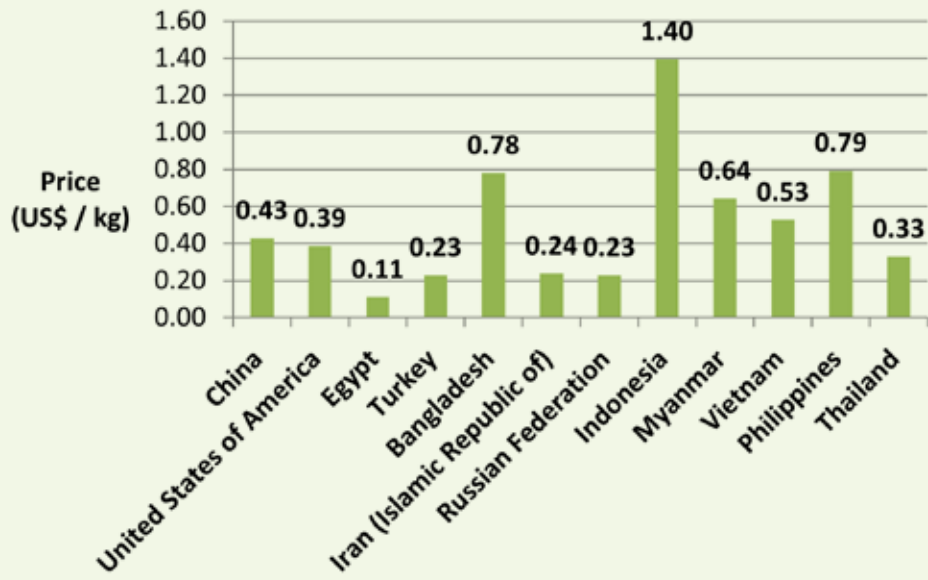
International competition for the onion market is influenced by geography which determines the timing of harvest and the local cost of production which will dictate prices.

As presented earlier, the top producers are also seasonal importers. A profitable timing of harvest is that which would take advantage of windows of export in major consuming countries. The policy concern is how to balance the country's foreign trade.

Prices offered by top onion producing countries are cheaper at US\$ 0.11/kg to US\$ 0.43/kg while we have an average price of US\$ 0.79/kg in 2019 (Figure 28). Within the year, the monthly prices of onion are fluctuating owing to its high seasonality. Onion is being consumed daily throughout the country but is produced only during the dry season and in just a few regions in Luzon. Highest prices were observed from November to February, when it is the planting season and the previous year's crop is dwindling. The lowest prices were from March to June as it is the harvest season and local supply is abundant.

To have a steady year-round supply of onion, the industry needs cold storage facilities to hold the off-season onion supply of the country, resort to importation for part of off-season requirements, produce off-season onion, or use onion alternatives.

FIGURE 31. ONION PRICES IN TOP PRODUCING COUNTRIES (2019)



Source: PSA

MARKET TRENDS AND PROSPECTS

Onion-producing countries still import a part of their supply requirement during off-season. Market prospects are influenced by the level of competitiveness of the Philippine onion industry. In the local market, potential demand still exceeds the local supply. Hence, sale of locally produced onions can still expand if supply is increased offered at competitive prices. Should prices decrease, we can expect the local demand to expand as domestic consumption may increase.

Aside from consuming fresh onions, they are also available in the global market as dehydrated onions or as puree and powder. As a spice, onion powder makes handling convenient and may be readily used for snacks, sauces, salads, soups, marinades, dry rubs, etc. They are also prepared as health supplements and cough and colds remedy. According to the International Market Analysis Research and Consulting (IMARC) Group, the global onion powder market (conventional and organic) will exhibit a compound annual growth rate of 5% for 2021 to 2026. With stringent lockdowns, sales shifted from storefront marketing to online platforms. Institutional users hold majority of the market share over home users in which the United States is a primary destination. Other key regions are China, India, Japan, South Korea, Turkey, Iran, Pakistan, and Egypt. Major institutional players for the global onion powder market include Sensient Technologies (USA), Vegenat (Spain), Sodeleg (France), Qingdao Lulin Dehydrated Vegetables Co. (China), Olam International Inc. (Singapore), Giza National Dehydration (Egypt), New Benisuef (Egypt), Natural Dehydrated Vegetables Pvt. Ltd. (India), and Xinghua Hengsheng Food Co. Ltd. (China).

Locally, McCormick onion powder is commonly seen in supermarkets. Some onion-flavored snacks include crackers, potato chips, and potato fries (e.g., from Monde M.Y. San Corporation, Universal Robina Corporation, Croley Foods Mfg., Liwayway Marketing Corporation). Sour cream and onion is also a popular flavoring.

As for dehydrated onions, Global Banking & Finance Review® reported that the U.S. market will grow from US\$ 319 Million in 2021 to US\$ 478.2 Million in 2031. The U.K. is expected to emerge as a leading market in Europe due to high demand from the food processing sector. They also cited an analysis from Future Market Insights (FMI) that the market is expected to a valuation of over US\$ 1.7 Billion by 2031.

As an additional source of income and to reduce production waste, several studies have been supported in the Philippines to develop innovative products. Specifically, onion leaves are seen as similar to spring onion and may be processed for food applications as spice. The leaves may be dried, vacuum-fried, powdered, and pickled. onion leaves extract, and vacuum-fried onion leaves. Hydroalcoholic extract from onion leaves has been studied for inhibition of pancreatic lipase which could potentially decrease fat absorption.

FIGURE 32. VALUE-ADDED PRODUCTS FROM ONION LEAVES



(Photo: Agriculture Monthly)

TARGET SETTING

Target setting for this roadmap proved to be a challenge due to discrepancies between the reported data and the actual situation faced by industry members in addition to the lack of apparent consensus on policy recommendations. Aiming to balance the abovementioned factors, the consensus was to strive for self-sufficiency in terms of volume based on demand or consumption per capita; and for trade parity based on adjusted import values. Hence, the industry mindset should at least be that of an export producer.

Vision	
A modern, competitive, and profitable onion industry providing high quality, safe, affordable, and sustainable supply of onion to meet increasing domestic and export demand	
Mission	Goal
1. Ensure the production of and access to high quality, safe, and affordable onion throughout the year	1.1. Increase total production of onion from 229,539 mt (2020) to 279,270 mt to achieve self-sufficiency in onions by 2025 1.2. Increase production of yellow onion and shallots by 10% per year for targeted niche market 1.3. Ensure food safety by supporting the adoption of GAP / Organic farming approaches 1.4. Enhance off-season production and improve storage facilities for year-round supply
2. Provide quality support services to improve the lives of onion growers and enhance their global competitiveness	2.1. Enhance seed system for bulb onion and shallots 2.2. Enhance post-production and logistics facilities 2.3. Strengthen marketing linkages/systems and support services for local and export markets 2.4. Minimize production cost and postharvest losses through mechanization from production to packaging
3. Provide responsive regulatory and crop protection services	3.1. Strengthen analytical service laboratories (ASLs) 3.2. Enhance pest and disease forecasting capability for prevention and rapid response to crop infestations 3.3. Ensure balanced supply high quality and safe bulb onions and shallots

Mission	Goal
4. Implement proactive R&D programs in support of stakeholders especially small producers	4.1. Develop varieties for long storage life, pest and disease resistance, and climate resilience 4.2. Develop crop protection systems 4.3. Develop onion crop models and other decision-support tools 4.4. Improve postharvest handling, processing, and value-adding systems for products and by-products
5. Support farmer – empowered marketing systems	Organize the production sector
6. Enhance climate resiliency of the onion sector	Protect onion growers from losses due to disasters, pests, diseases, and other climate impacts
7. Strengthen the gender-responsiveness of the onion industry	Ensure equitable access to resources and opportunities

MISSION 1.	Ensure the production of and access to high quality, safe, and affordable onion throughout the year			
Goal 1.1.	Increase total production from 229,539 mt (2020) to 279,270 mt to achieve self-sufficiency by 2025			
Key Strategy:	Expand both traditional and non-traditional production areas through clustering			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
1.1.1.	Institute a master list of onion farmers with corresponding geo-referencing information	Number of onion farmers included in the master list	DA RFOs, LGUs	October 2022 to 2025
1.1.2.	Establish a mechanism for accreditation of farmers' associations	Number of accredited farmers association	BPI, LGUs	October 2022 to 2025
1.1.3	Provide subsidy for the distribution of planting materials and other support services	Number of farmers served Number of hectares planted	HVCDP, DA RFOs, LGUs	2022 to 2025
1.1.4.	Conduct trainings on entrepreneurship, GAP	Number of trainings conducted Number of farmers trained	ATI, Private sector	Oct 2022 to 2025

MISSION 1.	Ensure the production of and access to high quality, safe, and affordable onion throughout the year		
Goal 1.2.	Increase production of yellow onion and shallots by 10% per year for targeted niche market		
Key Strategy:	Expand production in key areas		
Action Plan / Activities	Key Performance Indicators	Responsible Entities	Timeframe
1.2.1. Develop database on onion per variety (refer to 1.1.1)			
1.2.2. Conduct mapping and geo-tagging (refer to 1.1.1)			
1.2.3 Provide rain shelters for onion seedling nurseries to support early season production	Number of rain shelters provided Number of farmers served	HVCDP, DA RFOs, LGUs	2022 to 2025
1.2.4. Provide rain shelters in Mindanao for year-round production	Number of rain shelters provided Number of farmers served	HVCDP, DA RFOs, LGUs	2022 to 2025

MISSION 1.	Ensure the production of and access to high quality, safe, and affordable onion throughout the year		
Goal 1.3.	Ensure food safety by supporting the adoption GAP / Organic farming approaches		
Key Strategy:	Promote food safety through public advocacy		
Action Plan / Activities	Key Performance Indicators	Responsible Entities	Timeframe
1.3.1. Strengthen and promote GAP	Number of GAP-certified farms	BPI, DTI, Private sector	2022 to 2025
1.3.2. Increase public awareness on GAP and Organic farming approaches through TV and social media advertisements	Number of airtime, views, and other social media parameters	HVCDP, BPI, NOAP	2022 to 2025

MISSION 1.	Ensure the production of and access to high quality, safe, and affordable onion throughout the year			
Goal 1.3.	Ensure food safety by supporting the adoption GAP / Organic farming approaches			
Key Strategy:	Promote food safety through public advocacy			
	Action Plan / Activities	Key Performance Indicators	Responsible Entities	Timeframe
1.3.3	Conduct KADIWA / LGU Market Days	Number of Market Days conducted	AMAS, Private sector	2022 to 2025
1.3.4.	Encourage marketplaces to dedicate sections/ shelves for products from GAP-certified / organic farms	Number of marketplaces with dedicated areas/shelves for products from GAP-certified / organic farms	AMAS, Private sector	2022 to 2025
1.3.5.	Recommend implementation of tax incentives for GAP-certified / Organic producers to the Bureau of Internal Revenue	Number of compliant farms Approval of tax policy recommendation	BPI, DA RFOs, LGUs, BIR	2022 to 2025

MISSION 1.	Ensure the production of and access to high quality, safe, and affordable onion throughout the year			
Goal 1.4.	Enhance off-season production and improve storage facilities to support year-round supply			
Key Strategy:	(a) Promote production in Visayas and Mindanao especially during off-season in Luzon			
	Action Plan / Activities	Key Performance Indicators	Responsible Entities	Timeframe
1.4.1.	Provide rain shelters for onion seedling nurseries to support early season production (refer to 1.2.3)			2022 to 2025
1.4.2.	Provide rain shelters for off-season production in Mindanao (refer to 1.2.4)			2022 to 2025
1.4.3	Provide irrigation support	Number of farmers served	NIA	2022 to 2025
	Key Strategy:	(a) Promote production in Visayas and Mindanao especially during off-season in Luzon		
1.4.4.	Streamline the accreditation of storage facilities	Number of accredited facilities	BPI, Private sector, PhilMech	2022 to 2025
		Number of processing days for accreditation		
1.4.5.	Rehabilitate and upgrade existing storage facilities	Number of facilities rehabilitated/ upgraded	BPI, Private sector, PhilMech	2026 to 2030 (medium term)
1.4.6.	Conduct trainings for facility operators	Number of facility operators trained	BPI, Private sector, PhilMech	2022 to 2025

MISSION 2.	Provide quality support services to improve the lives of onion growers and enhance their global competitiveness			
Goal 2.1.	Enhance seed system for bulb onion and shallots			
Key Strategy:	Establish seed systems for red and yellow bulb onion and shallots			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
2.1.1.	Conduct research to decrease costs through local shallot seed production	Number of studies conducted	BAR, BPI, SUCs	2022 to 2025
2.1.2.	Improve seed distribution systems to stabilize the supply of planting materials	Stabilized supply of planting materials	National Seed Technology Park	2022 to 2025
2.1.3.	Procure seeds of hybrid, open-pollinated, and early maturing varieties of onion and shallot	Amount of seeds procured Amount of seeds distributed Number of farmers served	DA RFOs, LGU Private sector	2022 to 2025

MISSION 2.	Provide quality support services to improve the lives of onion growers and enhance their global competitiveness			
Goal 2.2.	Enhance post-production and logistics facilities			
Key Strategy:	Establish new and upgrade existing postharvest facilities in key areas			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
2.2.1.	<p>Implement Onion Cold Storage Program with the following components and considerations:</p> <ul style="list-style-type: none"> - Capacity of at least 300,000 bags - With flash dryer - Operation mechanisms supported by the private sector <p>Oversight from the onion marketing board</p>	<p>Number of onion cold storage programs implemented</p>	<p>BPI, Private sector (members of onion marketing board)</p>	<p>2026 to 2030 (medium term)</p>
2.2.2.	<p>Implement Hanger Program for Alliums with the following components and considerations:</p> <ul style="list-style-type: none"> - With drying area, sorting equipment, and vermicompost bins - Php 1.5M per unit with land as counterpart of the organization - Capacity of 2,000 -3,000 bags <p>Operated by farmers' organization</p>	<p>Number of hanger programs implemented</p>	<p>BPI, Private sector</p>	<p>2026 to 2030 (medium term)</p>

MISSION 2.	Provide quality support services to improve the lives of onion growers and enhance their global competitiveness			
Goal 2.3.	Strengthen marketing linkages/systems and support services for local and export markets			
Key Strategy:	(a) Revitalize / Improve market systems			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
2.3.1.	Support government initiatives in the promotion of onions through: <ul style="list-style-type: none"> - Market matching - Market linkage KADIWA	Number of market matching / linkages facilitated	AMAS	2022 to 2025
2.3.2.	Update market information <ul style="list-style-type: none"> - buyers' / suppliers' guide - Market Research / Benchmarking Market Information System	Updated market information	AMAS	2022 to 2025
2.3.3.	Conduct of onion festival / fair / congress	Number of onion festivals / fairs / congress conducted	AMAS	2022 to 2025
Key Strategy:	(b) Promote and support shallot and bulb onion exportation			
2.3.4.	Conduct government to government negotiation for shallot and onion exportation to Indonesia and other potential export markets	Number of export markets gained	DA IAD, HVCDP, BPI, Private sector	2022 to 2025

MISSION 2.	Provide quality support services to improve the lives of onion growers and enhance their global competitiveness			
Goal 2.4.	Minimize production cost and postharvest losses through mechanization from production to packaging			
Key Strategy:	Promote / adopt mechanization through Public-Private Partnerships			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
2.3.1.	Establish farm service providers for farm machineries mainly for land preparation, direct seeding and transplanting, sorting, and packaging	Number of farm service providers	PhilMech, LGUs, ACPC, Private sector	2022 to 2025
2.3.2.	Conduct trainings and facilitate accreditation of equipment operators	Number of accredited equipment operators	PhilMech, ATI, TESDA, Private sector	2022 to 2025
2.3.3.	Establish demo areas and handling trials throughout the value supply chain	Number of demo areas established Number of handling trials conducted	HVCDP, BPI, DA RFOs, LGUs, Private sector	2022 to 2025

MISSION 3.	Provide responsive regulatory and crop protection services			
Goal 3.1.	Strengthen analytical service laboratories (ASLs)			
Key Strategy:	Support ASLs towards ISO certification			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
3.1.1.	Establish strategic satellite ASLs for pesticide residue and heavy metals - Central - Regional - Provincial	Number of established satellite ASLs	BPI, BAR, DOST, SUCs, Private sector	2026 to 2030 (medium term)

MISSION 3.	Provide responsive regulatory and crop protection services			
Goal 3.1.	Strengthen analytical service laboratories (ASLs)			
Key Strategy:	Support ASLs towards ISO certification			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
3.1.2.	Upgrade existing laboratories	Number of laboratories upgraded	BPI, BAR, DOST, SUCs, Private sector	2022 to 2025
3.1.3.	Facilitate accreditation of government and private ASLs	Number of accredited ASLs	BPI, DOST, SUCs, Private sector	2022 to 2025

MISSION 3.	Provide responsive regulatory and crop protection services			
Goal 3.2.	Enhance pest and disease forecasting capability for prevention and rapid response to crop infestations			
Key Strategy:	Strengthen services provided by Regional Crop Protection Centers for onion growers			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
3.2.1.	Establish quarantine laboratories	Number of established quarantine laboratories	BPI	2026 to 2030 (medium term)
3.2.2.	Conduct regular pest risk assessment, surveillance, and monitoring	Number of periodic assessment / surveillance / monitoring activities conducted	DA RFOs, LGUs	2022 to 2025
3.2.3.	Implement post-entry quarantine	Standardized post-entry quarantine measures consistently implemented	BPI	2022 to 2025

MISSION 3.	Provide responsive regulatory and crop protection services			
Goal 3.2.	Enhance pest and disease forecasting capability for prevention and rapid response to crop infestations			
Key Strategy:	Strengthen services provided by Regional Crop Protection Centers for onion growers			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
3.2.4.	Develop sensors for invasive pests and pathogens (biological and GIS / IT- based)	Number of sensors developed	HVCDP, BPI, BAR, SUCs, DOST, Private sector	2022 to 2025
3.2.5.	Develop organic pesticide and biological control methods	Number of organic pesticides developed Number of biological control methods developed/ optimized	HVCDP, BPI, BAR, SUCs, DOST, Private sector	2022 to 2025
3.2.6.	Equip RCPCs with forecasting tools	Number of RCPCs equipped with forecasting tools	HVCDP, BPI, BAR, DOST, Private sector	2022 to 2025
3.2.7.	Capacitate technical staff regarding utilization of forecasting tools	Number of technical staff capacitated	HVCDP, BPI, BAR, DOST, Private sector	2022 to 2025
3.2.8.	Promote awareness and implementation of Integrated Pest and Disease Management	Number of farmers adopting IPDM practices	HVCDP, BPI, DA RFOs, Private sector	2022 to 2025

MISSION 3.	Provide responsive regulatory and crop protection services			
Goal 3.3.	Ensure balanced supply of high quality and safe bulb onions and shallots			
Key Strategy:	Improve existing regulatory services			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
3.3.1.	Monitor and regulate the quality and quantity of imported onions	Target number of monitoring activities (semestral/ annual?) is achieved	BPI	2022 to 2025
3.3.2.	Strictly regulate the issuance of sanitary and phytosanitary import clearance	Number of clearances issued to fully compliant requestors	BPI	2022 to 2025
3.3.3.	Improve regulations/guidelines on the issuance of plant quarantine clearance	Number of regulations/ guidelines reviewed/ revised	BPI, HVCDP, DA RFOs, Private sector Other stakeholders	2022 to 2025
3.3.4	Strengthen coordination with Bureau of Customs for the cessation of smuggling and implementation of appropriate taxation / tariffs	Number of meetings conducted Reduced reports of onion smuggling Amount of funds generated from taxation / tariffs	BPI, Bureau of Customs	2022 to 2025
3.3.5.	Involve/include stakeholders in planning and decision-making	Number of meetings conducted with multi-stakeholder participation	BPI, HVCDP	2022 to 2025

MISSION 4.	Implement proactive R&D programs in support of stakeholders especially small producers			
Goal 4.1.	Develop varieties for long storage life, pest and disease resistance, and climate resilience			
Key Strategy:	Provide continuous/long-term support from variety development up to registration			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
4.1.1.	Conduct research on the local production of onion seeds to lower costs per hectare (refer to 2.1.1.)	Number of studies conducted	SUCs, DA RFOs, BAR, BPI, Private sector, DOST	2022 to 2025
4.1.2.	Develop local seed production systems for bulb onion and shallot	Number of established local seed production systems	SUCs, DA RFOs, BAR, BPI, Private sector	2022 to 2025
4.1.3.	Varietal development for various ecological zones	Number of varieties developed per identified ecological zone	SUCs, DA RFOs, BAR, BPI, Private sector	2026 to 2030 (medium term)

MISSION 4.	Implement proactive R&D programs in support of stakeholders especially small producers		
Goal 4.2.	Develop crop protection systems		
Key Strategy:	Enhance sustainable production and pest management system		
Action Plan / Activities	Key Performance Indicators	Responsible Entities	Timeframe
4.2.1. Develop pest management systems for off-season production areas	<p>Number of developed pest management systems</p> <p>Number of farmers who adopted the recommended pest management system in a specific production area</p>	BPI	2022 to 2025
4.2.2. Develop/improve irrigation systems	<p>Efficiency of implemented irrigation systems</p> <p>Optimized irrigation water consumption per unit area</p> <p>Number of farmers served</p>	NIA?	2022 to 2025
4.2.3. Generate pest and disease forecasts and analyze trends	Availability of periodic data through pest and disease forecasts	DA RFO RCPCs	2022 to 2025

MISSION 4.	Implement proactive R&D programs in support of stakeholders especially small producers			
Goal 4.3.	Develop onion crop models and other decision-support tools			
Key Strategy:	Adopt precision agriculture			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
4.3.1.	Conduct R&D in line with SMART farming for onion	Number of studies conducted	SUCs, DA ICT, DA RFOs, Private sector	2022 to 2025
4.3.2.	Develop automated irrigation and fertigation systems	Number of farmers / farms served	SUCs, DA ICT, DA RFOs, Private sector	2022 to 2025
4.3.3.	Provide real-time weather, pest, and disease forecasting and recommendations	Number of farmers / farms served	SUCs, DA ICT, DA RFOs, PhilMech, PhilRice, UPLB NCPC, Private sector (especially those that specialize on IoT for agriculture)	2022 to 2025
4.3.4.	Develop/optimize drone-mediated fertilizer and pesticide application	Number of farmers / farms served	DA RFO RCPCs	2022 to 2025

MISSION 4.	Implement proactive R&D programs in support of stakeholders especially small producers			
Goal 4.4.	Improve processing and value-adding systems for products and by-products			
Key Strategy:	Develop products and by-products to expand marketability/durability and utility			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
4.4.1.	Develop new products (food and non-food)	Number of products developed	Private processor, DA-FDC, SUCs, DOST	2022 to 2025
4.4.2.	Innovate ways to repurpose by-products	Number of products developed Percent reduction in waste products	Private processor, DA-FDC, SUCs, DOST	2022 to 2025
4.4.3.	Develop market-responsive/consumer-attractive packaging and labelling technologies	Number of packaging and labelling technology options generated	Private processor, DA-FDC, SUCs, DOST	2022 to 2025
4.4.4.	Develop new and/or improved processing and value-adding procedures/equipment	Number of new or improved processing and value-adding procedures/equipment	Private processor, DA-FDC, SUCs, DOST, PhilMech, Private sector	2022 to 2025

MISSION 5.	Support farmer – empowered marketing systems			
Goal 5:	Organize the production sector			
Key Strategy:	Strengthen / Empower onion growers			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
5.1.	Employ community-based production and marketing systems	Number of onion farming communities served	CDA, LGU, Landbank, ACPC, Private sector	2022 to 2025
5.2.	Encourage/promote a participatory and interactive production sector	Adoption of participatory methods, appropriate extension modalities, and technology dissemination systems	CDA, LGU, Landbank, ACPC, Private sector	2022 to 2025
5.3.	Promote the clustering of onion farmers	Number of farmer clusters/ groups formed	CDA, LGU, Landbank, ACPC, Private sector	2022 to 2025
5.4.	Establish a federation of cooperatives and associations of onion growers	Established onion growers federation	CDA, LGU, Landbank, ACPC, Private sector	2022 to 2025
5.5.	Support accreditation of cooperatives and associations	Number of cooperatives and associations accredited by the DA	CDA, LGU, Landbank, ACPC, Private sector	2022 to 2025
5.6.	Provide professional managers for cooperatives and associations	Number of cooperatives and associations served	CDA, LGU, Landbank, ACPC, Private sector	2022 to 2025

MISSION 5.	Support farmer – empowered marketing systems			
Goal 5:	Organize the production sector			
Key Strategy:	Strengthen / Empower onion growers			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
5.7.	Conduct trainings and workshops (Training of Trainers)	Number of trainings conducted	ATI, LGUs	2022 to 2025
5.8.	Establish consolidation centers to regulate prices in support of the farmers	Number of consolidation centers established	HVCDP, DTI	2030 to 2040 (long term)

MISSION 6.	Enhance climate resiliency of the onion sector			
Goal 6:	Protect onion growers from losses due to disasters, pests, diseases, and other climate change impacts			
Key Strategy:	Expand access to and coverage of crop insurance and credit			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
6.1.	Support production-credit-insurance linkage	Number of linkage opportunities facilitated	PCIC, ACPC	2022 to 2025
6.2.	Conduct seminars on credit and insurance	Number of seminars conducted Number of participants	PCIC, ACPC	2022 to 2025
6.3.	Conduct trainings on financial management and insurance delivery	Number of trainings conducted Number of participants	PCIC, ACPC	2022 to 2025

MISSION 6.	Enhance climate resiliency of the onion sector			
Goal 6:	Protect onion growers from losses due to disasters, pests, diseases, and other climate change impacts			
Key Strategy:	Expand access to and coverage of crop insurance and credit			
6.4.	Provide easy access loan assistance	Number of farmers served	PCIC, ACPC	2022 to 2025
6.5.	Expand insurance coverage not limited to armyworm and anthracnose infestations	Insurance coverage expanded	PCIC, ACPC	2022 to 2025
6.6.	Open/improve new credit and insurance windows and facilities	Number of new credit and insurance windows and facilities Number of improved credit and insurance windows and facilities	PCIC, ACPC	2022 to 2025

MISSION 7.	Strengthen the gender-responsiveness of the onion production sector / onion industry			
Goal 7:	Ensure equitable access to resources and opportunities			
Key Strategy:	Empower and support women members of the onion production sector / onion industry			
Action Plan / Activities		Key Performance Indicators	Responsible Entities	Timeframe
7.1.	Provide easy access loan assistance for women (refer to 6.4.)	Numbers of women farmers served	PCIC, ACPC	2022 to 2025
7.2.	Conduct trainings on - leadership, and management - insurance delivery - marketing entrepreneurship	Number of trainings conducted	ATI, DA RFOs	2022 to 2025

MISSION 7.	Strengthen the gender-responsiveness of the onion production sector / onion industry			
Goal 7:	Ensure equitable access to resources and opportunities			
Key Strategy:	Empower and support women members of the onion production sector / onion industry			
7.3.	Provide ergonomic equipment and tools to improve their work environment	Number of farms served	DA RFOs, PhilMech	2022 to 2025
7.4.	Provide credit assistance to onion-based enterprises	Number of women assisted	PCIC, ACPC, Private sector	2022 to 2025

Short-term physical and financial targets were determined in consultation with the DA Regional Field Offices for CY 2021 – 2025 following the strategies identified. Corresponding activities / action plan for all components of the value chain are summarized below.

The total budget needed for all the identified interventions is PhP 721,892,602.72. Production support (largely for fertilizer) takes the lion share with a total of PhP 621,573,620.45 (83% of the total budget). This followed by postharvest handling, processing, and logistics support (PhP 68,134,372.27).

TABLE 12. PHYSICAL TARGETS FOR THE ONION INDUSTRY (2021-2025)

ACTIVITY CATEGORY	PHYSICAL TARGETS					
	2021	2022	2023	2024	2025	TOTAL
SEED SYSTEM ESTABLISHMENT	-	450	603	654	1,008	2,715
Nursery Establishment	-	-	1	3	6	10
Seed Storage	-	-	2	1	2	5
Seed Distribution	-	450	600	650	1,000	2,700
REGULATORY	-	-	5	5	5	15
Monitoring of compliance to Phytosanitary Protocols	-	-	1	1	1	3
Creation of masterlist / database of onion farmers with info on variety planted and for geo-referencing	-	-	3	3	3	9

ACTIVITY CATEGORY	PHYSICAL TARGETS					
	2021	2022	2023	2024	2025	TOTAL
Promotion of GAP and Organic farming approaches through TV and social media advertisements	-	-	1	1	1	3
TRAININGS	14	30	64	65	61	234
Production	2	8	23	23	23	79
Pest and Disease Management	6	13	25	25	22	91
Post-harvest and Processing	2	9	15	15	15	56
Establishment of Techno-Demo Farms	4	-	1	2	1	8
PRODUCTION SUPPORT	106,385	141,823	180,657	183,332	186,922	799,120
Planting Materials	105,871	84,098	87,716	90,173	92,653	460,512
Fertilizer	-	57,355	92,500	92,700	93,800	336,355
Other Farm Inputs	-	4	12	24	32	72
Other Farm Tools and Equipment	514	366	429	435	437	2,181
POSTHARVEST HANDLING, PROCESSING, AND LOGISTICS	1,003	2,038	23,041	28,043	28,050	82,175
Plastic Crates	1,000	2,000	23,000	28,000	28,000	82,000
Cold Storage	3	28	23	24	27	105
Processing Facility	-	-	-	1	-	1
Hauling Truck	-	10	18	18	23	69
SOIL ANALYSIS	-	-	20	21	21	62
MARKET DEVELOPMENT	-	4	22	24	29	79
R&D	-	-	3,100	5,000	6,700	14,800
Seed Production	-	-	3,100	5,000	6,700	14,800

TABLE 13. FINANCIAL TARGETS FOR THE ONION INDUSTRY (2021-2025)

ACTIVITY CATEGORY	FINANCIAL TARGETS					
	2021	2022	2023	2024	2025	TOTAL
SEED SYSTEM ESTABLISHMENT	-	4,500,000.00	6,001,500.00	7,501,000.00	12,501,500.00	30,504,000.00
Nursery Establishment	-	-	500.00	1,000,500.00	2,500,500.00	3,501,500.00
Seed Storage	-	-	1,000.00	500.00	1,000.00	2,500.00

ACTIVITY CATEGORY	FINANCIAL TARGETS					
	2021	2022	2023	2024	2025	TOTAL
Seed Distribution	-	4,500,000.00	6,000,000.00	6,500,000.00	10,000,000.00	27,000,000.00
REGULATORY	-	-	400,000.00	400,000.00	400,000.00	1,200,000.00
Monitoring of compliance to Phytosanitary Protocols	-	-	100,000.00	100,000.00	100,000.00	300,000.00
Creation of masterlist / database of onion farmers with info on variety planted and for geo-referencing	-	-	200,000.00	200,000.00	200,000.00	600,000.00
Promotion of GAP and Organic farming approaches through TV and social media advertisements	-	-	100,000.00	100,000.00	100,000.00	300,000.00
TRAININGS	4,800.00	22,400.00	40,790.00	41,120.00	35,450.00	144,560.00
Production	4,000.00	10,000.00	6,890.00	6,920.00	6,950.00	34,760.00
Pest and Disease Management	400.00	6,400.00	25,900.00	26,200.00	20,500.00	79,400.00
Post-harvest and Processing	-	6,000.00	7,000.00	7,000.00	7,000.00	27,000.00
Establishment of Techno-Demo Farms	400.00	-	1,000.00	1,000.00	1,000.00	3,400.00
PRODUCTION SUPPORT	1,274,140.00	111,193,149.50	168,944,144.80	169,039,899.80	171,122,286.40	621,573,620.50
Planting Materials	1,253,450.00	1,180,482.00	4,864,494.80	4,896,499.80	4,971,286.40	17,166,212.95
Fertilizer	0.00	110,002,617.50	164,011,750.00	164,012,450.00	166,012,800.00	604,039,617.50
Other Farm Inputs	-	400.00	1,800.00	4,800.00	8,000.00	15,000.00
Other Farm Tools and Equipment	20,690.00	9,650.00	66,100.00	126,150.00	130,200.00	352,790.00
POSTHARVEST HANDLING, PROCESSING, AND LOGISTICS	805,072.27	1,944,000.00	13,060,500.00	26,140,100.00	26,184,700.00	68,134,372.27
Plastic Crates	800,000.00	1,600,000.00	12,903,000.00	26,003,600.00	26,004,200.00	67,310,800.00

ACTIVITY CATEGORY	FINANCIAL TARGETS					
	2021	2022	2023	2024	2025	TOTAL
Cold Storage	5,072.27	314,000.00	123,000.00	100,000.00	131,000.00	673,072.27
Processing Facility				2,000.00		2,000.00
Hauling Truck	0.00	30,000.00	34,500.00	34,500.00	49,500.00	148,500.00
SOIL ANALYSIS	-	-	12,000.00	36,000.00	60,000.00	108,000.00
MARKET DEVELOPMENT	-	200.00	6,050.00	6,450.00	12,550.00	25,250.00
R&D	-	-	40,500.00	67,400.00	94,900.00	202,800.00
Seed Production	-	-	40,500	67,400	94,900	202,800.00
TOTAL	2,084,012.27	117,659,749.50	188,505,484.80	203,231,969.75	210,411,386.40	721,892,602.72

The target area expansion areas are shown in Table 12. From 2021 to 2025, an additional 18,511.21 hectares will be planted to onion. Of which, 75.15% will be for red onion, 14.14% for yellow onion, and 10.71% for shallot. The largest expansion area will be in Central Luzon (4,936.7 ha), followed by Cagayan Valley (4,129.7 ha), and Ilocos Region (4,059.8 ha).

TABLE 14. DISTRIBUTION OF TARGET EXPANSION AREAS BY REGION (HA), 2021-2025

	2021	2022	2023	2024	2025	TOTAL
Region I	839	647.5	805	715	1,053.3	4,059.8
Region II	125	357	500	700	800	2,482
Region III	801.7	435	775	1,250	1,675	4,936.7
MIMAROPA	1,306	625	575	575	575	3,656
Region VI	70	120	150	200	275	815



RECOMMENDATIONS FOR POLICIES, STRATEGIES, AND PROGRAMS

The recommendations aim to sustain existing initiatives to capacitate producers to export quality onions and shallot at competitive prices. Along the value chain, the proposed key interventions are production clustering, seed support system, infrastructure and equipment support, input subsidies, postharvest support facilities, and systemic interventions such as consolidation centers, auction markets, regulatory services.

Interventions will be through farmer clusters. Existing growers would be encouraged to increase their cropped areas if possible and train them on GAP and other recommended technology packages. New clusters would be encouraged to federate with existing groups which have already developed the capability for exports or have established good linkages in the local market networks. The other growers in the same locality will also be encouraged to go into onion production to maximize the benefits from common infrastructure. The new growers in other regions especially in areas with different cropping schedule and lower cost production system will be encouraged to go into onion production.

The production support will be in the form of seeds for shallots and rain shelters for off-season and early seedling production in Mindanao. There should be an equipment and machinery pool for planting, land preparation, harvesting, sorting, and packaging to ensure timely planting and lower production costs. Irrigation facilities will help increase potential areas for onion. The cold storage facilities will initially be matched with the production targets and additional facilities will be constructed as needed. This will help spread the supply over time and prolong the ownership of the onions for organized the farmers so they can negotiate for better prices and reduce postharvest losses and, more importantly, assure adequate planting materials for the ensuing planting season.

Most of the traditional growing areas of onion are degraded due to the excessive use of inorganic fertilizers. The support for organic fertilizer production and biological control agent (BCA) production plant will help rejuvenate the production areas and minimize the use of hazardous pesticides. Growers willing to go organic will be assisted through trainings, organic certification and marketing as provided in the law RA 10068 or the Organic Act of 2021 amended as RA 11511 in July 2020.

The HVCDP, in cooperation with other stakeholders, will pave the way for the creation of an Onion Board whose goal is the holistic development of the onion industry through policy formulation, promotion of the commodity and technical assistance. More specific functions will include advise on production methods, post-harvest and value-adding, cross-border trade, trade fairs and exhibitions and market surveys.

These interventions will be complemented with advocacy to reinforce key players' market responsiveness. Foremost of this is the choice of bigger and high yielding varieties and optimum use of inputs. The specific plans for each onion type are as follows:

A. Red onion

1. Rain shelters for seedling production for early season planting
2. Rain shelters for bulb production in off-season areas
3. R&D for new varieties adapted to specific regular and off-season production areas
4. R and D for local seed production
5. Support for GAP certification
6. Support for machinery pool for planting, harvesting, sorting, and packaging

B. Yellow onion

1. Rain shelters (seedling nurseries) for early season production
2. Rain shelters for off-season production mainly in Mindanao
3. R and D for varieties with longer shelf life
4. Support for GAP certification for local and export markets

C. Shallots

1. Shallot seed production and distribution system
2. Tissue culture laboratory for the initial production of disease-free planting materials
3. Support for GAP certification for local and export markets
4. R and D on development of new varieties and control of purple blotch and other major diseases

The investment and support per region are integrated in the target expansion areas. The manner of implementation is through the production clusters, from production planning, training, and marketing. The cost details for the onion programs including institutional strengthening and support services development costs are presented below.

The estimated cost is only indicative of the resources needed to achieve the targets at current prices. The government support is based on the estimate of physical inputs per target area of physical expansion and anticipated increase in production. It would be translated into regional or even provincial sub-allocations. In actual implementation, the cost of support services would be demand-driven or based on the actual needs of proponent cooperators or beneficiary groups, as is currently practiced in most of HVCDP program components. These include the socialization of eligibility criteria, menu of possible or eligible support, proposal preparation, evaluation and approval process, procurement, construction supervision and administration of the whole process.

The proposed systemic interventions will have mainly intangible benefits to the stakeholders in the form of acquired knowledge and skill, responsive regulatory and crop protection services when needed, greater market opportunities, and potential to exploit broader more lucrative international market.

Improving production efficiency can be achieved through the following practices:

1. Use of better varieties in shallots and bulb onions
2. Intercropping to minimize pests and provide diverse source of income
3. Proper use of inputs for nutrient and pest management

If the farmers are organized and operate as a bigger economic entity and receive additional support in terms of postharvest facilities, they can other benefits if they practice the following:

1. Planting of early maturing varieties to harvest early
2. Price negotiation as a group and offering better quality onions
3. Price negotiation in the trading centers rather than in the farm
4. Venture into consumer-packaging at the consolidation centers
5. Avail of inventory financing to store their harvest and release them gradually at higher prices

MANDANAS RULING

In view of the further devolution of specific functions to local government units (LGUs), efforts will be exerted to strengthen partnerships and collaborations with concerned units at the city, municipal and other levels. Targets and policies contained in the Onion Industry Roadmap will be communicated to concerned LGU units.

INDUSTRY CLUSTER GOVERNANCE NETWORK (IMPLEMENTATION TEAM)

The implementation of the Onion Industry Strategic Plan shall be guided by the National Onion Technical Working Group (NO-TWG) which will be under the HVCDP Steering Committee (HVCDP-SC). The latter shall be composed of the chair of the different crops TWG. The NO-TWG shall be composed of various representatives (Table 12.) The NO-TWG shall meet regularly per their agreed frequency. It shall deal mostly with programs and issues at the National level. The TWG shall be funded by the HVCDP (re: meetings, travel expenses). The members will be pro bono (no honorarium or compensation except for the travel expenses)

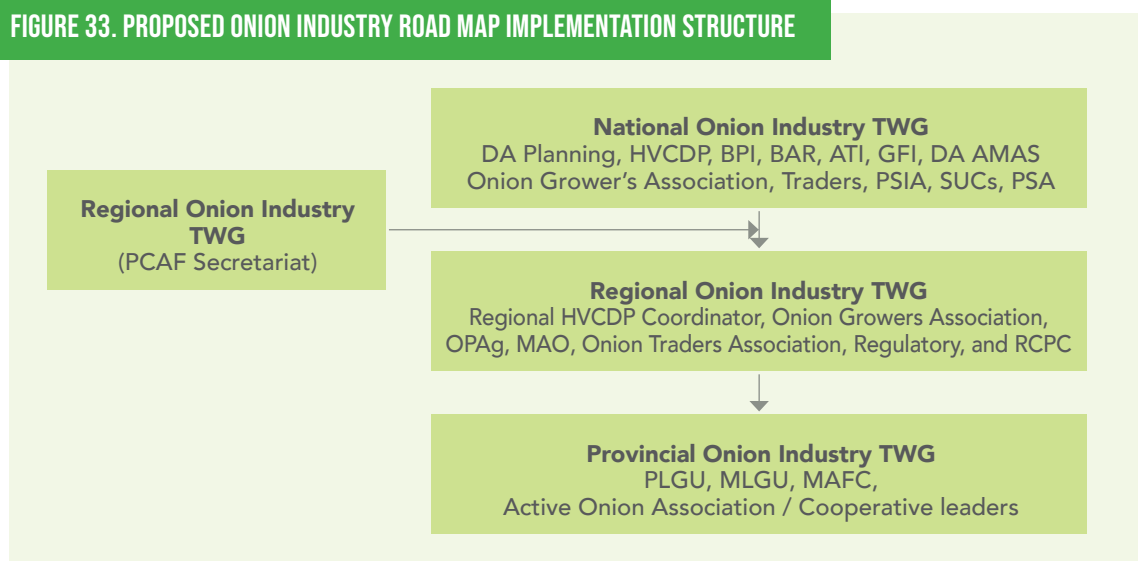
At the regional level, the Regional Onion Technical Working Group (RO-TWG) shall oversee leading/facilitating the group and shall be composed of the regional focal persons. The RO-TWG shall meet regularly per their agreed frequency. Concerns shall be about the programs and issues at the regional, provincial, municipal, and farm levels. The TWG shall be funded by the respective RFU (re: meetings, travel expenses). The members will be pro bono (no honorarium or compensation except for the travel expenses).

TABLE 15. ROLES, RESPONSIBILITIES, AND ACTORS FOR THE NATIONAL ONION TECHNICAL WORKING GROUP

ROLES	RESPONSIBILITIES	ACTORS
HVCDP Steering Committee (HVCDP-SC)		Chair for each of the different crops / commodities
National Onion Technical Working Group	<ul style="list-style-type: none"> • Assist the HVCDP-PMO implement the Onion Industry Strategic Plan • Validate and consolidate national and regional plans on onion • Monitor the developments and implementation the Onion Industry Strategic Plan • Update from time to time the Onion Industry Strategic Plan based on national and international developments • Liaison with the national policy makers, Bureaus, and other stakeholders of the onion industry 	<p>Chair: Private sector representative</p> <p>Co-chair: Government representative preferably from HVCDP</p> <p>Members:</p> <ul style="list-style-type: none"> • Onion Farmer’s Cooperative (Region 1, 2, 3, 4B ,6) • Onion importers and exporters organization • Philippine Seed Industry Association (PSIA) • HVCDP Coordinators from the onion growing regions • DA (Planning, HVCDP, BPI, BAR, ATI, PCAF, GFI, AMAS, PSA, PhilMech) • Department of Agrarian Reform (DAR) • Department of Trade and Industry (DTI) • Department of Science and Technology (DOST)

ROLES	RESPONSIBILITIES	ACTORS
Regional Onion Technical Working Group	<ul style="list-style-type: none"> Develop the regional onion action plans to include municipal and provincial targets and programs Implement the regional plans developed from the national plan through the provincial and municipal counterparts of the Regional HVCDP Conduct regional onion congresses and field days in coordination with the regional/provincial stakeholders and relevant agencies Promote GAP in onion production Ensure reliability of data and information access on production, prices, consumption and trade Report and represent the region in the NO-TWG 	<ul style="list-style-type: none"> Regional HVCDP Coordinator Onion Growers Association Office of the Provincial Agriculturist (OPAg) Municipal Agriculture Office (MAO) Onion Trader Associations Regulatory RCPC

FIGURE 33. PROPOSED ONION INDUSTRY ROAD MAP IMPLEMENTATION STRUCTURE



Five-Year Implementation Plan (2021-2025)

Vision

A modern, competitive, and profitable onion industry providing high quality, safe, affordable, and sustainable supply of onion to meet increasing domestic and export demand

Mission	Goal
1. Ensure the production of and access to high quality, safe, and affordable onion throughout the year	1.1. Increase total production of onion from 229,539 mt (2020) to 279,270 mt to achieve self-sufficiency in onions by 2025 1.2. Increase production of yellow onion and shallots by 10% per year for targeted niche market 1.3. Ensure food safety by supporting the adoption of GAP / Organic farming approaches 1.4. Enhance off-season production and improve storage facilities for year-round supply
2. Provide quality support services to improve the lives of onion growers and enhance their global competitiveness	2.1. Enhance seed system for bulb onion and shallots 2.2. Enhance post-production and logistics facilities 2.3. Strengthen marketing linkages/systems and support services for local and export markets 2.4. Minimize production cost and postharvest losses through mechanization from production to packaging
3. Provide responsive regulatory and crop protection services	3.1. Strengthen analytical service laboratories (ASLs) 3.2. Enhance pest and disease forecasting capability for prevention and rapid response to crop infestations 3.3. Ensure balanced supply high quality and safe bulb onions and shallots
4. Implement proactive R&D programs in support of stakeholders especially small producers	4.1. Develop varieties for long storage life, pest and disease resistance, and climate resilience 4.2. Develop crop protection systems 4.3. Develop onion crop models and other decision-support tools 4.4. Improve postharvest handling, processing, and value-adding systems for products and by-products
5. Support farmer – empowered marketing systems	Organize the production sector

Mission	Goal
6. Enhance climate resiliency of the onion sector	Protect onion growers from losses due to disasters, pests, diseases, and other climate impacts
7. Strengthen the gender-responsiveness of the onion industry	Ensure equitable access to resources and opportunities

Responsibility Matrix

(please refer to detailed tables on Section 6.0. Target Setting)

Institutional Arrangement

ROLES	RESPONSIBILITIES	ACTORS
HVCDP Steering Committee (HVCDP-SC)		Chair for each of the different crops / commodities
National Onion Technical Working Group	<ul style="list-style-type: none"> Assist the HVCDP-PMO implement the Onion Industry Strategic Plan Validate and consolidate national and regional plans on onion Monitor the developments and implementation the Onion Industry Strategic Plan Update from time to time the Onion Industry Strategic Plan based on national and international developments Liaison with the national policy makers, Bureaus, and other stakeholders of the onion industry 	<p>Chair: Private sector representative Co-chair: Government representative preferably from HVCDP</p> <p>Members:</p> <ul style="list-style-type: none"> Onion Farmer’s Cooperative (Region 1, 2, 3, 4B ,6) Onion importers and exporters organization Philippine Seed Industry Association (PSIA) HVCDP Coordinators from the onion growing regions DA (Planning, HVCDP, BPI, BAR, ATI, PCAF, GFI, AMAS, PSA, PhilMech) Department of Agrarian Reform (DAR) Department of Trade and Industry (DTI) Department of Science and Technology (DOST)

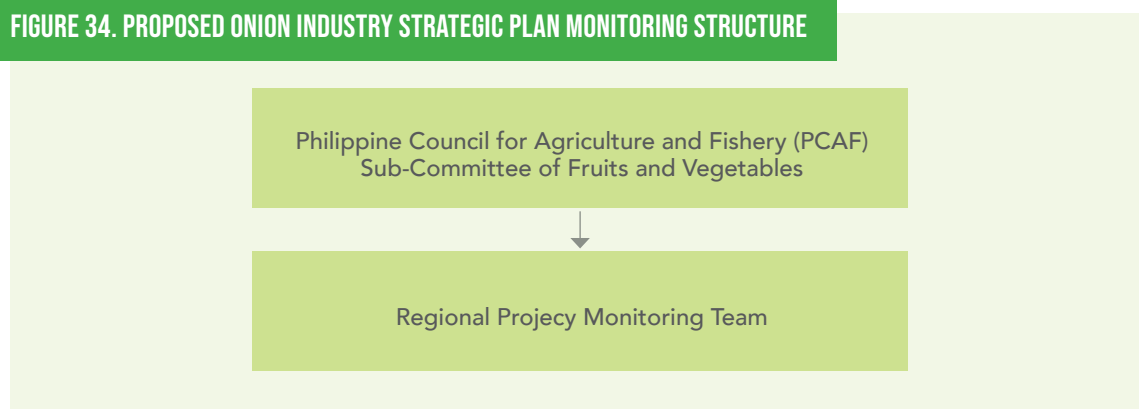
ROLES	RESPONSIBILITIES	ACTORS
Regional Onion Technical Working Group	<ul style="list-style-type: none"> • Develop the regional onion action plans to include municipal and provincial targets and programs • Implement the regional plans developed from the national plan through the provincial and municipal counterparts of the Regional HVCDP • Conduct regional onion congresses and field days in coordination with the regional/provincial stakeholders and relevant agencies • Promote GAP in onion production • Ensure reliability of data and information access on production, prices, consumption and trade • Report and represent the region in the NO-TWG 	<ul style="list-style-type: none"> • Regional HVCDP Coordinator • Onion Growers Association • Office of the Provincial Agriculturist (OPAg) • Municipal Agriculture Office (MAO) • Onion Trader Associations • Regulatory • RCPC

Monitoring and Evaluation

The existing system of monitoring DA banner programs would continue to be practiced for this commodity road map. The Sub-Committee on Onion under the Fruits and Vegetable Committee of the Philippine Council for Agriculture and Fishery (PCAF).

At the regional level the monitoring and evaluation shall be done by the Monitoring Team of the region consisted of the Planning, Accounting, Engineering Regional Staff and Regional and Provincial Agricultural and Fishery Coordinators (RAFC/PAFC) (Figure34).

FIGURE 34. PROPOSED ONION INDUSTRY STRATEGIC PLAN MONITORING STRUCTURE



The Onion Industry Strategic Plan shall be updated regularly but the following principles will remain as the foundation:

1. Sustainable farm income as a result of increase yields and cost management;
2. Consumer and environmental protection in all aspects of crop production and postharvest handling and storage; and
3. Self-sufficiency and export expansion in bulb and shallots for both fresh and processed products.



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APPENDICES

APPENDIX 1. VOLUME OF RED AND YELLOW ONION PRODUCTION IN METRIC TONS (BY REGION AND PROVINCE), 2011-2020

Red and Yellow Onion	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PHILIPPINES	88,225	84,800	94,867	164,179	143,006	87,366	146,798	135,739	185,132	190,975
REGION I (ILOCOS REGION)	4,931	4,769	4,918	5,035	5,292	4,769	4,730	3,350	3,907	4,054
Ilocos Norte	168	172	181	189	198	216	221	235	244	242
Ilocos Sur	-	-	56	488	476	473	481	486	501	515
La Union	24	23	22	23	80	120	126	149	450	432
Pangasinan	4,740	4,574	4,659	4,335	4,538	3,960	3,903	2,480	2,713	2,866
REGION II (CAGAYAN VALLEY)	4,688	2,652	7,106	7,458	6,851	7,722	8,550	8,751	8,780	8,690
Batanes	-	-	-	-	4	3	5	5	5	4
Cagayan	-	-	-	-	-	-	-	-	-	-
Isabela	3	2	1	1	2	2	1	6	7	6
Nueva Vizcaya	4,686	2,650	7,105	7,457	6,845	7,717	8,543	8,741	8,768	8,680
Quirino	-	-	-	-	-	-	-	-	-	-
REGION III (CENTRAL LUZON)	69,396	68,369	69,764	137,953	112,828	59,817	113,703	104,498	136,899	144,195
Aurora	-	-	-	-	-	-	-	-	-	-
Bataan	-	-	-	-	-	-	-	-	7	10
Bulacan	-	-	-	-	-	-	-	-	-	-
Nueva Ecija	69,377	68,369	69,728	137,910	112,779	59,768	113,647	103,351	133,749	139,540
Pampanga	-	-	-	-	-	-	-	-	-	-
Tarlac	18	-	36	43	49	50	56	1,147	3,143	4,646
Zambales	-	-	-	-	-	-	-	-	-	-
REGION IV-A (CALABARZON)	182	231	225	195	126	91	96	81	72	40
Batangas	-	70	80	50	15	12	9	10	1	1
Cavite	182	161	145	145	111	79	87	70	71	39
Laguna	-	-	-	-	-	-	-	-	-	-
Quezon	-	-	-	-	-	-	-	-	-	-
Rizal	-	-	-	-	-	-	-	-	-	-

Red and Yellow Onion	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
REGION IV-B (MIMAROPA)	8,870	8,448	12,571	13,314	17,575	14,661	19,402	18,698	35,052	33,627
Marinduque	-	-	-	-	-	-	-	-	-	-
Occidental Mindoro	8,870	8,448	12,571	13,314	16,575	13,330	17,147	16,696	32,750	31,620
Oriental Mindoro	-	-	-	-	1,000	1,332	2,255	2,002	2,302	2,007
Palawan	-	-	-	-	-	-	-	-	-	-
Romblon	-	-	-	-	-	-	-	-	-	-
REGION VI (WESTERN VISAYAS)	145	275	228	168	297	278	307	360	419	368
Aklan	-	-	-	-	-	-	-	-	-	-
Antique	-	-	-	-	-	-	-	-	-	-
Capiz	-	-	-	-	-	-	-	-	-	-
Negros Occidental	-	-	-	-	-	-	-	-	-	-
Guimaras	-	-	-	-	-	-	-	-	-	-
Iloilo	145	275	228	168	297	278	307	360	419	368
REGION VII (CENTRAL VISAYAS)	2	17	5	17	4	5	2	1	1	0
Bohol	-	-	-	-	-	-	-	-	-	-
Cebu	-	-	-	-	-	-	-	-	-	-
Negros Oriental	-	-	-	5	2	4	2	0	-	-
Siquijor	2	17	5	12	2	0	0	1	1	0
REGION XII (SOCCSKSARGEN)	10	40	50	40	35	24	8	-	-	-
Cotabato	-	-	-	-	-	-	-	-	-	-
Sarangani	-	-	-	-	-	-	-	-	-	-
South Cotabato	10	40	50	40	35	24	8	-	-	-
Sultan Kudarat	0	0	0	0	0	-	-	-	-	-

APPENDIX 2. VOLUME OF SHALLOT PRODUCTION IN METRIC TONS (BY REGION AND PROVINCE), 2011-2020

Shallot	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PHILIPPINES	40,163	40,089	39,372	39,473	38,202	35,228	37,629	36,927	36,951	38,564
REGION I (ILOCOS REGION)	35,689	35,652	34,852	34,692	34,757	33,703	35,562	34,970	34,920	36,489
Ilocos Norte	19,824	20,398	20,093	20,110	19,710	19,011	19,094	18,425	18,354	18,112
Ilocos Sur	15,857	15,245	14,749	14,574	15,038	14,684	16,459	16,536	16,558	18,370
La Union	-	-	-	-	-	-	-	-	-	-
Pangasinan	8	9	10	9	9	9	9	8	8	7
REGION II (CAGAYAN VALLEY)	111	176	172	171	168	116	114	103	100	94
Batanes	-	66	69	72	68	64	66	59	61	62
Cagayan	43	43	45	42	38	32	32	29	25	20
Isabela	25	21	15	12	18	9	7	6	5	4
Nueva Vizcaya	42	45	42	46	44	11	8	9	9	8
Quirino	-	-	-	-	-	-	-	-	-	-
REGION III (CENTRAL LUZON)	4,140	4,131	4,147	4,391	3,080	1,258	1,850	1,757	1,896	1,954
Aurora	-	-	-	-	-	-	-	-	-	-
Bataan	-	-	-	-	-	-	-	-	-	-
Bulacan	-	-	-	-	-	-	-	-	-	-
Nueva Ecija	4,123	4,113	4,126	4,369	3,056	1,235	1,828	1,736	1,879	1,939
Pampanga	3	4	5	5	5	5	5	3	-	-
Tarlac	-	-	-	-	-	-	-	-	-	-
Zambales	14	15	16	17	20	18	18	18	17	15
REGION IV-A (CALABARZON)	184	98	165	178	173	124	75	75	14	7
Batangas	184	98	165	178	173	124	75	75	14	7
Cavite	-	-	-	-	-	-	-	-	-	-
Laguna	-	-	-	-	-	-	-	-	-	-
Quezon	-	-	-	-	-	-	-	-	-	-
Rizal	-	-	-	-	-	-	-	-	-	-

Shallot	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
REGION IV-B (MIMAROPA)	18	17	19	20	4	4	3	3	3	3
Marinduque	4	4	4	4	4	4	3	3	3	3
Occidental Mindoro	-	-	-	-	-	-	-	-	-	-
Oriental Mindoro	14	13	15	16	-	-	-	-	-	-
Palawan	-	-	-	-	-	-	-	-	-	-
Romblon	-	-	-	-	-	-	-	-	-	-
REGION VI (WESTERN VISAYAS)	4	4	3	2	-	-	-	-	-	-
Aklan	-	-	-	-	-	-	-	-	-	-
Antique	-	-	-	-	-	-	-	-	-	-
Capiz	-	-	-	-	-	-	-	-	-	-
Negros Occidental	-	-	-	-	-	-	-	-	-	-
Guimaras	-	-	-	-	-	-	-	-	-	-
Iloilo	4	4	3	2	-	-	-	-	-	-
REGION VII (CENTRAL VISAYAS)	-	-	-	-	-	2	3	3	4	4
Bohol	-	-	-	-	-	-	-	-	-	-
Cebu	-	-	-	-	-	-	-	-	-	-
Negros Oriental	-	-	-	-	-	2	3	3	4	4
Siquijor	-	-	-	-	-	-	-	-	-	-
REGION IX (ZAMBOANGA PENINSULA)	6	2	2	2	2	1	1	-	-	-
Zamboanga del Norte	-	-	-	-	-	-	-	-	-	-
Zamboanga del Sur	2	2	2	2	2	1	1	-	-	-
City of Zamboanga	-	-	-	-	-	-	-	-	-	-

Shallot	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Zamboanga Sibugay	4	-	-	-	-	-	-	-	-	-
REGION XII (SOCCSKSARGEN)	11	9	13	17	18	20	20	16	14	12
Cotabato	-	-	-	-	-	-	-	-	-	-
Sarangani	-	-	-	-	-	-	-	-	-	-
South Cotabato	11	9	13	17	18	20	20	16	14	12
Sultan Kudarat	0	0	0	0	0	-	-	-	-	-
REGION XIII (CARAGA)	-	-	-	-	1	-	1	-	-	0
Agusan del Norte	-	-	-	-	-	-	-	-	-	-
Agusan del Sur	-	-	-	-	1	-	-	-	-	-
Surigao del Norte	-	-	-	-	-	-	-	-	-	-
Surigao del Sur	-	-	-	-	-	-	1	-	-	-
Dinagat Islands	-	-	-	-	-	-	-	-	-	0

APPENDIX 3. AREA PLANTED RED AND YELLOW ONION IN HECTARES (BY REGION AND PROVINCE), 2011-2020

Red and Yellow Onion	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PHILIPPINES	10,087	10,486	10,994	11,109	10,791	9,226	14,444	14,092	16,149	14,453
REGION I (ILOCOS REGION)	821	813	811	840	846	800	822	635	646	647
Ilocos Norte	27	25	24	24	25	27	27	29	29	29
Ilocos Sur	-	-	5	33	29	26	27	28	28	29

Red and Yellow Onion	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
La Union	4	4	3	3	11	17	18	21	30	30
Pangasinan	790	784	780	780	781	730	750	558	559	559
REGION II (CAGAYAN VALLEY)	451	551	600	610	561	635	679	684	688	688
Batanes	-	-	-	-	1	1	1	1	1	1
Isabela	1	1	0	0	1	1	0	2	2	2
Nueva Vizcaya	450	550	600	610	559	634	677	682	685	685
REGION III (CENTRAL LUZON)	7,646	7,600	7,644	7,645	7,166	6,004	10,605	10,422	11,273	9,676
Bataan	-	-	-	-	-	-	-	-	1	1
Nueva Ecija	7,644	7,600	7,640	7,640	7,161	5,999	10,600	10,347	11,067	9,375
Tarlac	2	-	4	5	5	5	5	75	205	300
REGION IV-A (CALABARZON)	28	46	49	42	27	19	17	15	8	7
Batangas	-	19	21	14	5	4	2	3	0	0
Cavite	28	27	28	28	22	15	15	13	8	7
MIMAROPA REGION	1,100	1,400	1,825	1,913	2,116	1,696	2,245	2,261	3,456	3,360
Occidental Mindoro	1,100	1,400	1,825	1,913	1,950	1,502	1,920	1,945	3,100	3,000
Oriental Mindoro	-	-	-	-	166	194	325	316	356	360
REGION VI (WESTERN VISAYAS)	38	69	57	50	67	65	70	74	77	75
Iloilo	38	69	57	50	67	65	70	74	77	75
REGION VII (CENTRAL VISAYAS)	0	1	1	3	3	3	4	1	1	1
Negros Oriental	-	-	-	2	3	3	4	1	1	1
Siquijor	0	1	1	2	0	0	0	0	0	0
REGION XII (SOCCSKSARGEN)	3	7	7	6	5	4	2	-	-	-
South Cotabato	3	7	7	6	5	4	2	-	-	-

Red and Yellow Onion	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sultan Kudarat	0	0	0	-	-	-	-	-	-	-

APPENDIX 4. AREA PLANTED TO SHALLOT IN HECTARES (BY REGION AND PROVINCE), 2011-2020

Shallot	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PHILIPPINES	4,554.13	4,525.32	4,442.56	4,734.82	4,070.12	3,761.52	3,814.65	3,812.55	3,798.79	3,937.97
REGION I (ILOCOS REGION)	3,932.37	3,912.11	3,811.49	3,747.73	3,754.96	3,601.17	3,657.00	3,659.82	3,649.79	3,793.03
Ilocos Norte	2,226.87	2,236.61	2,190.00	2,140.00	2,120.00	2,105.00	2,109.80	2,108.57	2,109.09	2,090.03
Ilocos Sur	1,703.00	1,673.00	1,619.49	1,605.73	1,633.00	1,494.21	1,545.25	1,549.42	1,539.70	1,702.00
Pangasinan	2.50	2.50	2.00	2.00	1.96	1.96	1.95	1.83	1.00	1.00
REGION II (CAGAYAN VALLEY)	26.25	48.47	48.23	49.35	48.15	33.30	32.51	28.81	30.50	29.37
Batanes	-	20.87	21.23	22.35	21.00	18.50	21.00	19.00	20.03	20.05
Cagayan	11.00	11.00	11.00	10.00	9.00	8.00	6.00	5.00	6.00	5.00
Isabela	5.25	4.60	4.00	4.00	5.15	3.80	3.01	1.81	1.47	1.32
Nueva Vizcaya	10.00	12.00	12.00	13.00	13.00	3.00	2.50	3.00	3.00	3.00
REGION III (CENTRAL LUZON)	532.00	526.20	527.00	877.00	241.00	101.00	101.00	100.69	105.69	105.69
Nueva Ecija	526.00	520.00	521.00	871.00	235.00	95.00	95.00	95.00	100.70	100.70
Pampanga	1.00	1.20	1.00	1.00	1.00	1.00	1.00	0.70	-	-
Zambales	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.99	4.99	4.99
REGION IV-A (CALABARZON)	50.00	27.00	42.99	47.30	18.20	17.20	13.00	14.00	3.64	1.64
Batangas	50.00	27.00	42.99	47.30	18.20	17.20	13.00	14.00	3.64	1.64
MIMAROPA REGION	6.00	5.98	6.95	7.44	1.01	0.75	0.60	0.65	0.63	0.59
Marinduque	1.00	1.00	0.95	0.94	1.01	0.75	0.60	0.65	0.63	0.59
Oriental Mindoro	5.00	4.98	6.00	6.50	-	-	-	-	-	-
REGION VI (WESTERN VISAYAS)	1.00	1.00	0.75	0.50	-	-	-	-	-	-
Iloilo	1.00	1.00	0.75	0.50	-	-	-	-	-	-

Shallot	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
REGION VII (CENTRAL VISAYAS)	-	-	-	-	-	2.00	4.90	5.90	5.90	5.90
Negros Oriental	-	-	-	-	-	2.00	4.90	5.90	5.90	5.90
REGION VIII (EASTERN VISAYAS)	-	-	-	-	-	-	-	-	0.19	-
Samar (Western Samar)	-	-	-	-	-	-	-	-	0.19	-
REGION IX (ZAMBOANGA PENINSULA)	4.90	3.00	3.00	3.00	3.00	2.70	2.48	-	-	-
Zamboanga del Sur	3.00	3.00	3.00	3.00	3.00	2.70	2.48	-	-	-
Zamboanga Sibugay	1.90	-	-	-	-	-	-	-	-	-
REGION XII (SOCCSKSARGEN)	1.61	1.57	2.15	2.50	2.80	3.40	3.10	2.68	2.45	1.75
South Cotabato	1.60	1.56	2.15	2.50	2.80	3.40	3.10	2.68	2.45	1.75
Sultan Kudarat	0.01	0.01	0.01	-	-	-	-	-	-	-
REGION XIII (CARAGA)	-	-	-	-	1.00	-	0.06	-	-	-

APPENDIX 5. ONION SUPPLY AND UTILIZATION IN THE PHILIPPINES

All Onion	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Volume of Local Production (mt)	128,387.23	124,889.62	134,239.01	203,651.41	181,207.84	122,593.99	184,426.97	172,665.98	222,082.28	229,539.24
Volume of Imports (mt)	4,832.32	18,442.72	8,533.16	9,047.04	34,219.97	135,295.59	34,084.02	108,080.72	23,589.84	59,835.47

Volume of Exports (mt)	14,009.51	5,824.88	3,570.68	2,690.87	922.31	601.29	776.48	252.04	459.42	121.21
Total Local Supply (mt)	119,210.04	137,507.46	139,201.48	210,007.58	214,505.50	257,288.29	217,734.52	280,494.66	245,212.71	289,253.50
Annual Local Demand (mt)	180,866.00	226,911	231,009	235,180	236,398	240,054	243,766	247,536	251,364	255,252.00

APPENDIX 6. ONION-PRODUCING ASEAN COUNTRIES (VOLUME, MT)

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019
Indonesia	893,124.00	964,221.00	1,010,773.00	1,233,984.00	1,229,184.00	1,446,869.00	1,470,154.00	1,503,438.00	1,580,243.00
Myanmar	1,125,100.00	1,142,400.00	1,204,900.00	1,244,900.00	1,244,429.00	1,123,084.00	1,007,046.00	1,014,209.00	1,032,920.00
Vietnam	313,323.00	325,000.00	330,000.00	336,793.00	356,931.00	370,327.00	382,048.00	393,769.00	405,490.00
Philippines	128,387.00	124,890.00	134,239.00	203,651.00	181,208.00	122,594.00	184,427.00	172,666.00	222,082.00
Thailand	50,104.00	54,300.00	39,909.00	37,756.00	35,466.00	32,545.00	32,649.00	32,836.00	32,714.00

APPENDIX 7. ONION-PRODUCING ASEAN COUNTRIES (AREA, HA)

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019
Indonesia	93,667.00	99,519.00	98,937.00	120,704.00	122,126.00	149,635.00	158,172.00	156,779.00	159,195.00
Myanmar	72,034.00	72,034.00	76,890.00	78,104.00	76,671.00	69,962.00	69,779.00	70,586.00	71,430.00
Vietnam	89,422.00	90,000.00	92,000.00	92,864.00	95,064.00	96,803.00	98,186.00	99,524.00	100,817.00
Philippines	14,641.00	15,012.00	15,437.00	15,844.00	14,861.00	12,988.00	18,259.00	17,905.00	19,948.00
Thailand	1,934.00	1,940.00	1,622.00	1,410.00	1,416.00	1,218.00	,198.00	1,250.00	1,247.00

APPENDIX 8. ONION-PRODUCING ASEAN COUNTRIES (YIELD, MT/HA)

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019
Indonesia	9.54	9.69	10.22	10.22	10.06	9.67	9.29	9.59	9.93
Myanmar	15.62	15.86	15.67	15.94	16.23	16.05	14.43	14.37	14.46
Vietnam	3.50	3.61	3.59	3.63	3.75	3.83	3.89	3.96	4.02
Philippines	8.77	8.32	8.70	12.85	12.19	9.44	10.10	9.64	11.13
Thailand	25.91	27.99	24.60	26.78	25.05	26.72	27.25	26.27	26.23

APPENDIX 9. ONION FCA DIRECTORY

Onion FCA Directory		
FCA	Complete Address	Region
Federation of Aritao Farmers Onion Garlic and Ginger Growers Association (FAFOGGGA)	Aritao, Nueva Vizcaya	II
Pinayag Upland Vegetable Growers Association	Kayapa, Nueva Vizcaya	II
Abuyo Onion Growers Association	Alfonso Castaneda, Nueva Vizcaya	II
Women's Garlic and Onion Growers Association	Bambang, Nueva Vizcaya	II
Itbayat Garlic Producers Association	Itbayat, Batanes	II
Mallig Pro-Organic Farmers Association (MAPROFA)	Mallig, Isabela	II
Bayan ng Roxas Entrepreneurship Assistance and Development (BREAD) Agricultural Cooperative	Roxas, Isabela	II
Samahan ng Magtatanim ng Sibuyas sa Paluan	Alipaoy, Paluan, Occidental Mindoro	IVB
New Maduron Country Farm Cooperative	Alipaoy, Paluan, Occidental Mindoro	IVB
Alipaoy Calawagan Communal Irrigators Association	Occidental Mindoro Harison, Paluan, Occidental Mindoro	IVB
Palpagu Farmers Association	Mindoro, Tubili, Paluan	IVB
Onion and Garlic Farmers Association	Tubili, Paluan, Occidental Mindoro	IVB
Bugtong Buri Olima Irrigators Association	Poblacion, Magsaysay, Occidental Mindoro	IVB
Sta. Fe, Cuartel I, Farmers Association	Central, San Jose, Occidental Mindoro	IVB
Bolgogan Batangan Mangyan Association	Pag-Asa, Sablayan, Occidental Mindoro	IVB
La Curva Vegetable Growers Association	La Curva, San Jose, Occidental Mindoro	IVB
Mindoro Progressive Multi-purpose Cooperative	Tangkalan, Mamburao, Occidental Mindoro	IVB
Lourdes Multi-purpose Cooperative	Poblacion, Magsaysay, Occidental Mindoro	IVB
Onion Growers of Tanyag	Tanyag, Calintaan, Occidental Mindoro	IVB
8 Keys Development Cooperative	Magbay, San Jose, Occidental Mindoro	IVB

Onion FCA Directory		
FCA	Complete Address	Region
Barayong Integrated Rural Farmers Association	Calintaan, Occidental Mindoro	IVB
Samahan ng Magtatanim ng Sibuyas at Gulay ng Sitio Fernandez Block	Poblacion, Magsaysay, Occidental Mindoro	IVB
San Miguel 4Ps Association	San Miguel, Sablayan, Occidental Mindoro	IVB
Cambayang Farmers Association	Cabugao, Bulalacao, Oriental Mindoro	IVB
Nasucob Farmers Association	Nasucob, Bulalacao, Oriental Mindoro	IVB
Camsikat Farmers Association	Cambunang, Bulalacao, Oriental Mindoro	IVB
Maujao Farmers Association	Maujao, Bulalacao, Oriental Mindoro	IVB
Onion Growers of Bulalacao	Cambunang, Bulalacao, Oriental Mindoro	IVB
Culianan District Farmers Association Incorporation	Gapuh, Zamboanga City	IX
Matanao Bulb Onion FA	Brgy. Asinan, Davao del Sur	XI
Blasan Integrated Farmers and Workers Association	Brgy. Malawanit, Magsaysay, Davao del Sur	XI
Tapicong Datal Colon Integrated Farmers and Workers Association	Bgy. Bacungan, Magsaysay, Davao del Sur	XI
Nuevo Ilocos FA	Bgy. Nuevo Iloco, Mawab, Davao del Oora	XI
Assosasyon sang Manugsibuyas sa Miagao	Miagao, Iloilo	VI
Oton Bulb Onion Growers Association (OBOGA)	Oton, Iloilo	VI

