POTENTIAL BENEFITS OF PHILIPPINE FRUITS

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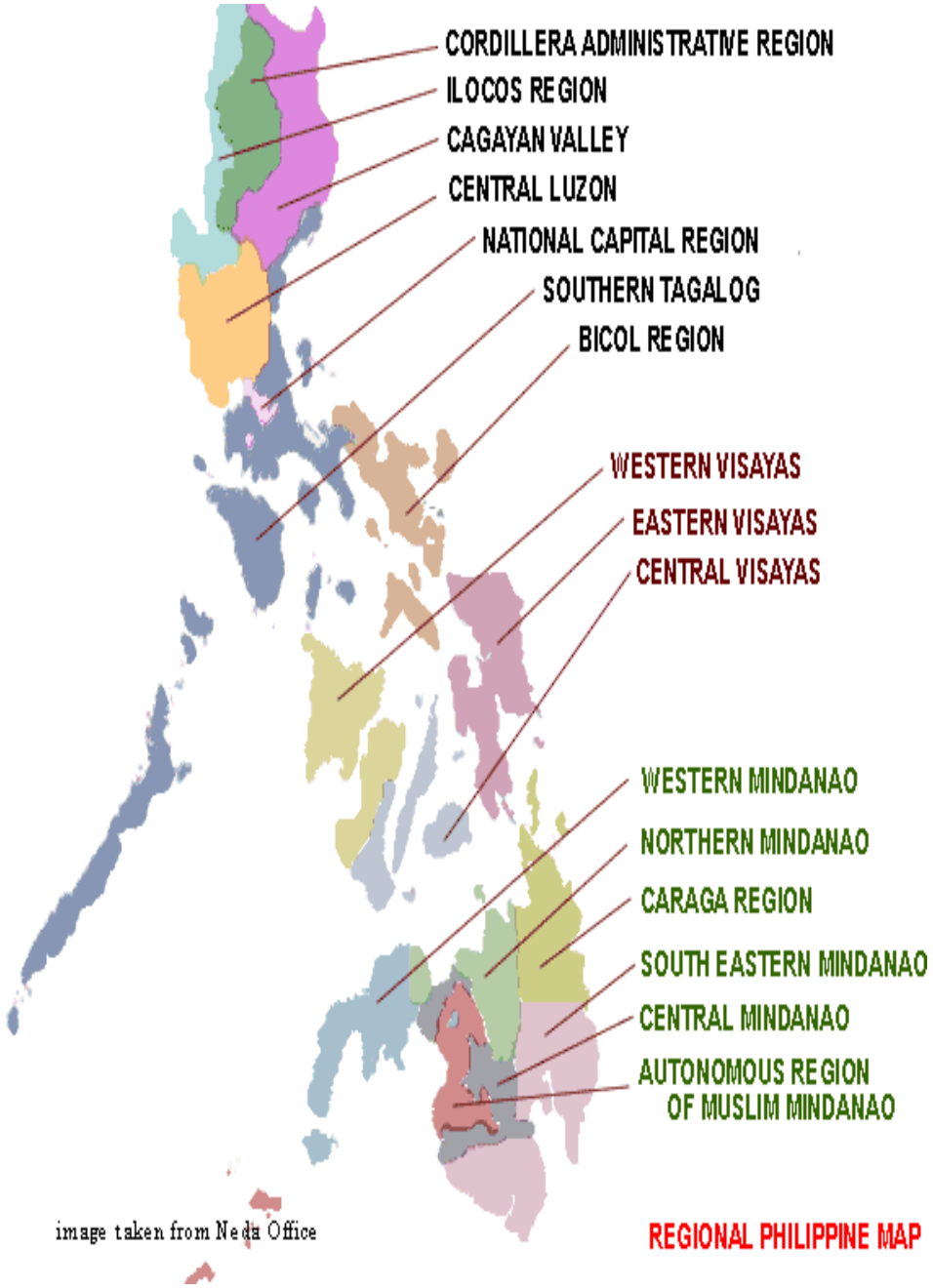
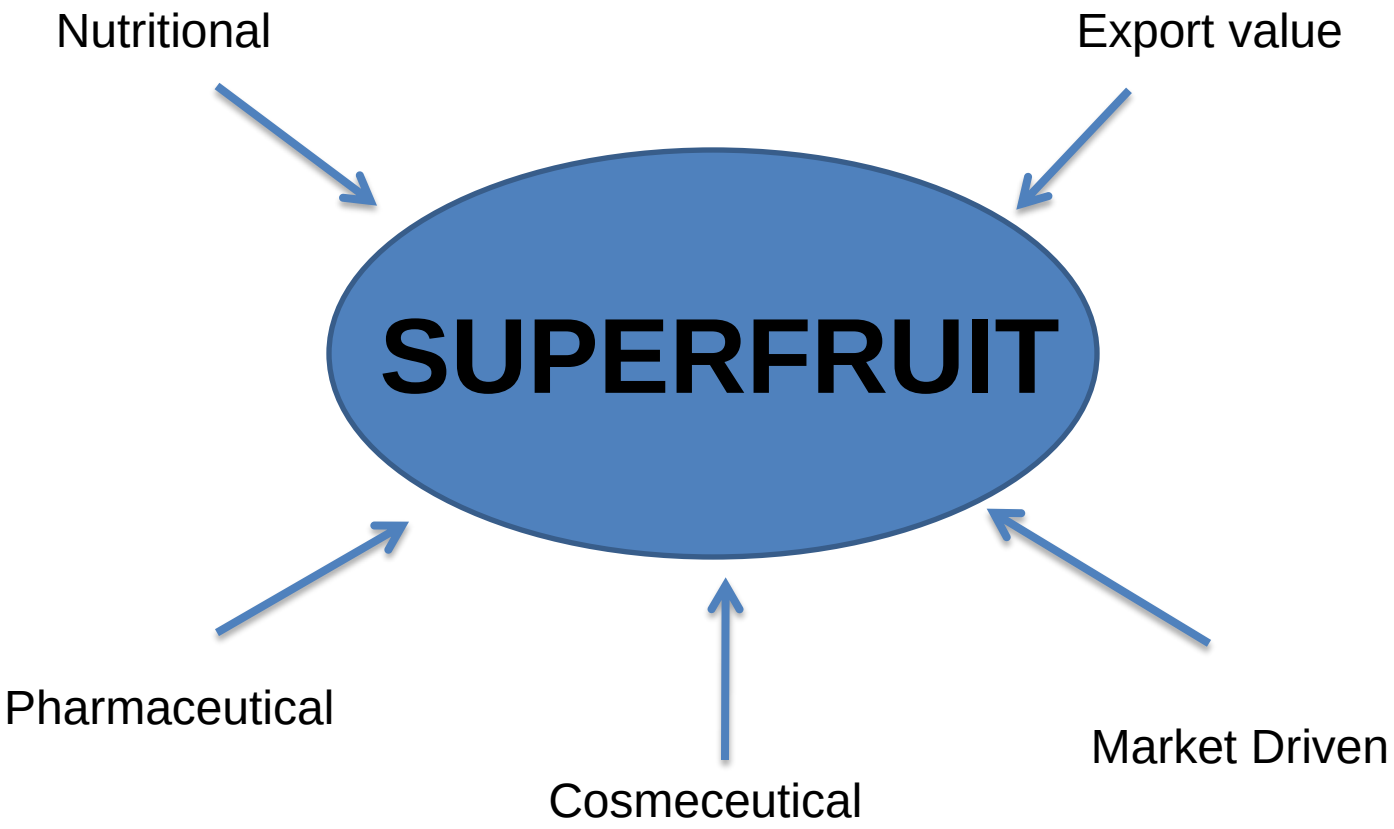
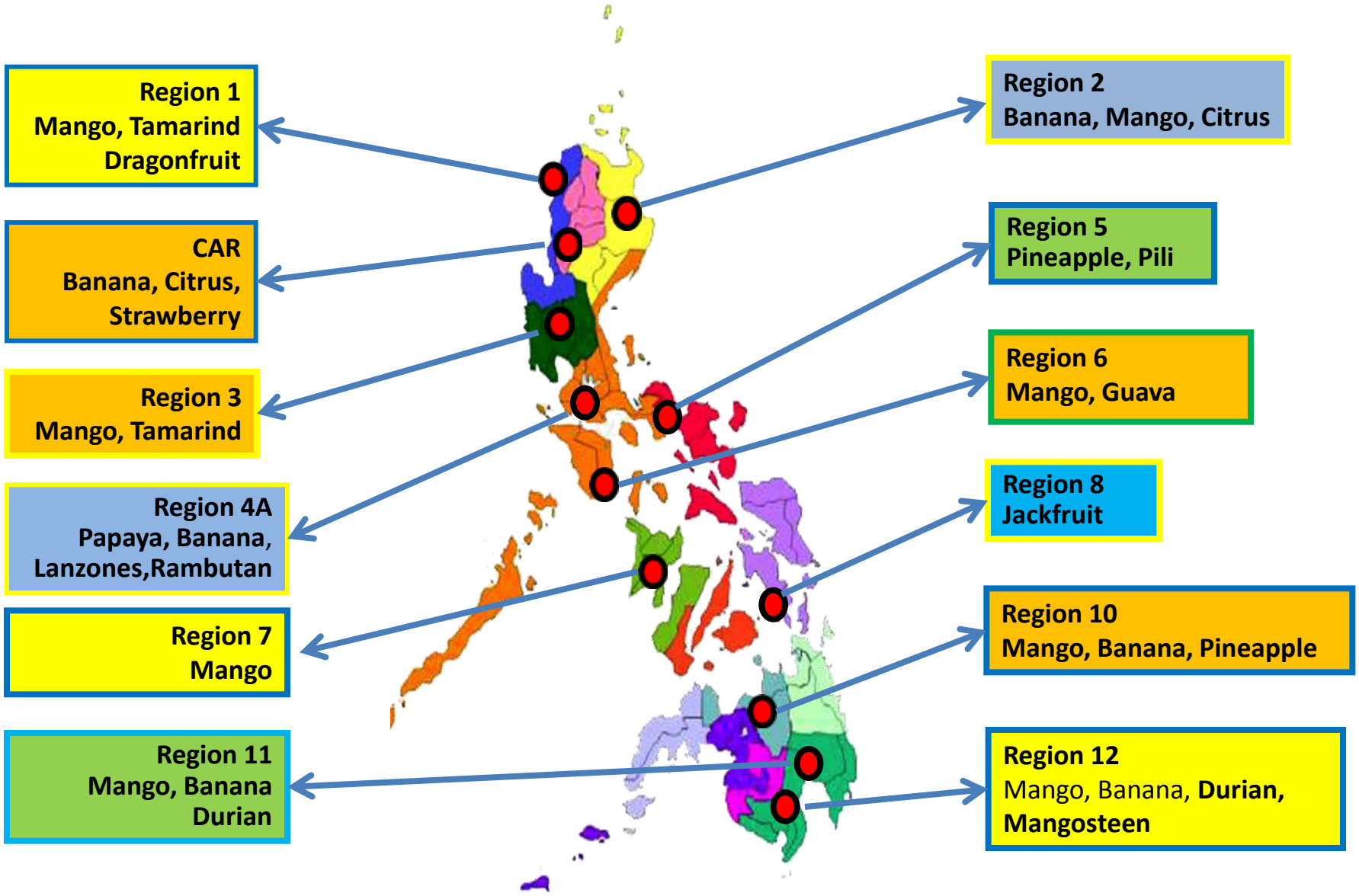


The Philippines has 7,100 islands. Floral diversity is between 10,000 and 14,000 species of vascular and non-vascular plants, more than half of which are endemic to the Philippines. Altogether, the country is host to some five percent of the world's species of flora and is ranked 5th in the world in terms of number of plant species.

What is SUPERFRUIT?



Major Producing Areas, by Region



Source: PCAARRD

OUTLINE

Three Categories why we consider Philippine Fruits as "SUPERFRUITS"

- ✓ **1st Category = Potential for Export**
- ✓ **2nd Category = Medicinal Benefits from Other Important and Underutilized Philippine Fruits**
  - ➢ **R&D Initiatives**
- ✓ **3rd Category = Policies regarding the Registration, Accreditation and Certification of Fruit crops to heighten their importance as "Superfruits"**

- ➢ **Future Directions**

1st Category

MANGO

TOP 5 Export Fruit Crops

PINEAPPLE

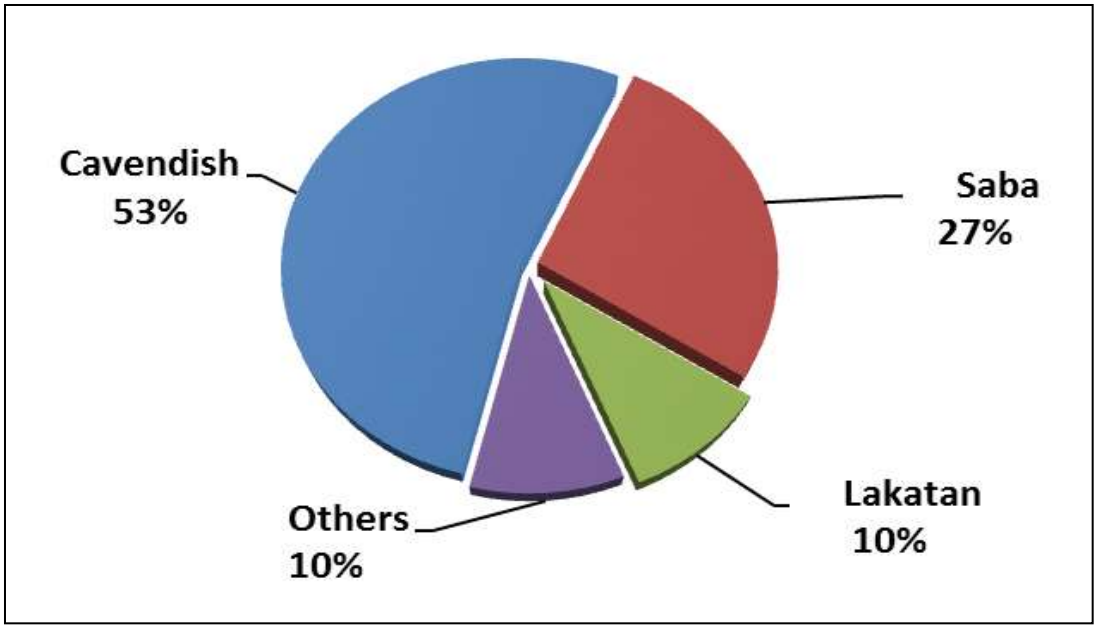
BANANA

PAPAYA

CALAMANSI

Banana production this quarter was estimated at 2,136.40 thousand mt, 4.0 percent more than the 2,053.42 thousand mt output level in the same period last year.

Scn. Name: ***Musa acuminata*** “Cavendish”
Family Name: Musaceae



Banana: Percent distribution of production by variety, Philippines, January-March 2015

Source:, Phil. Statistics Office, May 2015

Volume of Export

Export and Destination for Banana

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Japan	859,324.0125
Cavendish	China	482,441.0395
	South Korea	303,008.4135
	Iran	257,340.6470
	Kuwait	188,220.3645
	Jebel Ali	100,747.3430
	KSA	92,339.2565
	Other Countries (22)	259,751.1408
	TOTAL	**2,543,172.2173**

Source: BPI-NPQSD

Volume of Export

Export and Destination for Banana

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	South Korea	15,978.9600
Cardava	Japan	1,119.2880
	Jebel Ali	19.8700
	Canada	0.2110
	TOTAL	**17,118.3290**

Source: BPI-NPQSD

Volume of Export

Export and Destination for Banana

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Japan	3,003.0400
Lakatan	South Korea	153.0470
	KSA	0.0220
	Canada	0.2110
	TOTAL	**3,156.1090**
Señorita	Japan	2,750.6050
	South Korea	1,169.5100
	TOTAL	**3,920.1150**

Source: BPI-NPQSD

Volume of Export

Export and Destination for Banana

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Japan	
Tindok	South Korea	153.0470
	KSA	0.0220
	Canada	0.2110
	TOTAL	**3,156.1090**

Source: BPI-NPQSD

Volume of Export

Export and Destination for Banana

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Japan	842.2180
Saba	Australia	107.8940
	Canada	78.8090
	KSA	39.0060
	UAE	11.9953
	Qatar	9.2430
	Belgium	6.8410
	Other Countries (10)	8.4398
	TOTAL	**1,104.4461**

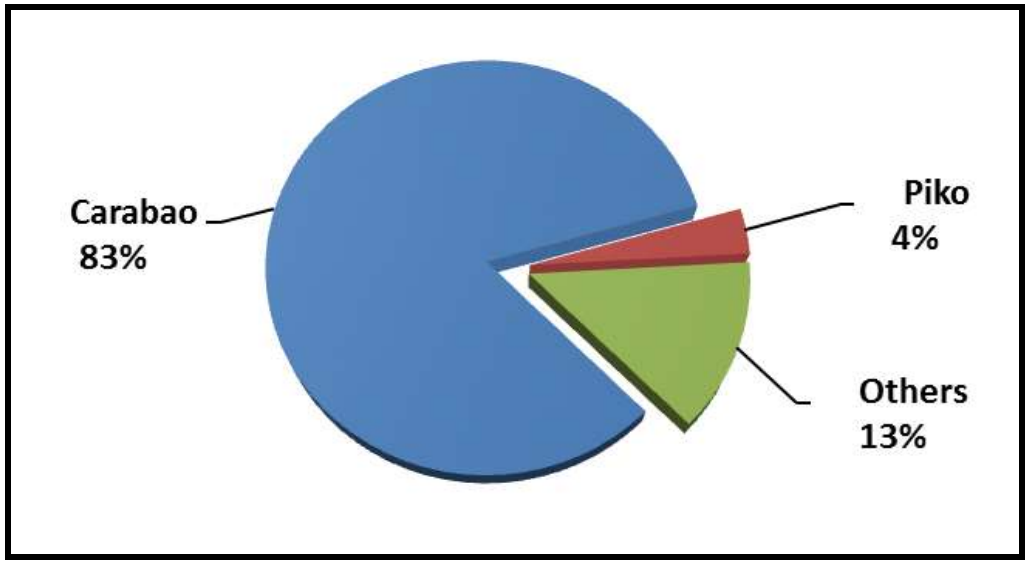
Source: BPI-NPQSD

Mango production this quarter was estimated at 148.85 thousand mt, 7.5 percent below the 2014 production level of 160.94 thousand mt.

MANGO

Scn. Name: ***Mangifera indica Linn.***

Family Name: Anacardiaceae



Mango: Percent distribution of production by variety, Philippines, January-March 2015

Source:, Phil. Statistics Office, May 2015

Volume of Export

Export and Destination for Mango

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Hongkong	7,251.9848
	South Korea	4,781.4503
	Japan	1,267.7970
	Malaysia	559.2600
	Singapore	282.6989
	Canada	57.5570
	Qatar	28.9270
	Other Countries (28)	137.0778
	TOTAL	**14,366.7526**

Source: BPI-NPQSD

PINEAPPLE
Scn Name: ***Ananas comosus (L.) Merr.***
Family Name: Bromeliaceae

The country produced 583.14 thousand mt of pineapple this quarter which is 1.8 percent higher than the 573.08 thousand mt output in 2014.

CALAMANSI
Scn. Name: ***Citrus microcarpa Bunge***
Family: Rutaceae

Calamansi production in January-March 2015 was estimated at 16.95 thousand mt. This was 2.9 percent below the 2014 production level of 17.45 thousand mt.

Source:, Phil. Statistics Office, May 2015

Volume of Export

Export and Destination for Pineapple

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Japan	183,630.5555
	South Korea	73,555.4240
	China	36,112.7380
	UAE	17,048.9100
	Kuwait	13,536.6200
	Jebel Ali	13,225.6870
	New Zealand	9,861.8790
	Other Countries (30)	35,461.8061
	TOTAL	**388,277.1922**

Source: BPI-NPQSD

Volume of Export

Export and Destination for Calamansi

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	UAE	16.715
	KSA	10.852
	Kuwait	1.843
	Qatar	3.7200
	Dubai	0.9850
	Austria	0.0300
	USA	0.0020
	Belgium	0.0730
	TOTAL	**34.2200**

Source: BPI-NPQSD

Volume of Export

Export and Destination for Papaya

KIND	DESTINATION	METRIC TONS (MT)
Fresh Fruits	Hongkong	14,814.4140
	Japan	1,902.9735
	China	546.9800
	New Zealand	539.1360
	Singapore	272.9800
	South Korea	144.3950
	UAE	26.3450
	Other Countries (8)	47.0009
	TOTAL	**18,294.2244**

Source: BPI-NPQSD

A typical Philippine pineapple market

Market stalls for Philippine Carabao Mango Fruits

A “Bagsakan” Center (Whole Sale Market) for Fruits and Vegetables in Manila, Philippines.

2nd Category


















Medicinal Benefits of Important and Underutilized Philippine Fruits

Department of Agriculture through the Bureau of Agricultural Research launched the “National Health and Wellness Tourism Month” for the month of October with Proclamation No. 1280 Series of 2007.

- This gave way for the exploration of indigenous plant species for further research.

Lipote

Scn. Name: ***Szygium curranii***

Family: Mrytaceae

- As pickle, preserved, jelly, jam or beverage, wine making
- Dietary value: the 83% edible portion contains (per 100g) 83.4g water, 77kcal energy, 0.7g protein, 2.5g fat, 12.9g carbohydrates, 1.7g crude fiber, 93mg calcium, 22mg phosphorous, 0.2mg iron, 50µg β-carotene, 10 µg total vitamin A, 0.01 mg thiamin, 0.02 mg riboflavin, 0.3 mg niacin, and 16 mg ascorbic acid

Mabolo

Scn. Name: ***Diospyros blancoi***

Family: Ebenaceae

- Folkloric usage of mabolo suggest its unripened fruit has natural treatment for diarrhea and first aid treatment for wounds; the bark, leaves and roots are useful in treating respiratory disease and skin ailments such as eczema
- Scientific research on the fruits boasts of its nutritional, medicinal and biofuel potential. Biofuel from mabolo emits lower amounts of carbon monoxide and carbon dioxide.

Marang

Scn. Name: ***Artocarpus odoratissima***

Family: Moraceae

- Dietary value: marang contains beneficial nutrients such as, ash, ascorbic acid,beta-carotene, carbohydrates, crude fiber, fat, iron, niacin, phosphorous, protein, retinol, riboflavin, thiamine and vitamin A.
- As food products: vacuum-fried marang, ice cream, jelly, conserve, jam, juice, concentrate, blanched pulp; vinegar; from seeds- eaten raw or roasted, made into coffee and nut butter

Yambos

Scn. Name: ***Zyzygium jambos***

Family: Myrtaceae

- As medicinal, it is good for the liver and brain as it boots the vigor of these major organs, fruit is diuretic, flower reduces fever, leaf decoction can be used to relieve sore eyes and rheumatism

•**Guyabano (Soursop)**

•Scn. Name: ***Annona muricata L.***

•Family: Annonaceae

Considered as SUPERFRUIT

•Pulverized **seeds** used as skin astringent, concoction made from seeds is a good vermifuge and anthelmintic against parasites, head lice and worms. Also used as all natural pesticide against caterpillars, armyworms, and leafhoppers on plants.

•Leaves - sudorific (inducing perspiration), tranquilizing and Sedative properties, treatment for pain, inflammation caused by arthritis and rheumatism, treat eczema and other skin diseases, can help to bring down fever. Sap of **young leaves** can be applied directly to pimples. Crushed leaves are applied also on skin eruptions for faster healing and preventing scarring. Drinking tea out of boiled leaves may help induce sleep. **Bark, roots and leaves are used to treat diabetes, green and unripe guyabano fruit has more flavonoids than its yellow and ripe form which may help in preventing cancer, allergies, infections and viruses. Guyabanos outdid Metformin, the most commonly used drug maintenance of diabetics, in lowering blood glucose levels (Department of Science and Technology-Industrial Technology Development Institute (DOST-ITDI).**

•As food, processed into candies, jam, jelly, preserves, tarts, shakes, ice cream, sherbets and other beverages

•Nutritional value as the fruit is rich in fructose, vitamins C, B1 and B2, potassium, magnesium, thiamin, copper, niacin, folate, iron, riboflavin and dietary fiber

BIGNAY

Scn. Name: ***Antidesma bunius Spreng.***

Family: Euphorbiaceae

- Leaves for snakebites
- Juice of fruits for heart disease and hypertension

- Made into wine, vinegar, jelly, jam

SAPINIT (Phil Wild Raspberry)

Scn. Name: ***Rubus rosifolius Linn.***

Family: Rosaceae

- rich in phytochemicals that inhibit the development of Alzheimer's disease and exhibited moderate COX inhibitory activity and the greatest potential to inhibit cancer cell growth (colon, breast, lung, and gastric human tumor cells). The high anthocyanin content of the fruits suggest a health benefit for a functional food.

- Made into jam, juice and wine, yields purple dye

TIESA - Egg Fruit
Scn. Name: ***Lucuma nervosa A. DC***
Family: Sapotaceae

- Excellent source of Carotene (provitamin A which is needed for healthy eyesight. And fair levels of multivitamins and minerals
- Study showed high amount of total phenols and antioxidants

DUHAT – Black Plum
Scn. Name: ***Syzygium cumini Skeels.***
Family: Myrtaceae

Fruit, Seeds – anti-diabetic, anti-inflammatory, high in phytochemicals

Leaf – anti-allergy, anti-bacterial, anti cervical cancer

R&D INITIATIVES

- Use of Recommended Varieties for these important fruits
- Multiplication and micro-propagation of disease-free planting materials
- Improvement of protocols for plant nursery management
- Development and management strategies against insect pests and diseases
- Enhancement of pre and post harvest management practices

R&D INITIATIVES

- Improvement of packaging and marketing scheme
- Promotion and technology transfer of improved production practices (ICM and IPM)
- Packaging and distribution of IEC materials
- Impact assessment studies

Source: PCAARRD

3RD CATEGORY

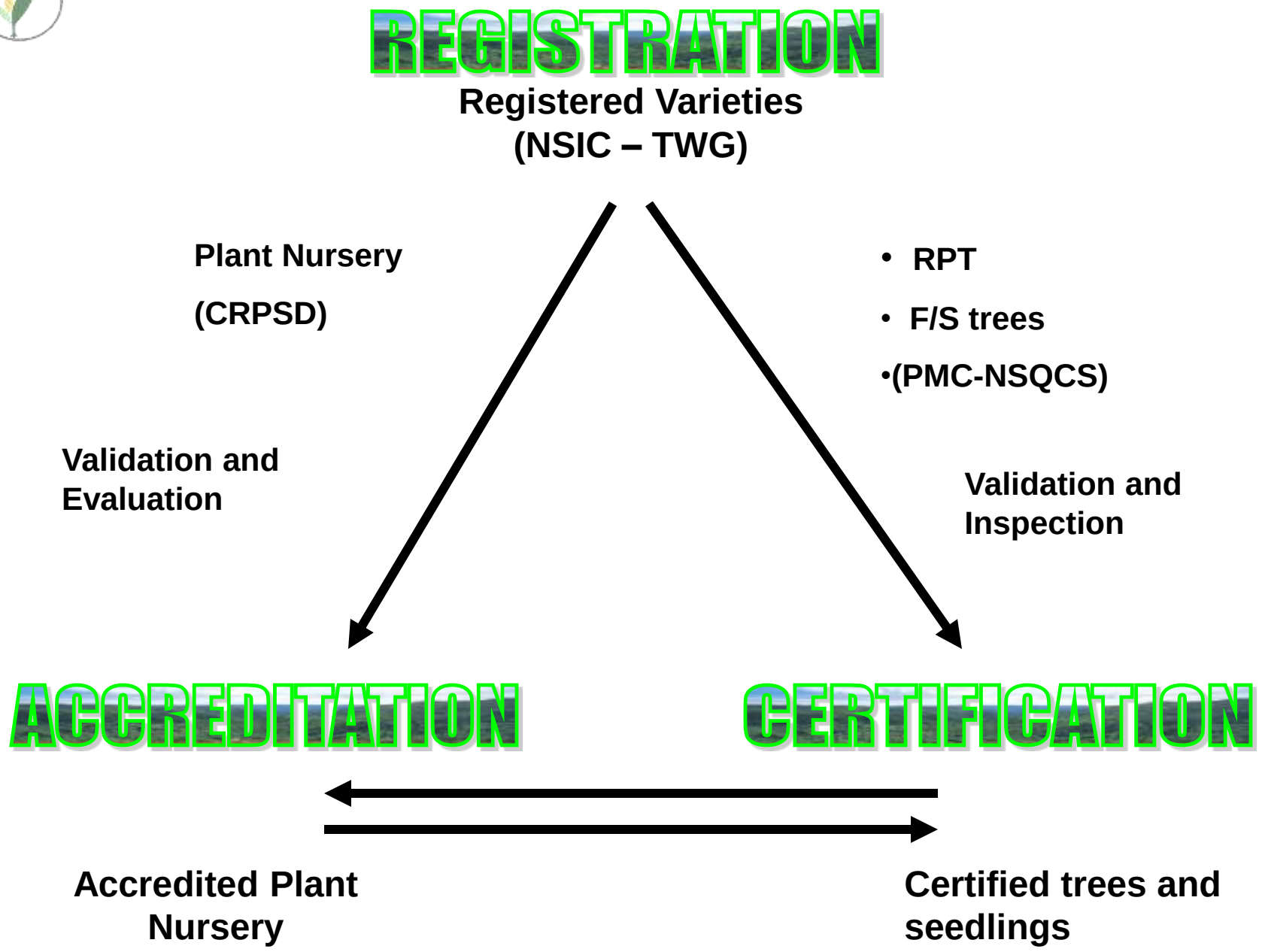
REGULATIONS AND POLICIES

Republic Act 7308

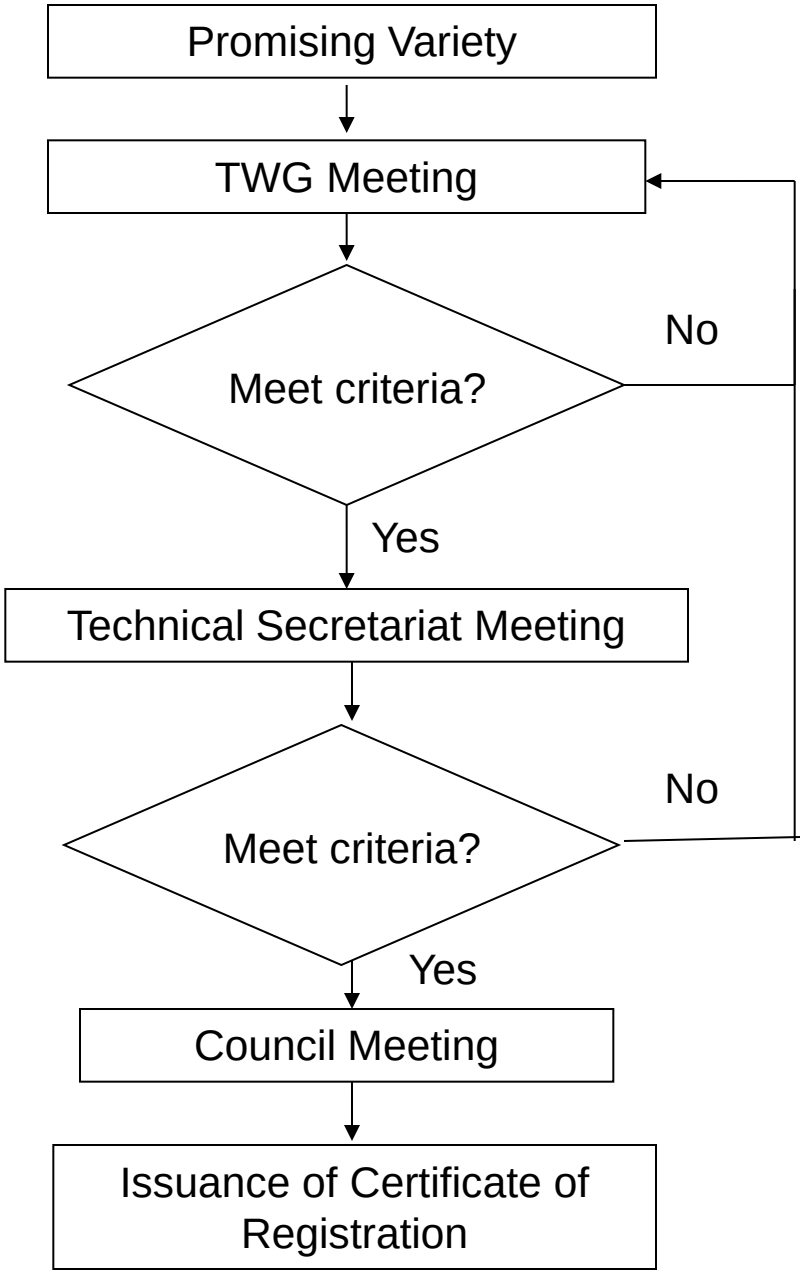
SEED INDUSTRY DEVELOPMENT ACT OF 1992

The National Seed Quality Control Services (NSQCS) as mandated by the Seed Industry Act of 1992 (Republic Act 7308) supports the major thrusts of the Department of Agriculture through the :

- provision of quality assurance and control services for seed and planting material production, processing, storage and distribution, seed research and seed training in seed quality control towards sustainable agriculture and environmental protection.


REGISTRATION
Registered Varieties
(NSIC – TWG)
Plant Nursery
(CRPSD)
• RPT
• F/S trees
•(PMC-NSQCS)
Validation and
Evaluation
Validation and
Inspection
ACCREDITATION
CERTIFICATION
Accredited Plant
Nursery
Certified trees and
seedlings

FLOWCHART FOR VARIETY REGISTRATION



Evaluation for three consecutive productive years

Evaluation of data gathered

Provide additional data or for further evaluation

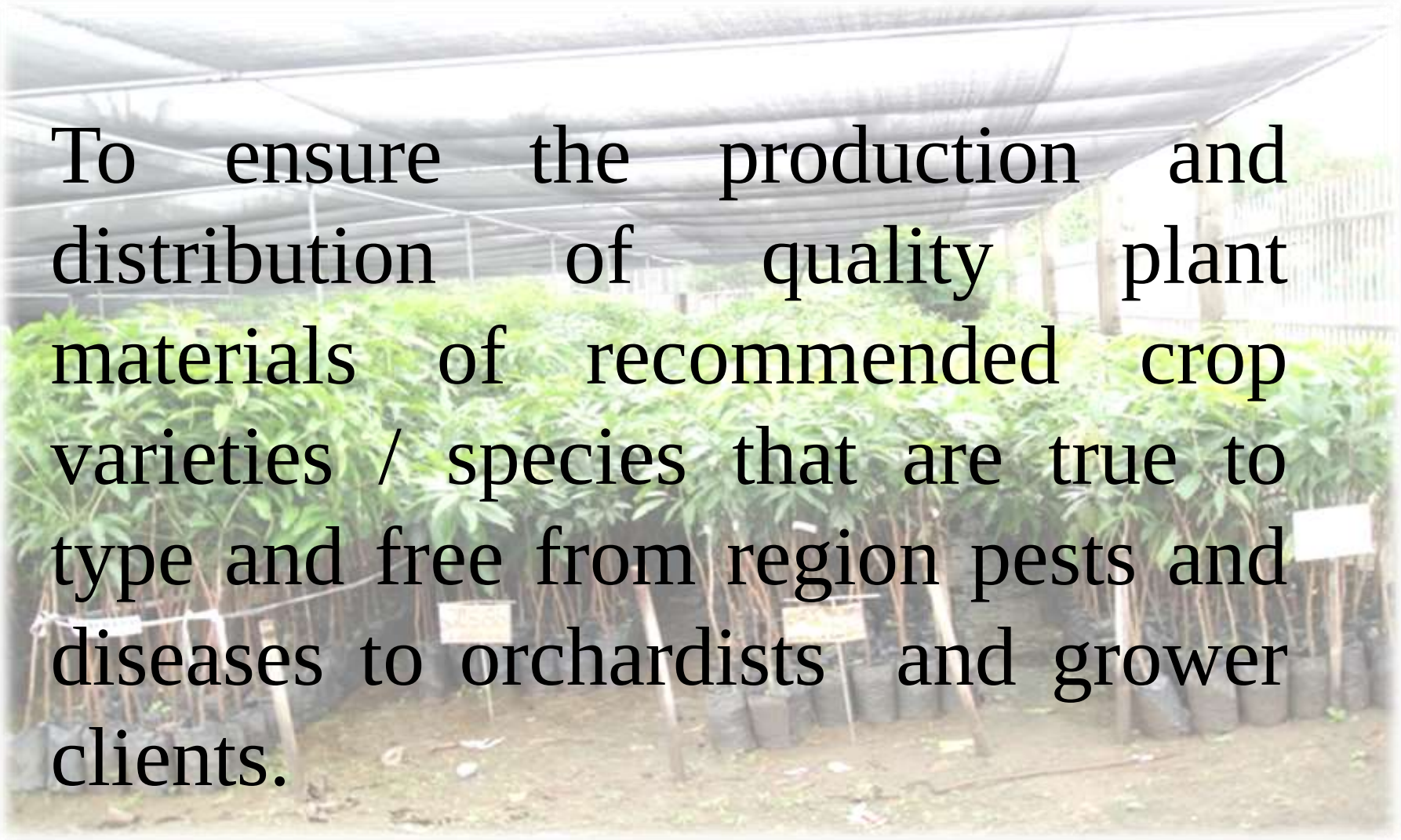
Finalize and submit nomination form (PC-Form No. 1) to the NSIC Secretariat

Discuss and further evaluate the merits of the variety

Council members approve the varieties by affixing their signatures

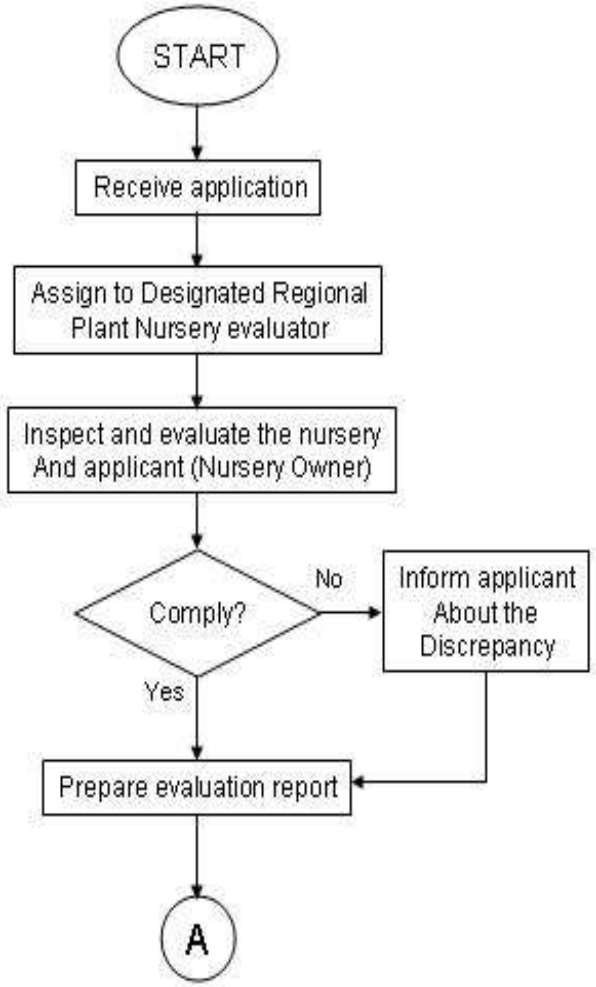
Executive Director issue certificate to the owner

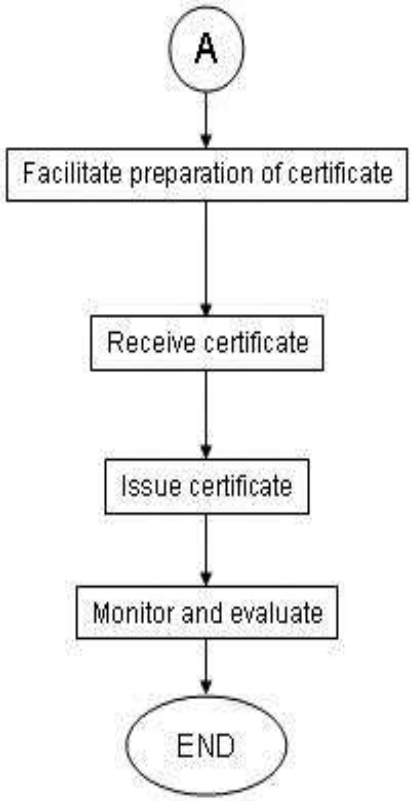
ACCREDITATION OF PLANT NURSERIES



To ensure the production and distribution of quality plant materials of recommended crop varieties / species that are true to type and free from region pests and diseases to orchardists and grower clients.

Procedures on Plant Nursery Accreditation

FLOW	PERSON RESPONSIBLE	DETAILS
	Clerk	Application from PNO is recorded (refer to NSIC PNA-Form #1)
	Chief Agriculturist	Refers to S.O. #503 Series 2006
	Designated Plant Nursery Evaluator	Refer to MC 3 Series of 2006 and S.O. #503 Series 2006
	Plant Nursery Evaluator	Refer to MC 3 Series of 2006 for non-complying applicants, 7 days period are given to meet the requirement
	Plant Nursery Evaluator	Evaluation Report is finalized and submitted to Division Chief

FLOW	PERSON RESPONSIBLE	DETAILS
		
	Plant Nursery Evaluator/Clerk	Facilitation is finished within 3-12 days
	Secretary II	Director approves the certificate
	Plant Nursery Evaluator	Certificate is issued to PNO through the Crop Production Division
	Plant Nursery Evaluator	Post accreditation evaluation report is submitted to the Director copy furnished the Asst. Director. Refer to MC 3 Series of 2006

Plant Material Certification

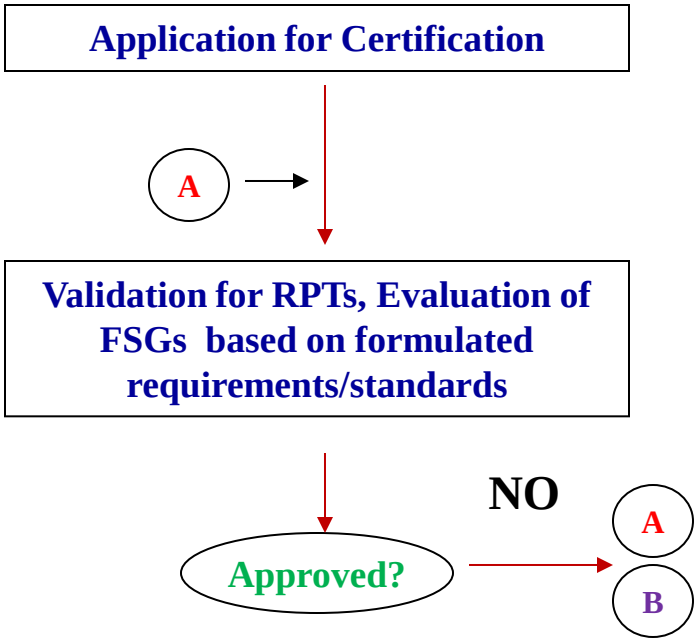
- Aims to produce and distribute high quality planting materials of superior crop varieties of known genetic and varietal purity including freedom from the seed-borne systemic diseases.

PLANT MATERIAL CERTIFICATION

- Formulation of standards for specific crops
- Revalidation of registered parent trees
- Field inspection of Foundation/Scion Trees
- Fruit Evaluation
- Tagging and Certification
- Training on Plant Material Certification

PLANT MATERIAL CERTIFICATION SCHEME FOR FRUITS AND PLANTATION CROPS
(For Foundation/Scion Groves)

PROCESS FLOW



DETAILS

Fill up BPI-NSQCS Form AC#1
(Only those NSIC registered)varieties/strains are eligible for certification)

Fill up BPI-NSQCS-PMC Form #2 and #3: Preliminary and Final Inspection Reports.
Two (2) evaluations will be done by PMC staff and/or PMIs during its fruiting stages to conduct qualitative and quantitative parameters before analyzing the results

YES

Approval of Evaluated FS trees

NSQCS to inform the owners or caretakers of the F/S trees and plant nurseries of the results of evaluations made

Tagging and Labeling

Formulated codes include NSIC reference numbers and NSQCS Control Codes and numbers embossed in a tin plate and waterproof seedling tags

Issue Certificates

Certificates will be issued by NSQCS, Central office. For seedlings, certificates are valid only while certified seedlings lasts from the accredited nursery owner

Periodic Monitoring

Re-evaluation of foundation/scion trees after 3 years from certification to check the performance of these certified trees as source of quality planting materials

B

END

Tagging of Certified Parent Tree as source of seeds/propagules for propagation

PLANT MATERIAL CERTIFICATION SCHEME FOR CERTIFIED SEEDLINGS OF FRUITS AND PLANTATION CROPS

PROCESS FLOW

Application for Certification by the nursery owner/manager

ACCREDITED? → NO

YES →

Evaluate and inspect the rootstocks ready for asexual propagation in the nursery

DETAILS

Fill up application form for Certification of Certified Seedlings (BPI-NSQCS-PMC AC#1)

Only those accredited nurseries are eligible to apply for seedling certification and produce certified seedlings

Preliminary inspection done by NSQCS staff and/or deputized plant material inspectors in their areas of responsibility. PMIs will fill up BPI-NSQCS-PMC Form #2A. Preliminary inspection report on Plant Material Certification

Nursery owners collect scions from certified foundation/scion trees from established groves

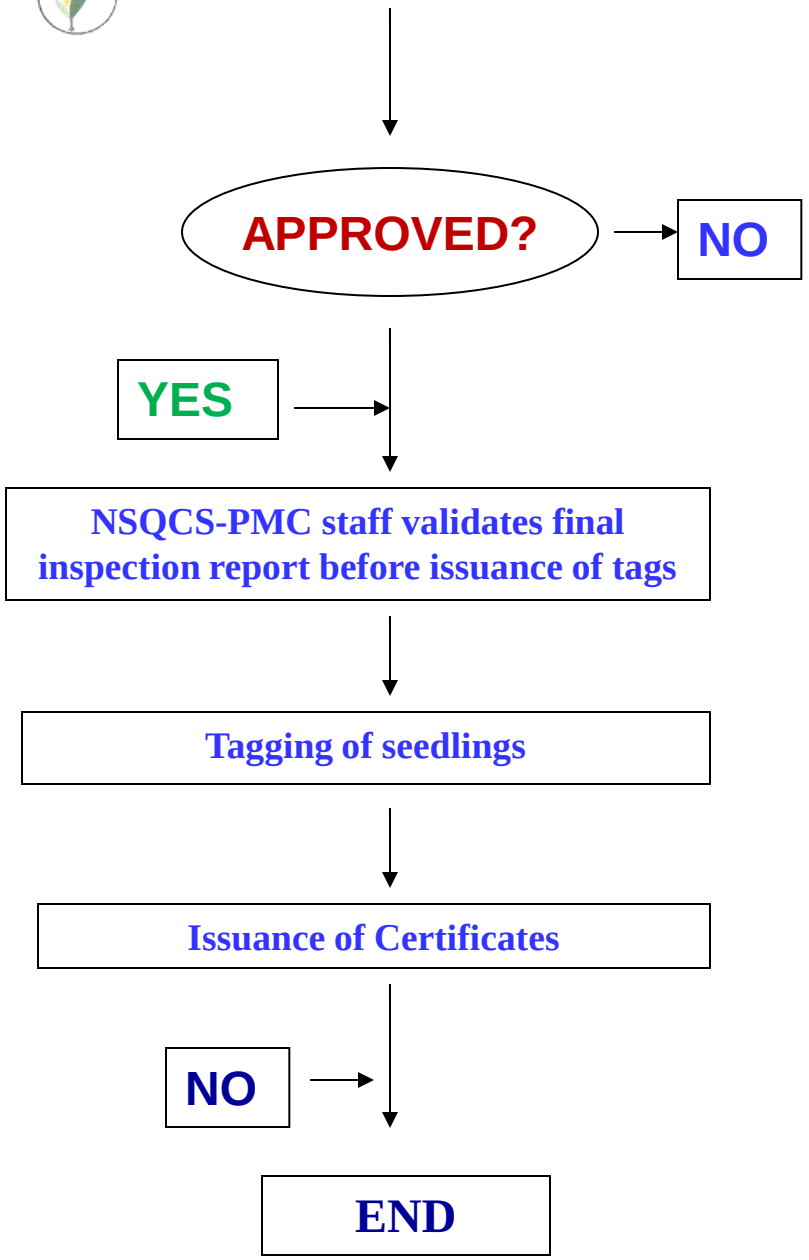
Nursery owners/managers/operators shall inform the owner of the foundation/scion groves and NSQCS and/or plant material inspectors of his/her intention to gather certified scions and their presence during the collection for reporting purposes. Official receipts as proof of purchase is necessary as evidence of the sale

Plant propagators to do the propagation

The PMI should be present during the asexual propagation time and include in the second inspection report. BPI-NSQCS-PMI Form #2B

Propagated seedlings will be housed in a separate area from non-certified seedlings of different crops

PMIs shall periodically inspect the grafted/budded seedlings and accomplish final inspection report to the NSQCS-PMC Form #3A of the status of the seedlings before approval or rejection of the application.



The NSQCS-PMC Central Office will approve or reject the application based on the inspections reported, submitted and monitoring results.

NSQCS-PMC will issue the tags to the PMIs based from the reports submitted with the presence of the nursery owner or manager or operator.

Periodic monitoring is mandatory for the PMIs to report the status of sales and conditions of the certified seedlings

NSQCS Central Office will issue the certificates corresponding to the crops and number of certified seedlings. The effectivity of this certificate will end until such time when the seedlings were sold/distributed

Mango certified seedlings being inspected by the regional plant material inspector from an accredited plant nursery before being distributed to intended beneficiaries

A typical assorted fruit market showcasing the best collection of SUPERFRUITS

Future Directions

- Market-driven outcomes
- Complementation with industry direction
- Strong government and private sector partnership
- Multistakeholders' involvement
- Capability Enhancement
- Sustainable Development
- Enhancing Productivity

Thank you and Good Day!!!