2024-2025
TOBACCO
PRODUCTION MANUAL

FLUE-CURED (VIRGINIA)
- Neutral Flavor
- Improved Flavor

AIR-CURED (BURLEY)
- Neutral Flavor
- Improved Flavor

NATIVE
- Cigar Filler
- Batek

Department of Agriculture
NATIONAL TOBACCO ADMINISTRATION

BAGONG PILIPINAS

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MESSAGE

WE are implementing various programs and projects under the **Sustainable Tobacco Enhancement Program (STEP)**, starting crop year 2024-2025. While we expanded the coverage of our production and livelihood assistance through our farm clustering program, the Tobacco Block Farm, still equally important in our thrust for a sustainable industry is to provide technical assistance to our tobacco growers for quality tobacco production.

Considering the significant factor of quality tobacco leaf in the tobacco prices, it is necessary that the farmers follow the updated package of technology for the production of quality leaves that meet the standards of both the local and global markets, in an environmentally sustainable manner, and get the maximum return from their tobacco farming enterprises.

We developed this latest resource material, the latest edition of the **Tobacco Production Manual (2024 - 2025),** to serve as a guide for all extension workers, Science Research Specialists, and other Extension Service Providers in assisting our farmers with updated quality leaf production technology, from seedbedding to field practices, harvesting, and post-harvest operations.

I commend the **Techno-Updating Task Force**, headed by OIC, Deputy Administrator for Operations Dr. Giovanni B. Palabay, for coming out with this latest resource material, in collaboration with private tobacco companies, and input suppliers.

Our vision for a progressive tobacco sector driven by productive and progressive farmers can be realized through this united effort and the combined expertise of our staff and industry partners.

BELINDA S. SANCHEZ, CPA
Administrator and CEO

FOREWORD

As the demand for tobacco continues to grow globally, farmers must be provided with the latest and updated technology on tobacco production. This Techno-Guide is an invaluable resource for the extension workers who will assist our tobacco farmers in achieving optimal yields and quality. As usual, the Techno-Updating Task Force pursued the task of identifying mature information and technology components that are incorporated in this Techno-Guide.

This Techno-Guide is a comprehensive guide to tobacco production, covering all aspects of the crop cycle from planting to harvesting and post-harvest operations. It provides detailed information on soil preparation, seedbed preparation, planting, irrigation, fertilization, pest and disease management, harvesting, and curing. Our extension workers need to be continuously reminded of this, and this Techno-Guide will serve as a handy guidebook for their effective and efficient field work.

The manual also highlights the importance of good agricultural practices (GAPs) in ensuring food safety and reducing the risk of contamination. It provides guidance on how to implement GAPs throughout the tobacco production process, from field preparation to storage and transportation.

We commend the technical working group for their dedication and expertise in updating this manual. The members are the identified experts in tobacco production from the NTA Branch Offices, mostly senior officials, in collaboration with experts from the private sector. Per Special Order No. 0755 dated August 30, 2023, the members were divided into three Focus Discussion Groups, one for each tobacco type. Their efforts have resulted in this updated technoguide that will benefit the tobacco farmers. Extension workers are expected to use this manual as a guide when assisting the farmers in their specific areas. By implementing the recommended practices outlined in this technoguide, farmers can improve their yields, reduce costs, and ensure a high-quality product that meets international standards.

We expect that the efforts of our TWG in accomplishing this Techno-Guide for our contract growers will also benefit programs designed in support of the Sustainable Tobacco Enhancement Program (STEP), which aims to increase tobacco yield levels and improve farmers' incomes.

GIOVANNI B. PALABAY, Ph.D.
OIC, Deputy Administrator for Operations &
Chair, Techno-Updating Task Force

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UNIFIED PRODUCTION TECHNOLOGY FOR VIRGINIA NEUTRAL FLAVOR

1. Variety

Reaction to Diseases

	Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/ CMV	PVY
Reams 266		MT	R	R		
DH 48			R		S	
Coker 254		S		S		
Golden Harvest		S				
Giant Coker		S				
K326	LT	R	R	S	S	S

Note: *R – resistant; HT - highly tolerant; MT – moderately tolerant; S – susceptible; LT – low tolerant; M- medium; RKN – Root Knot Nematode; TMV – Tobacco Mosaic Virus; CMV – Cucumber Mosaic Virus; PVY –Potato Virus Y*

Accredited Source of Seeds: NTA and Tobacco Company ONLY

2. Sowing Date: September to November 15. Extendable depending on soil and weather condition.

Note: Seedbed site assessment is a pre-requisite in early transplanting to determine the suitability of the area for seedbedding especially in low-lying areas that are prone to flooding.

3. Seedling Production

CONVENTIONAL ELEVATED SEEDBED
SEMI-FLOAT SEEDBED
SEEDLING TRAY

Note: Apply NTA recommended soil conditioner.

4. Land Preparation: 15 to 30 Days before transplanting
1st passing: 10-15 cm depth
2nd passing: 7 days before planting; 15 cm depth
Furrowing can be done a day or during transplanting.

5. Transplanting Cut-off Date: December 15 - January 15. Extendable depending on soil and weather condition

Reminder: Transplanting can be done earlier or delayed given the weather condition.

Transplanting Method: Furrow (Recommended with El Niño Phenomenon)
Ridge (Recommended with La Niña Phenomenon)

Distance of Planting:
0.90m – 1.00m x 0.42m – 0.50m

Number of plants/hectare: 20,000 – 26,455

6. Replanting: Within **5 days** after transplanting (DAT)

7. Fertilizer Rate (Quantity), Source, Method and Time of Application:

Option 1 (62-36-73/48 kg N-P_2O_5-K_2O/ha)

Quantity	Rate & Source	Method and Time
4 bags	10-18-24	basal, single band along furrows, 0 DAT
4 bags	21-0-0	sidedress, single band, 21–28 DAT
1 bag	0-0-50	sidedress, single band, 21-28 DAT

* Optional depending on companies preference

Reminder: Adjust the amount of fertilizer if the total plant population has exceeded 20,000 & 26,455/ha.

Note: Use of 75% of the reccomended rate for moderate and high fertile soils (based on soil fertility mapping).

Recommended Other Farm Inputs *(Optional)*

1. Soil Conditioner

K-Humate Soil Conditioner
Broadcast/Incorporate 100 g K-Humate per 10 square meter broadcast at seedbed before sowing.
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows.

2. **Biostimulant**

CERES Biostimulant Fertilizer		
40 ml / 16 L water	First Foliar Spray	15 DAT
60 ml / 16 L water	Second Foliar Spray	30 DAT
60 ml / 16 L water	Third Foliar Spray	45 DAT
60 ml / 16 L water	Fourth Foliar Spray	60 DAT (Optional)

3. **Plant Growth Enhancer**

AMO		
1tbs / 16 L water	First Foliar Spray	15 DAT
1tbs / 16 L water	Second Foliar Spray	30 DAT
1tbs / 16 L water	Third Foliar Spray	45 DAT
VITALGRO		
150ml/16L water	First Foliar	0 DAT
150ml/16L water	Second Foliar	14 DAT
150ml/16L water	Third Foliar	25 DAT
300ml/16L water	Fourth Foliar	40 DAT
300ml/16L water	Fifth Foliar	After Topping

4. **Liquid Phosphite**

VAKSI K Liquid Phospite		
45 ml / 16 L water	First Foliar Spray	15 DAT
45 ml / 16 L water	Second Foliar Spray	30 DAT
45 ml / 16 L water	Third Foliar Spray	45 DAT
45 ml / 16 L water	Fourth Foliar Spray	60 DAT (Optional)

8. Watering, Irrigation Method and Schedule

Watering	**Method and Schedule**
1st	at transplanting @ approximately 1 L/plant
2nd	5 DAT @ 1 approximately 1 L/plant
3rd	14 DAT @ approximately 2–3 Liters/plant
4th*	21 to 28 DAT, after hilling-up, @ approximately 3-5 Liters/plant
5th*	31 to 38 DAT, @ 3-5 Liters/plant
6th*	41 to 48 DAT, @3-5 Liters/plant

**in the event that there is scarcity of water such that irrigation is not possible.*

Irrigation	Method and Schedule
1st	21 to 28 DAT, after hilling-up, alternate furrows
2nd	28 to 31 DAT, in alternate furrows
3rd	42 to 45 DAT, full furrows
4th	after 3rd priming, full furrows (Depending on the availability of water)
5th	after the 5th priming, depending on soil moisture; alternate furrows (Depending on the availability of water)

Construction of dikes along the furrows is highly recommended to lessen the volume of water and to avoid water logging

9. Crop Protection Agents (CPAs)

Note: The farmers are encourage to apply recommended CPAs based on Economic Threshold Level (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs, and prevent insect resistance development.

Note: **Annex A** List of NTA recommended Crop Protection Agents (CPAs)

Annex B Safe use and management of CPAs

Annex C Integrated Pest Management

*FLOWER HEAD REMOVAL at full bloom and field sanitation are important IPM strategies that can sustainably reduce insect infestation on tobacco.

10. Harvesting

Harvest mature leaves as indicated by the following:

– leaf color changes from light green to yellow-green
– leaf tips turn brownish
– midrib turns light green

Reminder: **Sorting before Sticking or Stringing**

Sort and stick or string leaves according to:

- Ripeness
- Injury
- Length

Important:

Harvest as needed.

Haul leaves immediately after harvest and unload under the shade, using cheesecloth, bamboo slats, C48 carton, or buri (*silag*) as matting material.

Pile the harvested leaves PROPERLY with the butt ends down.

Sort, stick, and pile the leaves properly in shaded area and hang the leaves inside the barn within the day.

Start firing within 12 hours after hanging/loading.

11. Flue-Curing Barn

Dimension and Fixtures

Particulars	0.5 ha-capacity barn	1.0 ha-capacity barn
Inside dimension	L = 3.8 m; W = 3.0 m; H = 5.7 m	L = 3.75 m; W = 3.75 m; H = 5.7 m
Height of the first tier	1.8 m	1.8 m
No. of tiers	5 + additional tier at the ridge (2 hangers)	5 + additional tier at the ridge (3 hangers)
No. of rows	4	5
Distance between tiers	0.75 m	0.75 m

No. of bottom vents	8 (2 per side)	8 (2 per side)
Size of bottom vents	L = 30 cm; W = 15 cm, with adjustable up and down cover	L = 30 cm; W = 15 cm, with adjustable up and down cover
Top vent	Ridge type; L = 3.6 m: W = 0.3 m	Ridge type; L = 3.6 m: W = 0.3 m
Flue-tube	Single passing	Double passing
Capacity	812 sticks	1,100 sticks
Length of stick	60 cm	60 cm
Number of leaves per stick	46	46
Distance bet. poles	10 cm	10 cm

Reminder: PLANT ONLY ACCORDING TO CAPACITY OF THE EXISTING BARN. THE BARN MUST BE AIRTIGHT. USE OF INSULATORS IS RECOMMENDED TO SAVE FUELWOOD.

Recommended Furnaces: Modified Venturi, Modified Anawang, and Modular Anawang

Furnace Type:

Modified Anawang furnace

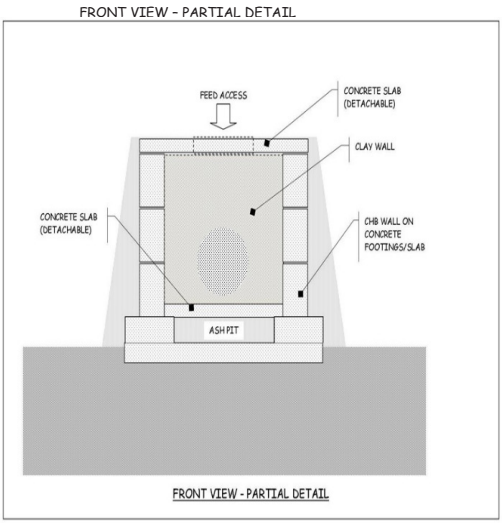


Figure 1. *Front view of the modified Anawang furnace*

Modified Venturi furnace

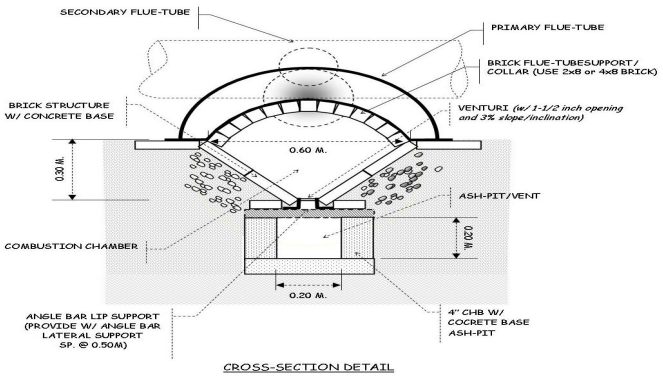


Figure 2. *Front view cross-section detail of the modified Venturi furnace*

Non-traditional or Additional Fuel

Biomass (Corn cob, ricehull, coconut husk,tobacco stalks)

Removable chicken wire mesh 15 cm below the leaves on the first tier
Insulator like C48 carton in case of barn with GI wall.
Psychrometer to monitor temperature and relative humidity inside the barn.
Curing graph/chart guide
Automated corn cob/ricehull dispenser for anawang furnace

Automated corn cob/ricehull dispenser

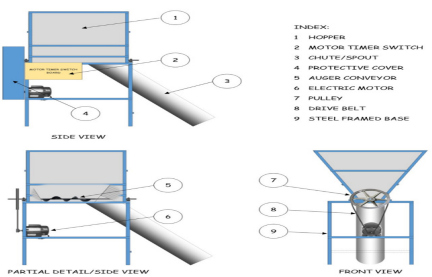
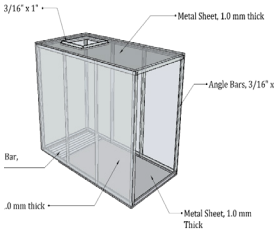
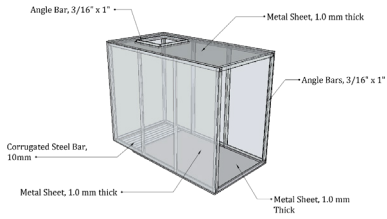
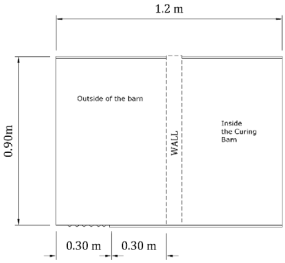


Figure 3. *Schematic diagram of the automated corn cob/ricehull dispenser*

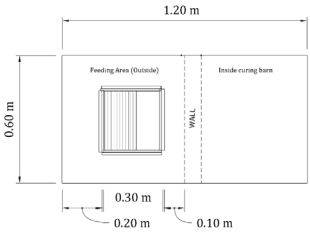
Figure 4. Modular Anawang Furnace



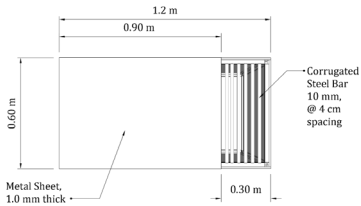




LEFT ELEVATION



TOP VIEW

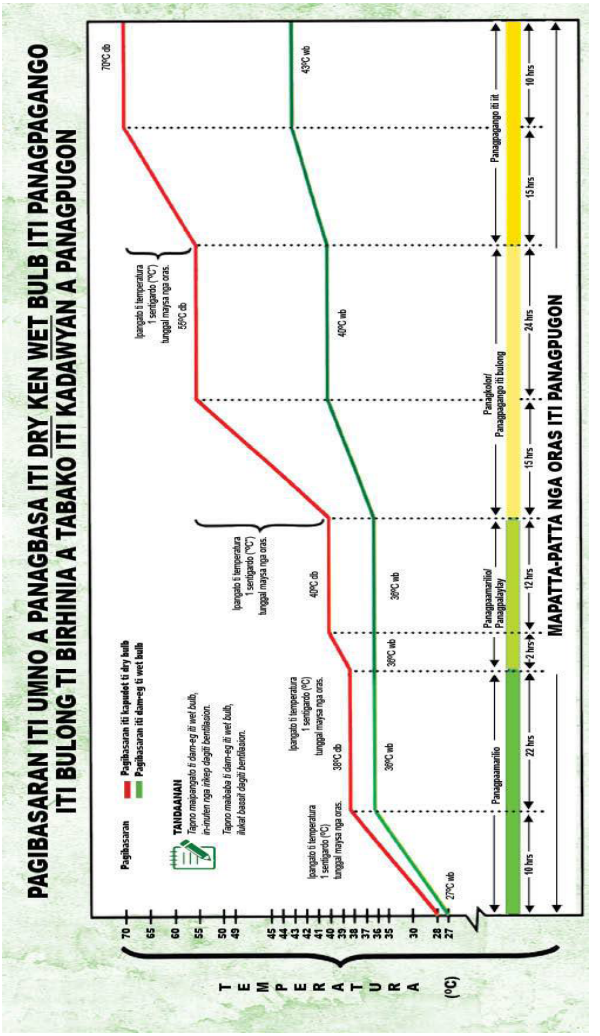


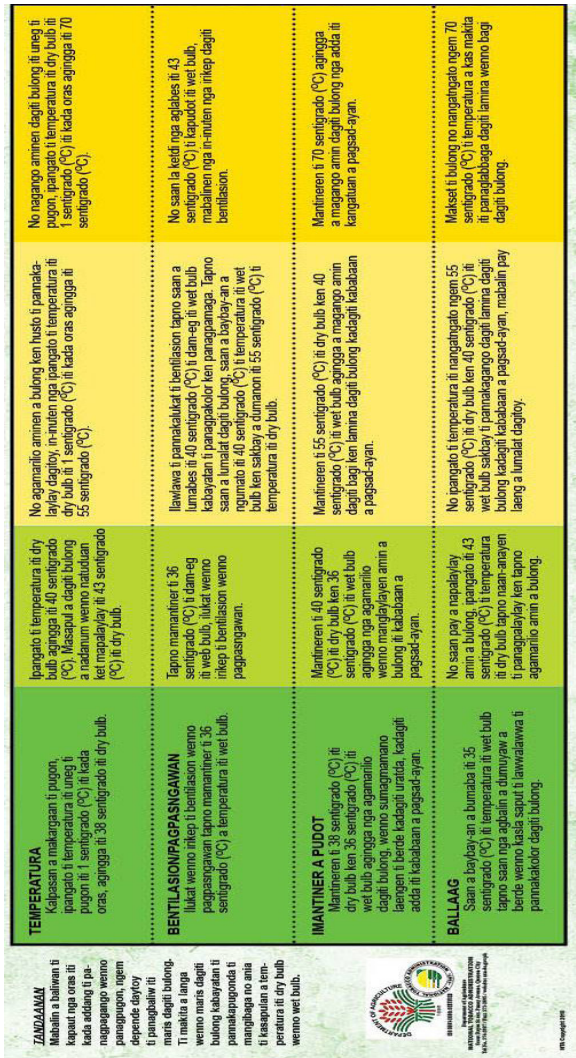
BOTTOM VIEW

12. Curing

Start firing within 12 hours after hanging/loading.

Follow **STRICTLY** the Curing Graph (see *pages* 18-19).





13. Unloading
    Condition the cured leaves by opening all the vents and doors.
    Let it cool down before unloading.
    Unload. Hang or pile the cured leaves in sticks.

14. Classification of Cured Leaves
The cured leaves must be classified based on the following: **Leaf position, Color, Length, Injury**

15. Baling System

I. Straight Laid Open Bale (SLOB) System
Size of Bale Box:
- Size varies according to the requirement of the company in relation to the size of their grading ramp but the weight should not be more than 50 kg.
- Pre-classify the leaves by leaf position.
- Put leaves of the same stalk position and quality in a bale.

II. Bundled Tobacco
- Size varies according to the requirement of the company in relation to the size of their grading ramp but the weight should not be more than 50 kg.
- Pre-classify the leaves by leaf position.
- Bundle into 2-2.5 inches diameter for further verification with TMI.
- Put leaves of the same stalk position and quality in a bale.

Reminder: ***The moisture content of the leaves must not exceed 18%.***

16. Target Yield (kg/ha) and grade distribution: **2,000 (± 10%)**

Quality	Grades	% distribution
HIGH	AA-C	70
MEDIUM	D-F	20
LOW	R	10

17. Marketing and delivery - Cut - off: June 30 as per TRR

Note:

REFER TO ANNEX D FOR THE ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRMs).

REFER TO ANNEXES E AND G FOR THE NTA HARMONIZED GRADES OF LOCALLY GROWN VIRGINIA.

UNIFIED PRODUCTION TECHNOLOGY FOR VIRGINIA IMPROVED FLAVOR

1. Variety

Variety	Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/ CMV	PVY
NC 2326	S	S	LT	S	S	
K326	LT	R	S	S	S	
CC67	R	R	HR		R	
PVH 2254	HT	R	HR	S	R/HR	HR
PVH 2233	LT	R	HR	M	R/MT	R
PVH 2310		R	R	M	R	R

Legend: *R - resistant; HR - highly resistant; HT - highly tolerant; MT - moderately tolerant; S - susceptible; LT - low tolerant; M - medium RKN – Root Knot Nematode; TMV – Tobacco Mosaic Virus; CMV – Cucumber Mosaic Virus; PVY –Potato Virus*

Accredited Source of Seeds: NTA and Tobacco Company ONLY

2. Sowing Date: September to November 15. Extendable depending on soil and weather condition.

Note: Seedbed site assessment is a pre-requisite in early transplanting to determine the suitability of the area for seedbedding, especially in low-lying areas that are prone to flooding.

3. Seedling Production Method:

CONVENTIONAL ELEVATED SEEDBED; SEMI-FLOAT SEEDBED; SEEDLING TRAY

4. Land Preparation: 15 to 30 Days before transplanting
1st passing: 10-15 cm depth
2nd passing: 7 days before planting; 15 cm depth
Furrowing can be done a day or during transplanting.

5. Transplanting Cut-off Date: December 15 - January 15. Cut-off date for ULPI is January 30.

(NOT EARLIER THAN 45 DAYS AFTER SOWING (DAS) AND NOT LATER THAN SIXTY (60) DAS DEPENDING ON THE SEEDLING STAND

Furrow (RECOMMENDED WITH EL NIÑO PHENOMENON)
Ridge (RECOMMENDED WITH LA NIÑA PHENOMENON)

Transplanting Method: Furrow (Recommended with El Niño Phenomenon) or Ridge (Recommended with La Niña Phenomenon).

Distance of Planting

1.2 m x 0.45 m	1.2 m x 0.5 m	1.1 m x 0.45	1.0 m x 0.5 m

Number of Plants per ha.

18,519	16,667	20,202	20,000

6. Replanting: Within **5 days** after transplanting
7. Fertilizer Rate (Quantity), Source, Method and Time of Application:

Option 1: (82/103-72-146 kg N-P_2O_5-K_2O/ha)

Quantity	Rate & Source	Method and Time
8 bags	10-18-24	basal, single band along furrows, 0 DAT
2 bags	0-0-50	basal, single band along furrows, 0 DAT
4 bags	21-0-0	sidedress, single band, 10–14 DAT
2 bags	21-0-0	sidedress, single band, 25– 28 DAT

*Optional depending on companies Reference

Option 2: (88.5-92-150 kg N-P_2O_5-K_2O/ha)

Quantity	Rate & Source	Method and Time
4 bags	18-46-0	basal, single band along furrows, 0 DAT
2 bags	0-0-50	basal, single band along furrows, 0 DAT
4 bags	0-0-50	sidedress, single band along furrows, 18 – 21 DAT
5 bags	21-0-0	sidedress, single band along furrows, 18 – 21 DAT

Reminder: Adjust the amount of fertilizer if the total plant population exceeds the recommended plant population (16,667, 18,519, 20,000 & 20,202).

Recommended Other Farm Inputs *(Optional)*

1. Soil Conditioner

K-Humate
Broadcast/Incorporate 100 g K-Humate per 10 square meter broadcast at seedbed before sowing
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows

2. Biostimulant

CERES Foliar Fertilizer		
40 ml/16L water	First Foliar Spray	15 DAT
60 ml /16L water	Second Foliar Spray	30 DAT
60 ml /16L water	Third Foliar Spray	45 DAT
60 ml /16L water	Fourth Foliar Spray	60DAT (Optional)

3. Plant Growth Enhancer

AMO		
8 g / 16L water	First Foliar Spray	15 DAT
8 g / 16L water	Second Foliar Spray	30 DAT
8 g / 16L water	Third Foliar Spray	45 DAT
VITALGRO		
150mlL/16L water	First Foliar Spray	0 DAT
150mlL/16L water	Second Foliar Spray	14 DAT
150mlL/16L water	Third Foliar Spray	25 DAT
300mL/16L water	Fourth Foliar Spray	40 DAT
300mL/16L water	Fifth Foliar Spray	After Topping

4. Liquid Phosphite

VAKSI K		
45 ml/16L water	First Foliar Spray	15 DAT
45 ml/16L water	Second Foliar Spray	30 DAT
45 ml/16L water	Third Foliar Spray	45 DAT
45 ml/16L water	Fourth Foliar Spray	60DAT(Optional)

8. Watering, Irrigation Method and Schedule

Watering	Method and Schedule
1st	at transplanting @ 1 liter/plant
2nd	5 DAT @ 1 liter/plant
3rd	10-14 DAT @ 2-3 liters/plant

Irrigation

1st	18 to 28 DAT, all furrows, 15% water level of the ridge after re-ridging
2nd	25 to 38 DAT, in alternate furrows at 50% water level of the ridge
3rd	32 to 48 DAT, all furrows at 50% water level of the ridge
4th	after 2nd priming, all furrows at 20% water level of the ridge
5th	after 4th priming, all furrows at 10-15% water level of the ridge
6th	case to case depending on soil moisture.

9. Crop Protection Agents (CPAs)

Note: The farmers are encouraged to apply CPAs based on Economic Threshold Level (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs and prevent insect resistance development.

Note: **ANNEX A** List of NTA recommended crop protection agents (CPAs)

ANNEX B Safe use and management of CPAs

ANNEX C Integrated Pest Management

10. Topping Time

Number of leaves	*Time of Topping*
16 – 22	Bud-top when 30%-50% of the total population is at button stage.

(depending on the crop stand and market requirement)

11. Suckercide

Active Ingredients	Brand name	AI Concentration	FPA Toxicity Category	Target	Vol/ha (li) *	Vol/li water (ml)	Solution/plant (ml)
Flumetralin	Flupro 14 EC	138 g/li	III	suckers	3–4	15–20	10–15
	Flumex 15 EC	144 g/li	III	suckers	3–4	15–20	10–15

Legend: *EC- Emulsifiable concentrate*
- moderately hazardous
* - *depending on plant population*

Note: Suckercides SHOULD be applied within 24 hours after topping.

12. Harvesting

Harvest mature leaves as indicated by the following:

– leaf color changes from light green to yellow green
– turn brownish of the leaf tips
– midrib turns light green

Reminder: Sorting before sticking

Sort and Stick Leaves according to:
Ripeness, Injury, Length

Important:

Harvest as needed, do not wait until topping is done.
Haul leaves immediately after harvest and unload under the shade, using cheesecloth, bamboo slats, C48 carton, and buri "*silag*" as matting material.
Pile the harvested leaves PROPERLY with the butt ends down.
Sort, stick and pile the leaves properly in shaded area and hang the leaves inside the barn within the day.

13. Curing

Start firing within 12 hours after hanging/loading.

Follow **STRICTLY** as stated in the Curing Graph (see ***pages 9-10***).

14. Flue-Curing Barn

Dimension and Fixtures

Particulars	0.5 ha-capacity barn	1.0 ha-capacity barn
Inside dimension	L = 3.8 m; W = 3.0 m; H = 5.7 m	L = 3.75 m; W = 3.75 m; H= 5.7 m
Height of first tier	1.8 m	1.8 m
No. of tiers	5 + additional tier at the ridge (2 hangers)	5 + additional tier at the ridge (3 hangers)
No. of rows	4	5
Distance between tiers	0.75 m	0.75 m
Number of bottom vents	8 (2 per side)	8 (2 per side)
Size of bottom vents	L = 30 cm; W = 15 cm, with adjustable up and down cover	L = 30 cm; W = 15 cm, with adjustable up and down cover
Top vent	Ridge type; L = 3.6 m: W = 0.3 m	Ridge type; L = 3.6 m: W = 0.3 m
Flue tube	Single passing	Double passing
Capacity	812 sticks	1,100 sticks
Length of stick	60 cm	60 cm
Number of leaves per stick	46	46
Distance bet. poles	10 -15 cm	10 - 15 cm

Reminder: Plant only according to the capacity of the existing barn. The barn must be airtight. Use of insulators is recommended to save fuelwood.

Recommended Furnaces: Modified Venturi, Modified Anawang, Modular Venturi

Furnace Type

Modified Anawang furnace (see Fig. 1, ***page 6***)
Modified Venturi furnace (see Fig. 2, ***page 7***)

Non-traditional or Additional Fuel:
Biomass (Corn cob, ricehull, coconut husk, tobacco stalks)

Additional fuel Fixture
- Removable chicken wire mesh 15 cm below the leaves on the first tier.
- Insulator-like C48 carton in case of barn with GI wall.
- Psychrometer to monitor temperature and relative humidity inside the barn.
- Curing graph/chart guide.

Automated corn cob/ricehull dispenser for Anawang furnace (see Figure 3, ***page 7***)
Modular Anawang Furnace (see Figure 4,***page 8***)

15. Unloading
- Condition the cured leaves by opening all the vents and doors.
- Let it cool down before unloading.
- Unload. Hang or pile the cured leaves in sticks.

16. Classification of Cured Leaves
The cured leaves must be classified based on the following: **leaf position**, **color**, **length,** and **injury/ damage.**

17. Straight Laid Open Bale (SLOB) System
Size of Bale Box:
Size varies according to the requirement of the company in relation to the size of its grading ramp but the weight should not be more than 50 kg.
Pre-classify the leaves by leaf position.
Put leaves of similar size and quality in a bale.
Reminder: The moisture content of the leaves must not exceed 18%.

18. Target Yield (kg/ha) and Grade Distribution:
2,200 (± 10%)

Quality	Grades	% distribution
HIGH	AA-C	70
MEDIUM	D-F	20
LOW	R	10

Note:

REFER TO ANNEX D FOR THE ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRMs)

REFER TO ANNEX E FOR THE NTA HARMONIZED GRADES OF LOCALLY GROWN VIRGINIA

REFER TO ANNEX G FOR THE TOBACCO LEAF GRADING FOR LOCALLY GROWN VIRGINIA

UNIFIED PRODUCTION TECHNOLOGY FOR
BURLEY NEUTRAL FLAVOR

1. Variety

Reaction to Diseases

	Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/ CMV
TN 90	S	S	MT	S	R
CC812G	HR	S	R	MR	S
NC 7	S	HR	R	HR	R
KT 206	S	S	HR	S	R
GF 1888	HR	R			R
HB4488P	S	R	R	LT	R

Note: *HR – highly resistant; R – resistant; MR – moderately resistant; MT – moderately tolerant; S – susceptible; LT – low tolerant; TMV – Tobacco Mosaic Virus; CMV – Cucumber Mosaic Virus*

Accredited Source of seeds: NTA and Tobacco Company ONLY

2. Sowing Date: September to October 31. Extendable depending on soil and weather condition.

3. Seedling Production Method

CONVENTIONAL ELEVATED SEEDBED
SEMI-FLOAT SEEDBED
SEEDLING TRAY

Note: Apply NTA recommended soil conditioner.

4. Transplanting Cut-off Date: January 15. Extendable depending on weather condition

5. Transplanting Method: Furrow Planting / Ridge Planting wherever applicable

6. Distance of Planting: (0.80m x 0.45m); (0.8 m x 1.0 m); (1.0m x 0.45m); (1.0 m x 0.50 m)

7. Number of plants/ha: 24,000 – 30,000

8. Replanting: Within **5 days** after planting
9. Fertilizer Rate, Source, Time and Method of Application:

Option 1 (235-54-72 kg N-P_2O_5-K_2O/ha)

Quantity	Source	Method and Time
6 bags	10-18-24	Band application along planting furrows at transplanting
8 bags	46-0-0	Sidedress as band along the furrows after off-barring at 10–14 DAT
1 bag	21-0-0	Sidedress as band along the furrows during hilling-up at 25–28 DAT
1 bag	21-0-0	Fertigation at 35–40 DAT
2 kg	Foliar (17-8-17)	Apply as spray starting at 10 DAT applied at weekly interval until topping time

Option 2 (235-54-122 kg N-P_2O_5-K_2O/ha)

Quantity	Source	Method and Time
6 bags	10-18-24	Band application along furrows at transplanting
2 bags	0-0-50	Band application along furrows at transplanting
8 bags	46-0-0	Sidedress as band along the furrows after off-barring at 10-14 DAT
1 bag	21-0-0	Sidedress as band along the furrows during hilling-up at 25-28 DAT
1 bag	21-0-0	Fertigation at 35-40 DAT
2 kg	Foliar (17-8-17)	Apply as spray starting at 10 DAT applied at weekly interval until topping time

Option 3 (198-54-72 kg N-P_2O_5-K_2O/ha)

Quantity	Source	Method and Time
6 bags	10-18-24	Band application along furrows at transplanting
4 bags	21-0-0	Sidedress at 10-14 DAT
6 bags	21-0-0	Sidedress at 21 DAT
6 bags	21-0-0	Sidedress at 30-35 DAT

Reminder: Adjust the amount of fertilizer if the total plant population has exceeded 25,000.

Recommended Other Farm Inputs *(Optional)*

1. Soil Conditioner

K-Humate
Broadcast/incorporate 100 g K-Humate per 10 square meter seedbed before sowing
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows

2. Biostimulant Foliar

CERES Foliar Fertilizer		
40ml/16Lwater	First Foliar Spray	15 DAT
60m /16L water	Second Foliar Spray	30 DAT
60ml/16L water	Third Foliar Spray	45 DAT
60ml/16L water	Fourth Foliar Spray	60 DAT

3. Plant Growth Enhancer

AMO		
1tbs/16L water	First Foliar Spray	15 DAT
1tbs/16L water	Second Foliar Spray	30 DAT
1tbs /16L water	Third Foliar Spray	45 DAT
1tbs /16L water	Fourth Foliar Spray	60 DAT

2. Liquid Fertilizer Phosphite

VAKSI K		
45ml / 16L water	First Foliar Spray	15 DAT
45ml / 16L water	Second Foliar Spray	30 DAT
45ml / 16L water	Third Foliar Spray	45 DAT
45ml / 16L water	Fourth Foliar Spray	60 DAT

10. Cultivation/Weeding

Off-barring 10 – 14 DAT
Hilling-up 1 25 – 28 DAT
Hilling-up 2 35 – 40 DAT

Manual weeding, if necessary

11. Irrigation Method and Schedule

Watering	Method and Schedule
1st	at transplanting @ 1 liter/plant
2nd	5 DAT @ 2 liters/plant

Irrigation	
1st	10 to 14 DAT full furrows
2nd	26 to 29 DAT full furrows
3rd	35 to 42 DAT full furrows
4th	After 1st priming, alternate furrows
5th	After 3rd or 4th priming, depending on soil moisture, alternate furrows

Note: ***Construction of dike along furrows is highly recommended to lessen volume of water and avoid water logging.***

12. Crop Protection Agents (CPAs)

Note: The farmers are encouraged to apply CPAs based on ECONOMIC THRESHOLD LEVEL (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs and prevent insect resistance development.

Note: **ANNEX A** List of NTA recommended crop protection agents (CPAs)

ANNEX B Safe use and management of CPAs

ANNEX C Integrated Pest Management

"*TOPPING before full bloom and field sanitation are important IPM strategies that can sustainably reduce insect infestation on tobacco.*"

13. Other Crop Protection Measures

Use of bird perch at strategic locations in the field and plant repellants (e.g., MARIGOLD) and attractants at field boundaries.

14. Harvesting and Handling

Harvest ripe and mature leaves.

Important:

Haul leaves immediately after harvest and unload under the shade, using cheesecloth, bamboo slats, C48 cartons and buri (*silag*) as matting material.

Pile the leaves upright with the butt ends down.

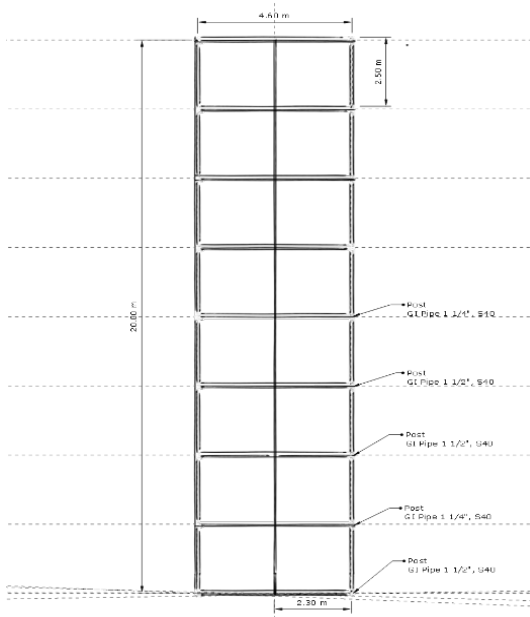
Sort, stick, and hang the leaves within the day.

15. Air-Curing Shed: **Dimension (Collapsible)** with **black plastic roofing**

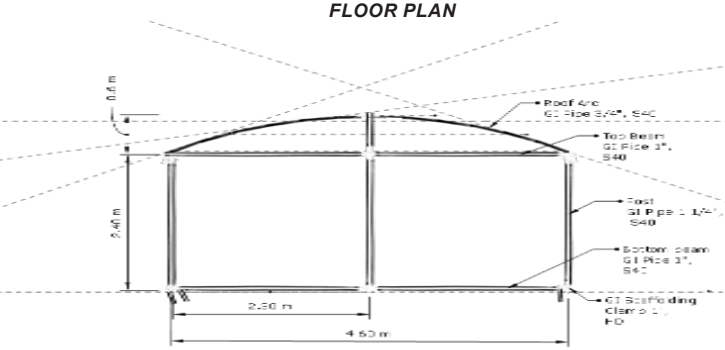
Particulars	OPTION I	OPTION II
Floor	20.0m L x 4.5m W	20.0m L x 4.5m W
Height	3.0 m	4.5m
No. of tiers	3	3
Distance of tiers from the ground	0.85 m	0.85 m
Number of units/ha	3	2

Barn Fixture: **Hygrometer** *is needed to monitor relative humidity and temperature inside the shed.*

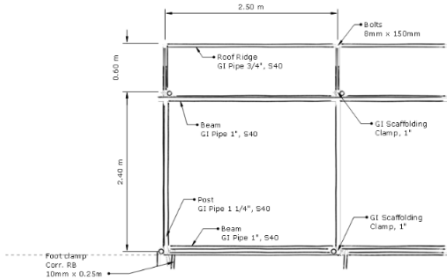
Collapsible Air Curing Shed Design



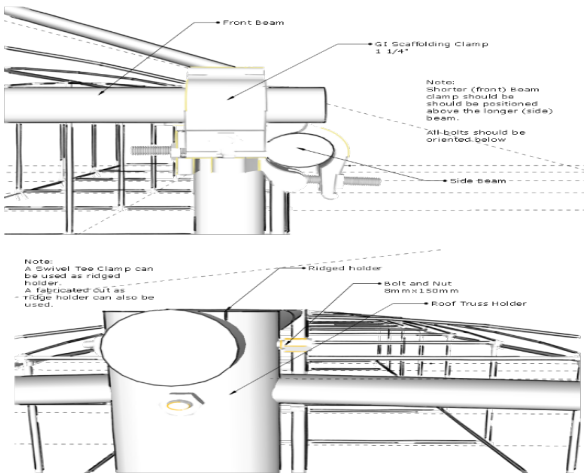
FLOOR PLAN



FRONT ELEVATION



SIDE ELEVATION



CONNECTORS DETAILS

16. Air Curing

Hang sticked leaves at 15 cm apart for good air circulation inside the barn.

Maintain closed walls until yellowing is completed. Open walls when RH is above 70%

17. Sorting and Bundling

Sort and bundle according to: **Leaf position, Color, Length,** and **Injury/Damage.**

18. Straight Laid Open Bale (SLOB) System/Bunding

Prepare/bale tobacco leaves according to market tie-up specifications.
Bundle tobacco at 2-inch diameter.

Reminder: The moisture content of the leaves must not exceed 18%.

19. Target Yield (kg/ha): at least **2,200 (± 10%)**

Quality Index	Grades	% distribution
HIGH	A-C	70
MEDIUM	D-F	20
LOW	R	10

Note:

REFER TO ANNEX D FOR THE ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRMs)

REFER TO ANNEX F FOR THE HARMONIZED GRADES FOR THE LOCALLY GROWN BURLEY

REFER TO ANNEX H FOR TOBACCO LEAF GRADING FOR BURLEY

UNIFIED PRODUCTION TECHNOLOGY FOR BURLEY IMPROVED FLAVOR FOR REGION 1

1. Variety

Reaction to Diseases

	Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/ CMV	PVY
TN 90	S	S	MT	S	R	
CC812G	HR	S	R	MR	S	
NC 7	S	HR	R	HR	R	
KT 206 LC	S	S	HR	S	R	
GF 1888	HR				R	
HB-4488P (TMI)	S	R	R	LT	R	R
HB-4155P (TMI)	MT	S	R	MT	R	R

Note: *HR – highly resistant; R – resistant; MR – moderately resistant; MT – moderately tolerant; S – susceptible; LT – low tolerant; TMV – Tobacco Mosaic Virus; CMV – Cucumber Mosaic Virus; PVY –Potato Virus*

Accredited Source of seeds: NTA and Tobacco Company ONLY

2. Sowing Date: September to October 31. Extendable depending on weather condition

3. Seedling Production Method:
   CONVENTIONAL ELEVATED SEEDBED
   SEMI-FLOAT SEEDBED
   SEEDLING TRAY
   Note: Apply NTA-recommended soil conditioner.

4. Transplanting Cut-off Date: January 30. Extendable depending on weather condition

5. Transplanting Method: Furrow Planting / Ridge Planting wherever applicable

6. Distance of Planting: 1.0 m x 0.40 – 0.45 m

7. Number of Plants/hectare: 22,200 to 25,000

8. Replanting: Within **5 days** after planting
9. Fertilizer Rate, Source, Time and Method of Application:

Option 1 – 265-108-194 kg N-P_2O_5-K_2O/ha

Quantity	Source	Method and Time
12 bags	10-18-24	Band application along planting furrows, then cover with ridge, 0 DAT
2 bags	0-0-50	Band application along planting furrows, then cover with ridge, 0 DAT
8 bags	46-0-0	Band application, 10–14 DAT
1 bag	21-0-0	Band application after off-barring, 25–28 DAT
1 bag	21-0-0	Fertigation, at 35–40 DAT
3 kg	Foliar (17-8-17)	Apply as spray starting at 10 DAT applied at weekly intervals until topping time

Option 2 – 228-108-194 kg N-P_2O_5-K_2O/ha

Quantity	Source	Method and Time
12 bags	10-18-24	Band application along planting furrows, then cover with ridge, 0 DAT
4 bags	21-0-0	Band application, 10–14 DAT
2 bags	0-0-50	Band application at 21 DAT
6 bags	21-0-0	Band application after off-barring, 21 DAT
6 bags	21-0-0	Band application after hilling-up, 30–35 DAT

Reminder: Adjust the amount of fertilizer if the total plant population has exceeded 25,000.

Recommended Other Farm Inputs *(Optional)*

1. **Soil Conditioner**

K-Humate
Broadcast/Incorporate 100 g K-Humate per 10 square meter seedbed before sowing
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows

2. **Biostimulant Foliar**

CERES Foliar Fertilizer		
40ml/16Lwater	First Foliar Spray	15 DAT
60ml /16L water	Second FoliarSpray	30 DAT
60ml /16L water	Third Foliar Spray	45 DAT
60ml /16L water	Fourth Foliar Spray	60 DAT

3. Plant Growth Enhancer

AMO		
1tsp/16Lwater	First Foliar Spray	15 DAT
1tsp/16Lwater	Second Foliar Spray	30 DAT
1tsp/16Lwater	Third Foliar Spray	45 DAT
1tsp/16Lwater	Fourth Foliar Spray	60 DAT

4. Liquid Phosphite

VAKSI K Liquid Phosphite 1.5 Vaksi K per hectare		
45 ml /16L water	First Foliar Spray	15 DAT
45 ml /16L water	Second Foliar Spray	30 DAT
45 ml /16L water	Third Foliar Spray	45 DAT
45 ml /16L water	Fourth Foliar Spray	60 DAT

10. Cultivation/Weeding

Off-barring 10 – 18 DAT
Hilling-up 1 25 – 28 DAT
Hilling-up 2 35 – 40 DAT
Manual weeding, if necessary

11. Irrigation Method and Schedule

Watering

1st at transplanting @ 1 liter/plant
2nd 5 DAT @ 3 liters/plant

Irrigation (TMI & ULPI)

1st at 10 – 18 DAT, after first fertilizer sidedress, alternate furrows
2nd at 25 – 28 DAT, after the second fertilizer sidedress, alternate furrows
3rd at 35 DAT, after third fertilizer sidedress, alternate furrows
4th and succeeding irrigation will be as needed, depending on soil moisture and weather condition. Irrigate every two weeks if harvesting is by priming; if stalk-cut, irrigate 7–10 days intervals before stalk cutting.

Time of irrigation will follow the sidedressing schedule.

Note: Construction of dike along furrows is highly recommended to lessen volume of water and avoid water logging.

12. Crop Protection Agents (CPAs)

Note: The farmers are encouraged to apply CPAs based on ECONOMIC THRESHOLD LEVEL (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs and prevent insect resistance development.

Note: **ANNEX A** List of NTA recommended crop protection agents (CPAs)
ANNEX B Safe use and management of CPAs
ANNEX C Integrated Pest Management

TOPPING before full bloom and field sanitation are important IPM strategies that can sustainably reduce insect infestation on tobacco.

13. Other Crop Protection Measures

Use of birds' perches at strategic locations in the field and plant repellants (e.g., MARIGOLD) and attractants at field boundaries.

14. Topping

Number of leaves	*Time of Topping*
18 – 22	Bud-top when 30% of the total population reach button stage

15. Suckercide

Active Ingre-dients	Brand name	AI Concen-tration	FPA Toxicity Category	Target	Vol/ ha (li)	Vol/li water (ml)	Solution/ plant (ml)
Flumet-ralin	Flupro 14EC	138 g/l	III	suckers	3–4	10–20	10–15
Flumet-ralin	FFlumes15 EC	150 g/l	III	suckers	2-4*	12.5	10–15

Legend: *EC- Emulsifiable concentrate*
- *moderately hazardous*
* - *depending on plant population*

Note: Suckersides SHOULD be applied within 24 hours after topping.

16. Harvesting

For Stalk-Cut Tobacco: Prime twice with 2–3 mature leaves at 55 and 65–70 DAT; stalk cut at 84–90 DAT.

For Priming: Initial harvesting of 2-3 leaves is done prior of just after topping. Subsequent priming is undertaken starting 21-28 days after topping at weekly interval until all the leaves are harvested.

Haul leaves/stalk immediately after harvest and unload under the shade, using cheesecloth, bamboo slats, C4 cartons and buri (*silag*) as matting material.

Pile the leaves upright with the butt ends down; hang the stalk immediately inside the barn.

Sort, stick, and hang the leaves inside the curing shed within the day.

17. Air-Curing Shed: **Dimension (Collapsible)**

Particulars	Option 1 (Priming)	Option 2 (Stalk Cutting)	Adjustable Clamp
Floor	20 m L x 4.5 m W	20 m L x 5m W	18 m x 6 m
Height	3.0 m	2.5 m	2.5 m
No. of tiers	3	1	1
Distance of tier from the ground	0.85 m	n/a	n/a
Height of 1st tier from the ground	1.0 m	1.8 m	1.8 m
Number of units/ha	3	6	3

For harvesting by priming, with 1 priming before/after topping, wait for 21 – 28 days after topping before the next harvest and 7 – 10 thereafter for next priming (hand priming only). No STALK CUTTING).

For stalk cut, with 1 – 2 priming at 2 – 3 leaves per priming when the leaves are mature.

Barn Fixture: Hygrometer is needed to monitor relative humidity and temperature inside the shed.

Collapsible Air Curing Shed Design

(Refer to pages 25 - 26)

18. Air Curing

Hang sticked and stalk cut at 25 cm apart for good air circulation inside the barn.
Relative humidity (RH) of 65%-70% should be observed inside the barn particularly during yellowing to lamina drying by closing or opening its sidings; higher than 70%, open sidings; lower than 65%, close the sidings.

19. Unloading

Pile and condition leaves in preparation for stripping

20. Stripping, Sorting & Classification

Strip in accordance to leaf position considering color, length and injury
NOTE: NO SUNDRYING

21. Straight Laid Open Bale (SLOB) System/Bundling

Prepare/bale tobacco leaves according to market tie-up specifications
Bundle tobacco at 2-inch diameter

REMINDER: THE MOISTURE CONTENT OF THE LEAVES MUST NOT EXCEED 18%

22. Target Yield (kg/ha) 2,400 (± 10%)

Quality Index	Grades	% distribution
HIGH	A-C	70
MEDIUM	D-F	20
LOW	R	10

NOTE:

REFER TO ANNEX “D” FOR THE ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRMs)

REFER TO ANNEX “F” FOR THE NTA HARMONIZED GRADES OF LOCALLY GROWN BURLEY

REFER TO ANNEX “H” FOR THE TOBACCO LEAF GRADING FOR BURLEY

UNIFIED PRODUCTION TECHNOLOGY FOR BURLEY IMPROVED FLAVOR FOR REGION 2

1. Variety

Reaction to Diseases

Variety	Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/ CMV
TN 90	S	S	MT	S	R
CC812G	HR	S	R	MR	S
NC 7	S	HR	R	HR	R
KT 206 LC	S	S	HR	S	R
GF1888	HR	R			R

Legend: *HR – highly resistant; R – resistant; MR – moderately resistant; MT – moderately tolerant; S – susceptible; RKN – Root Knot Nematode; TMV – Tobacco Mosaic Virus; CMV – Cucumber Mosaic Virus*

Accredited Source of Seeds: NTA and Tobacco Company ONLY

2. Sowing Date: October to December 15. Extendable depending on the weather condition

3. Seedling Production Method

CONVENTIONAL ELEVATED SEEDBED
SEMI-FLOAT SEEDBED
SEEDLING TRAY

Note: Apply NTA-recommended soil conditioner.

4. Transplanting Cut-off Date: January 30

5. Transplanting Method: Furrow Planting / Ridge Planting wherever applicable

6. Distance of Planting

1.0 m x 0.42 m 1.10 m x 0.38 m 1.20 m x 0.35 m

7. Number of Plants/hectare: 24,000

8. Replanting: Within 5 days after planting

9. Fertilizer Rate: (**kg N-P_2O_5-K_2O/ha)**
   265-108-194 kg N-P_2O_5-K_2O/ha

10. Fertilizer Source & Time and Method of Application

Quantity	Source	Method and Time
12 bags	10-18-24	Basal, band application along the furrow before ridge construction
2 bags	0-0-50	Basal, band application along the furrow before ridge construction
4 bags	46-0-0	1st application at 10-14 DAT and second application at 25-28 DAT
4 bags	46-0-0	25-28 DAT perpendicular to the tip of the canopy of the leaf
2 bags	21-0-0	3rd sidedress, band application after off-barring at 35-40 DAT
4 kg	Foliar (17-8-17)	Apply as spray starting at 10 DAT applied at weekly interval until topping time

Reminder: Adjust the amount of fertilizer if the total plant population has exceeded 24,000.

Recommended Other Farm Inputs *(Optional)*

1. Soil Conditioner (for seedbedding)

K-Humate
Broadcast/Incorporate 100 g K-Humate per 10 square meter seedbed before sowing
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows

2. Biostimulant

CERES Foliar Fertilizer		
40ml / 16L water	First Foliar Spray	15 DAT
60ml / 16L water	Second Foliar Spray	30 DAT
60ml / 16L water	Third Foliar Spray	45 DAT
60ml / 16L water	Fourth Foliar Spray	60 DAT

3. Plant Growth Enhancer

AMO		
1 tbs/16L water	First Foliar Spray	15 DAT
1 tbs16L water	Second Foliar Spray	30 DAT
1 tbs /16L water	Third Foliar Spray	45 DAT
1 tbs / 6L water	Fourth Foliar Spray	60 DAT

4. Liquid Phosphite

VAKSI K , 1.5 L/ha		
45ml / 16L water	First Foliar Spray	15 DAT
45ml / 16L water	Second Foliar Spray	30 DAT
45ml / 16L water	Third Foliar Spray	45 DAT
45ml / 16L water	Fourth Foliar Spray	60 DAT

11. Cultivation/Weeding

Off-barring	10 – 14 DAT
Hilling-up 1	25 – 28 DAT
Hilling-up 2	35 – 40 DAT

Manual weeding, if necessary

12. Irrigation Method and Schedule

Watering

1st	at transplanting at 1 liter/plant
2nd	at 5 DAT at 1 liter/plant
3rd	10-14 DAT at 2-3 liters/plant

Irrigation

1st	17-24 DAT, alternate furrow irrigation
2nd	25-34 DAT, alternate furrow irrigation
3rd	35-40 DAT, alternate furrow irrigation
4th	after the first priming, all furrows and succeeding irrigations will depend on soil moisture.

***Note:* Construction of dike along furrows is highly recommended to lessen volume of water and avoid water logging.**

13. Crop Protection Agents (CPAs)

***Note:* The farmers are encouraged to apply CPAs based on ECONOMIC THRESHOLD LEVEL (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs and prevent insect resistance development.**

***Note:* ANNEX A**	List of NTA recommended crop protection agents (CPAs)
ANNEX B	Safe use and management of CPAs
ANNEX C	Integrated Pest Management

TOPPING before full bloom and field sanitation are important IPM strategies that can sustainably reduce insect infestation on tobacco.

14. Other Crop Protection Measures

Use of birds' perches at strategic locations in the field and plant repellants (e.g., MARIGOLD) and attractants at field boundaries.

15. Topping

Bud-top or when 30% of plants have one open flower.

Topping height: Bud topping at 18 to 22 leaves

16. Suckercide:

ACTIVE INGRE-DIENTS	BRAND NAME	AI Concen-tration	FPA Toxicity Category	Target	Vol/ha (li)	Vol/li water (ml)	Solu-tion/ plant (ml)
Flumetralin	Flumex 15 EC	150 g/li	III	suckers	2-4	10-20	10-15

Legend: *EC- Emulsifiable concentrate*
- moderately hazardous
* - *depending on plant population*

17. Harvesting and Stalk Cutting/Handling

Hand Priming: Harvest ripe and matured leaves only at weekly interval, prime only what can be sticked in a day.

Stalk-cutting: Initial harvesting by hand priming of 2–3 leaves. Stalk-cut at 85-90 DAT.

Stalk Cut/prime only when the weather is fine.

Important:

Haul leaves/stalk immediately after harvest and unload under the shade, using cheesecloth, and buri (*silag*) or bamboo slats as matting material during sorting and sticking.

Pile the leaves upright with the butt ends down; hang the stalk immediately inside the barn.

Sort leaves according to length, maturity and insect damage before sticking, and hang the leaves within the day.

Reminder: **Stalk-cut 3-7 days after irrigation/rain.**

18. Air-Curing Shed Dimension (Collapsible)

	Priming	Stalk Cutting	Adjustable Clamp	Collapsible Shed
Floor	20.0 m L x 4.5 m W	20m L x 4.5m W	18 m x 6 m	20m x 4.60m
Height	3 m	2.5m	2.5m	2.6m
No. of tiers	3	1	1	1
Distance of tier from the ground	0.85 m	n/a	n/a	n/a
Height of 1st tier from the ground	1 m	1.8 m	1.8 m	1.8 m
Number of units/ ha	3	7	3	3

The Black and White Plastic Sheet (BWPS) will be used as roofing materials of the curing shed.

Barn Fixture: **Hygrometer** is needed to monitor relative humidity and temperature inside the shed.

Collapsible Curing Shed Design *(Refer to pages 25-26)*

19. Air Curing

Hang sticked leaves at 20 cm apart for good air circulation inside the barn throughout the curing period.
Maintain closed walls until yellowing is completed.
Open walls when RH is above 70%.

20. Unloading

Unloading should be done early in the morning.
Pile and condition sticked leaves for 7-10 days prior to sorting.
Pile dried stalked cut leaves for 2-3 days for conditioning of leaves in preparation for stripping.

21. Stripping, Sorting, and Classification

Stripping should be done when midribs are fully dried. Pile the leaves according to the stalk position for conditioning within a period of 2-3 weeks.
When leaves are fully conditioned, classify according to: **color, length, thickness, injury.**
Pile for three days, then bale.

Reminder: ***Use buri mat, cheesecloth, bamboo slats or black plastic as matting material during these activities.***

22. Baling/Market Preparation Straight Laid Open Bale (SLOB) System

Pre-classify the leaves by leaf position.
Put leaves of similar size and quality in the bale.
Do not bale leaves with swollen midrib.
Bale weight should not be lower than 20 kgs for the lower leaves, upper leaves are 25 kgs and reject not lower than 10 kg per bale.

Reminder: ***The moisture content of the leaves must not exceed 18%.***

23. Target Yield (kg/ha): **2,400 (± 10%)**

Quality Index	Grades	Harmonized Grades	% distribution
HIGH	A-C	Grades with subscript 1-3	70
MEDIUM	D-F	Grades with subscript 5	20
LOW	R	ND, Reject	10

Note:

REFER TO ANNEX D FOR THE ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRMs)

REFER TO ANNEX F FOR THE HARMONIZED GRADES FOR THE LOCALLY GROWN BURLEY

REFER TO ANNEX H FOR TOBACCO LEAF GRADING FOR BURLEY

UNIFIED PRODUCTION TECHNOLOGY FOR
CIGAR FILLER TOBACCO
2024- 2025

1. Variety **Reaction to Diseases**

Variety	Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/ CMV	PVY
Vizcaya					R	
Tabije	MR				R	
Simmaba	MR				R	
IDAC 16	HR					

Legend: *HR – highly resistant; R – resistant; MR – moderately resistant; MT – moderately tolerant; RKN – Root Knot Nematode; TMV – Tobacco Mosaic Virus; CMV – Cucumber Mosaic Virus; PVY –Potato Virus*

Variety used by ULPI.

Accredited Source of seeds: NTA and Buyer Firm.

2. Sowing Date: October 15 to December 30

3. Seedling Production:
   CONVENTIONAL ELEVATED SEEDBED
   SEMI-FLOAT SEEDBED
   SEEDLING TRAY

   Note: 1. Apply NTA-recommended soil conditioner.
   2. In Region 2, seedlings were produced by BF accredited seedling grower (ULPI).
   For **PENTALEAF**, the farmers are producing their own seedlings thru conventional seedbeds.

4. Land Preparation: Plow and harrow one (1) month before transplanting
   Repeat if necessary, depending on soil condition and weed growth

5. Transplanting Cut-off Date:
   February 15 - Lower Vega
   January 30 - Mid/Upper Vega

6. Transplanting Method: Furrow or Ridge for wet or rainy season

7. Distance of Planting:
   Upper vega 0.90 x 0.80m/ 0.90 x 0.6 m
   Lower vega 1.0 x 0.80m/1.2 x 0.48 m

8. Number of plants/hectare:
   Upper vega 13,889/18,519
   Lower vega 12,500/17,361

9. Replanting: Not more than 5 days after transplanting (DAT)

10. Fertilizer Rate, Source, Time and Method of Application

Fertilizer Rate
Option 1: 122-54-122 kg N-P2O5-K2O/ha

Quantity (Bags)	Source	Rate per hill (grams)		Method and Time
		Upper vega	Lower vega	
6	10-18-24	16.2	17.28	Band application at 0 DAT or dibble at two points beside or perpendicular to the tip of the leaf.
2	0-0-50	5.4	5.76	Band application at 0 DAT or dibble at two points beside or perpendicular to the tip of the leaf.
4	46-0-0	11	11.52	Band application along the furrows after off-barring at 18 - 21 DAT

Fertilizer Rate

Option 2: 90-60-50 kg N-P2O5-K2O/ha

Quantity (Bags)	Source	Rate per hill (grams)		Method and Time
		Upper vega	Lower vega	
6	10-18-24	16.2	16.2	Band application at 0 DAT or dibble at two points beside the plant base at 10 DAT
2	0-0-50	5.4	5.4	band application at 0 DAT or dibble at two points beside the plant base at 10 DAT/mix with basal (16-20-0) for one time application
4	46-0-0	11	11	Band application along the furrows after off-barring at 21 DAT

Reminder: Adjust the amount of fertilizer if the total plant population has exceeded the recommended plant population.

Recommended Other Farm Inputs *(Optional)*

1. Soil Conditioner

K-Humate
Broadcast/Incorporate 100 g K-Humate per 10 square meter seedbed before sowing
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows.

2. Biostimulant

CERES Foliar Fertilizer		
40ml / 16L water	First Foliar Spray	15 DAT
60ml / 16L water	Second Foliar Spray	30 DAT
60ml / 16L water	Third Foliar Spray	45 DAT
60ml / 16L water	Fourth Foliar Spray	60 DAT

3. Plant Growth Enhancer

AMO		
1 tbs/16L water	First Foliar Spray	15 DAT
1 tbs16L water	Second Foliar Spray	30 DAT
1 tbs /16L water	Third Foliar Spray	45 DAT
1 tbs / 6L water	Fourth Foliar Spray	60 DAT

4. Liquid Phosphite

VAKSI K 1.5L/ha		
45ml / 16L water	First Foliar Spray	15 DAT
45ml / 16L water	Second Foliar Spray	30 DAT
45ml / 16L water	Third Foliar Spray	45 DAT
45ml / 16L water	Fourth Foliar Spray	60 DAT

11. Cultivation/Weeding

Off-barring at 10 – 14 DAT
Hilling - up 1 at 25 – 30 DAT
Hilling - up 2 at 35 - 40 DAT

MANUAL HAND WEEDING IF NECESSARY

12. Watering, Irrigation Method and Schedule

1st Watering	0-7 DAT, hill to hill(at least 1L per hill)
2nd Watering	5 to 14 DAT, hill to hill
1st irrigation	18-21 DAT, in alternate furrows
2nd irrigation	31-35 DAT, in alternate furrows
3rd irrigation	after first priming, all furrows (Optional)

Note: Irrigation volume and frequency depend on soil moisture and weather condition.

13. Crop Protection Agents (CPAs)

Note: The farmers are encouraged to apply CPAs based on ECONOMIC THRESHOLD LEVEL (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs and prevent insect resistance development.

Note: **ANNEX A**	List of NTA recommended crop protection agents (CPAs)
ANNEX B	Safe use and management of CPAs
ANNEX C	Integrated Pest Management

Flower (inflorescence) removal after second priming is recommended as cultural control of insect pests.

14. Harvesting, Priming, Sorting, and Sticking

Start harvesting at 55 to 60 DAT when the tip of the leaves starts to turn yellow to brown.
Harvest mature leaves as indicated by the following:
- leaf color changes from dark green to light green
- browning of the leaf tips
- midrib turns light green
- popping sound of the leaves primed

Reminder:
- harvest rime and matured leaves only
- when sticking, provide space about 3-4cm wide at 10 cm on both mid of hte sticks for hanging/load ing.
- prime only what can be sticked in a day.

Important:
Haul leaves immediately after harvest and unload under the shade, using cheesecloth, bamboo slats or silag/buri mat as matting material during sorting and sticking.
Pile the leaves upright with the butt ends down.
Sort leaves according to length, maturity and insect damage before sticking and hang the leaves within the day.
Do not prime right after irrigation or rain.

15. Sunwilting of Tobacco

Sun-wilt sticked leaves immediately in the wilting racks for not more than 5-7 days.
Distance between sticks in the rack should be 15 cm part.

Reminder: Sunwilting rack should be about 1.5 m high.

16. Curing Shed Material
    Permanent, using GI as roofing
    Collapsible, using black or opaque plastic

17. Curing Shed Dimension

Floor	L = 18.0 m; W = 5.5 m
Height	5.0 m
No. of tiers	3
Distance of tiers from the ground	1.5 m
Height of first tier	1.5 m
Number of units/ha	3

18. Curing of Tobacco
    Load the barn vertically, or fill a portion of the barn from top to bottom tier for each priming.

    Hang the sticked leaves parallel along the prevailing wind direction at a distance of 15-20 cm for air circulation.

    Cure/air-dry the leaves until the midribs are fully dried. (At least 25 - 30 days).

19. Ordering/Piling

    Unload dried leaves when they are soft and pliable, (or early in the morning).

    Pile leaves according to priming, then cover with cheesecloth or buri mat.

20. Ordering/Misting of cure tobacco, Bulking and Fermentation

    Mist the butt end of the leaves by spraying with water or by exposing the leaves to morning dew before piling.

Bulk the leaves per priming into mandala for fermentation with the butt ends outward.

Place a small perforated bamboo pole, with a **thermometer** INSIDE, at the middle of mandala for temperature monitoring at 7 a.m. and 5 p.m. daily. Cover the mandala with cheesecloth or buri mats and put weights on top.

Turn/Re-bulk the mandala when the temperature reaches the following level:

1st turning:	46 – 48°C
2nd turning:	49 – 51°C
3rd turning:	52 – 54°C

Fermentation of cigar filler tobacco should last for 30-35 days.

21. Sorting, Classification and Bundling

Classify the leaves according to NTA grading system; **High, Medium 1, Medium 2, Low 1 and Low 2**.

Bundle “Pongos” leaves when they are fermented and classify based on length, color, texture, elasticity, and damage (injury).

22. Target Yield (kg/ha): **2,000 (± 10%)**

Grades	% Distribution
High, Medium 1, Medium 2	65
Low 1	25
Low 2	15

23. Moisture Content (%)
The moisture content of the leaves must not exceed 18%.

NOTE: **REFER TO ANNEX “D” FOR THE ELIMINATION OF NON - TOBACCO RELATED MATERIALS (NTRMs)**

24. Marketing and Delivery

PROPOSED CUT OFF DATE OF DELIVERY FOR CIGAR FILLER IN REGION 02

Location	Transplanting Cut Off Date	First Priming (55-60 DAT)	Last Priming (6 Primings @ 48 day)	Curing (30 days)	Fermentation (30 Days)	Expected Delivery
Upper Vega	January 30	April 01	May 16	June 18	July 18	July 19
Lower Vega	February 15	April 16	June 03	July 03	August 02	August 03

UNIFIED PRODUCTION TECHNOLOGY FOR NATIVE BATEK

1. Variety

NSIC 2020 TC 24 (Pimminya - La Union)	Kasiri, Kattuyot Kantong (Misamis Oriental)
NSIC 2022 TC 25 (Lampangog - La Union)	Cabagel, Espada (Cotabato)
NSIC 2022 TC 26 (Sinai - Pangasinan)	
Karag (La Union)	
Lawit (La Union)	

Source of seeds: *Farmers produce their own seeds while other wait for the seeds treated from FTSD.*

Note: *NTA to register Native Batek varieties except Pimminya, Sinai and Lampangog ,which are already NSIC registered (FTSD).*

2. Sowing Date: September 15 to November 30 (Luzon), March 16 - April 15 (Mindanao)

3. Seedling Production:

CONVENTIONAL ELEVATED SEEDBED
SEMI-FLOAT SEEDBED
SEEDLING TRAY

Mindanao - Elevated seedbed, Lukong Method
Note: ***Apply NTA-recommended soil conditioner.***

4. Transplanting Cut-off Date: January 20 (Luzon)
June 30 (Mindanao)

5. Transplanting Method:
Flat and Furrow (Recommended with El Niño Phenomenon)
Ridge (Recommended with La Niña Phenomenon)

6. Distance of Planting: 0.90 – 1.0 m x 0.90 m – 1.0 m

Mindanao: 0.8m X 0.8 m 0.9 m X 0.9 m

7. Number of Plants/hectare: 10,000 to 12,345
   Mindanao: 15,625 and 12,346

8. Replanting: Within 5 days after transplanting (DAT)

9. Fertilizer Rate, Source, Time and Method of Application

Quantity	Source	Rate per hill (grams)	Method and Time
378-18-24 kg N-P2O5-K2O/ha (LA UNION/PANGASINAN)			
2 bags	10-18-24	10	At transplanting hole (seed bedding) - BASAL
10 bags	46-0-0	50	Alternate side of the plant at 10-14 DAT after off-barring and to be followed by hilling up after to form a ridge
3 bags	46-0-0	15	Applied as fertigation method after 1st priming
3 bags	46-0-0	15	Applied as fertigation method after 2nd priming
MINDANAO 278 - 144 - 35 kg N- P2O5-K2O/ha			
1 bag 1 bag	18-46-0 14-14-14		Basal
3 bags 2 bags 2 bags 1 bag	46-0-0 14-14-14 16-20-0 18-46-0		10 to 15 DAT (Sidedressing)
3 bags 2 bags 2 bags 1 bag	46-0-0 14-14-14 16-20-0 18-46-0		30 to 45 DAT (sidedressing)
2 bags	46-0-0		After 2nd priming

NATIVE LP4 316 - 72- 96 kg N - P2O5 -K2O/ha			
6 bags	10-18-24		Band application along planting furrows at trans-planting
6 bags	46 - 0 - 0		Sidedress as band along the furrows after off-barring at 10 - 14 DAT
6 bags	46 - 0 - 0		Sidedress as band along the furrows after off-barring at 25 - 28 DAT

Reminder: ***Adjust the amount of fertilizer if th total plant population has exceeded the recommended plant population.***

Recommended Other Farm Inputs *(Optional)*

1. **Soil Conditioner**

K-Humate
Broadcast/Incorporate 100 g K-Humate per 10 square meter seedbed before sowing
Mix 3 kg K-Humate per hectare with basal fertilizer at transplanting broadcast evenly along planting furrows.

2. **Biostimulant**

CERES		
40ml / 16L water	First Foliar Spray	15 DAT
60ml / 16L water	Second Foliar Spray	30 DAT
60ml / 16L water	Third Foliar Spray	45 DAT
60ml / 16L water	Fourth Foliar Spray	60 DAT

3. **Plant Growth Enhancer**

AMO		
1 tbs/16L water	First Foliar Spray	15 DAT
1 tbs16L water	Second Foliar Spray	30 DAT
1 tbs /16L water	Third Foliar Spray	45 DAT
1 tbs / 6L water	Fourth Foliar Spray	60 DAT

4. **Liquid Phosphite**

VAKSI K		
45ml / 16L water	First Foliar Spray	15 DAT
45ml / 16L water	Second Foliar Spray	30 DAT
45ml / 16L water	Third Foliar Spray	45 DAT
45ml / 16L water	Fourth Foliar Spray	60 DAT

10. Cultivation/Weeding

OPTION 1
Hill to hill cultivation and weeding

OPTION 2

Off-barring	10-14 DAT
Hilling-up 1	25-28 DAT
Hilling-up 2	35-40 DAT

MANUAL WEEDING IF NECESSARY

11. Watering, Irrigation Method and Schedule

Watering:
OPTION 1
1st - at transplanting about 1 L per hill
2nd- At 5-7 DAT, 2 L per hill
3rd - 7-10 days interval up to the second priming

OPTION 2
1st - at transplanting about 1 L per hill
2nd- At 5-7 DAT, 2 L per hill

Irrigation:

Start at 10-14 DAT all furrows.
Repeat in alternate furrows as the need arises.
Last furrow irrigation is after second priming.

12. Topping Height

Number of leaves	*Time of Topping*
16 – 18 leaves	Remove the terminal bud when the last leaf leaves reach(ed) (at last leaf is) 1 " long.

13. Crop Protection Agents (CPAs)

Note: ***The farmers are encouraged to apply CPAs based on ECONOMIC THRESHOLD LEVEL (ETL) to avoid CPA residues on tobacco, reduce farmers' exposure to CPAs, and prevent insect resistance development.***

Note:	**ANNEX A**	List of NTA recommended crop protection agents (CPAs)
	ANNEX B	Safe use and management of CPAs
	ANNEX C	Integrated Pest Management

14. Harvesting
First priming is 60–65 DAT, harvesting 5–6 leaves. At 7–10 days after 2nd priming, harvest 3–4 leaves. Then 14–21 days after the second priming, harvest Batek leaves in selective manner.

15. Air-Curing Barn Dimension
(for 0.5 ha farm)

Curing shed with black plastic cover

Dimension:

Floor	20.0 m X 5.0 m
Height	3.0 m
No. of tiers	3
Distance between tiers	1.0 m
Height of 1st tier	1.0 m
Number of units per ha.	3

Refer to pages 25- 26 for the sample designs of the air-curing sheds.

16. Curing

Hang the sticked leaves directly under the sun for 10-14 days or until the lamina turns brown but cover them with black plastic at night time or when it rains (Pangasinan), in La Union, sunwilting is done only for 1 day.

When the lamina turns brown and the midribs are still green, pile and put weight for 24 hours, then hang them again until fully cured (14-21 days).

Unload and pile the cured leaves early in the morning or when these are soft and pliable.

Cover the pile with mat or cheesecloth.

If not disposed within a week, re-bulk the cured leaves once a week to prevent pile burn.

17. Classification and Marketing of Cured Leaves

Classify the leaves according to the NTA grading system:

High
Medium 1
Medium 2
Low 1
Low 2

Option 1 – Straight weighing

Remove the stick before bundling according to: **Leaf position, length, color, and injury.**

Option 2 – Selling of Batek leaves by Pardo

A pardo is equivalent to 120 sticks at 28-30 leaves per stick.

Option 3 – Selling of Batek leaves in sticks by Quintal

A *quintal* is equivalent to 58 kg gross weight with stick (50 kg net weight of leaves).

***REMINDER:* THE MOISTURE CONTENT OF THE LEAVES MUST NOT EXCEED 18%.**

17. Target Yield (kg/ha): **2,400 (± 10%)**

Grades	% distribution	Description
HIGH	70	Batek
MEDIUM 1 – MEDIUM 2	20	Morado 1, Morado 2
LOW 1 – LOW 2	10	Liso 1, Liso 2

***NOTE:* REFER TO ANNEX "D" FOR THE ELIMINATION OF NON - TOBACCO RELATED MATERIALS (NTRMs)**

Annex A: LIST OF NTA RECOMMENDED CPAs

GROWTH STAGE	ACTIVE INGREDIENT	BRAND NAME	a.i. CONCEN-TRATION	FPVA TOXICITY CATEGORY	IRAC GROUP
Seedling	Propamocarb HCl	Proplant, Previcur-N	722 g/li	IV	28
	Organic (Tea Tree Extract)	Timorex Gold	238 g/li	IV	46
	Abamectin [1]	Abamec 1.8 EC, Yichem 1.8 EC, Agriguard 1.8 EC	18 g/li	Ib	6
Vegetative (10-34 DAT)	Indoxacarb	Steward 30 WDG	300 g/kg	III	22
	Cinnamal-dehyde	Tarssus XP 60SL	600 g/li	IV	UNE
	Organic (Tea Tree Extract)	Timorex Gold	238 g/li	IV	46
	Azadirachtin	Parker Neem Tonic	1.5 g/li	IV	UN
	Thiamethoxam + Chlorantraniliprole	Virtako 40 WG	200g/L	IV	28
Early Maturity (35-50 DAT)	Bt + Pyridalyl	Dipel WP + Pleo	320 g/kg	IV	11A
			100 g/li		UN
	Chlorantra-niliprole	Prevathon 5 SC, Elicor 5 SC	50 g/li	IV	28
	Indoxacarb	Steward 30 WDG	300 g/kg	III	22
	Acephate	Blackhawk 40SL	400 g/li	III	1B
	Cinnamal-dehyde	Tarssus XP 60SL	600 g/li	IV	UNE
Maturity (60 DAT) until the 3rd or 4th harvest depending on insect population and crop stand	Bt + Pyridalyl	Dipel WP + Pleo	320 g/kg	IV	11A
			100 g/li		UN
	Indoxacarb	Steward 30 WDG	300 g/kg	III	22
	Chlorantra-niliprole [1]	Prevathon 5 SC, Elicor 5 SC	50 g/li	IV	28

Annex A … (con't)

CHEMICAL GROUP	MODE OF ACTION	TYPE OF ACTIVITY	TARGET PESTS	DOSAGE PER 16 L
Carbamate	Lipid synthesis inhibitor	systemic	Pythium spp	
Liquid organic	Spore germination inhibitory	broad spectrum	damping off & leaf spots	25-50 ml
Avermectin	Glutamate-gated chloride channel (GluCl) allosteric modulators	contact	cutworm, budworm	15 ml
Oxadiazine	Voltage-dependent Sodium channel blocker	contact, stomach, ovicidal	cutworm, budworm, loopers, leaf miners	4 g
Biorational	Botanical essence including synthetic, extracts and unrefined oils with unknown or uncertain MOA	contact	thrips, whitefly	8-16 ml
Liquid Organic	Spore germination inhibitory	broad spectrum	Damping off & leaf spots	40-80 ml
Liminoid Group	Unknown or Uncertain Mode of Action	Systemic, Repellant, Anti-feedant, Ovicidal	budworms, whiteflies	120 ml
Diamide	Thiamethoxam: Group 4A Insecticide Chlorantraniliprole: Group 28 Insecticide	systemic	budworms	20g
Bt-organic	Microbial disruptors of insect midgut membranes	systemic	cutworm, budworm, loopers	30 g + 20 ml
Pyridalyl-synthetic	Compounds of unknown or uncertain MOA			
Diamide	Ryanodine receptor modulator: modulating release of Ca ultimately preventing muscle contraction	systemic	cutworm, budworm, loopers	25 ml
Oxadiazine	Voltage-dependent Na channel blocker	contact, stomach, ovicidal	cutworm, budworm, loopers, leaf miners	4 g
Organo-phosphate	Acetylcholinesterase (AChE) inhibitors. Nerve Action [Strong evidence that action at this protein is responsible for insecticidal effects.]	contact, stomach, systemic	Budworm, aphids	30 ml
Biorational	Botanical essence including synthetic, extracts and unrefined oils with unknown or uncertain MOA	contact,	Thrips, whitefly	8-16 ml
Bt-organic	Microbial disruptors of insect midgut membranes	systemic	cutworm, budworm, loopers	30 g + 20 ml
Pyridalyl-synthetic	Compounds of unknown or uncertain MOA			
Oxadiazine	Voltage-dependent Sodium channel blocker	contact, stomach, ovicidal	cutworm, budworm, loopers, leaf miners	4 g
Diamide	Ryanodine receptor modulator: modulating release of Ca ultimately preventing muscle contraction	systemic	cutworm, budworm, loopers	25 ml

Annex A … (con't)

PRODUCT VOLUME	NO. OF SPRAYINGS	Maximum Tankload/ (L for seedbed) per ha.	PRE-HARVEST INTERVAL (days)	REENTRY PERIOD (hours)
50-100 ml	drench & spray	10 sqm bed	No PHI limitation	No re-entry limitation
22.5 ml	3	0.5		When spray deposit has dried
48 g	2	6	7	24
288-576 ml	3	12	No PHI limitation	No re-entry limitation
160-320 ml	2	2	No PHI limitation	No re-entry limitation
100-1000 ml	3	14	No PHI limitation	No re-entry limitation
10g	3	6	No PHI limitation	No re-entry limitation
330 g + 220 mL	1	11		
200 ml	1	8	7	24
40 g	1	10	7	24
360 ml	1	12	14	When spray deposit has dried
288-576 ml	3	12	No PHI limitation	No re-entry limitation
360 g + 240 ml	1	11		
40 g	1	10	7	12
300 ml	1	12	7	24

Legend:
Ib – extremely hazardous; toxic
II – highly hazardous; harmful
III – moderately hazardous; caution
IV – slightly hazardous; no warning statement

Legend:
SP - Soluble Powder
SL - Soluble Liquid
SC - Suspension Concentrate
WP - Wettable Powder
WDG- Water Dispersable Granule
EC – Emulsifiable Concentrate

Annex B: SAFE USE AND MANAGEMENT OF CROP PROTECTION AGENTS (CPAs)

What do CPAs contain?

CPAs = active ingredient + filling material + other substances

Active ingredient	The poisonous element, the ingredient which actively kills the target pest.
Filling material	Material carrying the active substance or ingredient and determining the composition of the CPA (solid, liquid, granule, powder, etc.).
Other substances	Substances which increase the effect of CPA, facilitate its holding on to the leaf, increase shelf-life and prevent foaming, colors.
Application dosage	The quantity effective on the target disease or pest.

Using CPAs more than recommended dose does not increase their effect.

Re-entry period: Refers to the period of time immediately following the application of a pesticide during which unprotected workers should not enter a field.

Re-entry period warning signage installed in farm after application of CPA

Re-entry period warning signage

Pre-harvest interval: The recommended period between the final application of CPA and the harvesting time. The value is indicated on the CPA's label.

Residue: Any quantity of CPAs remaining on agricultural crops following CPA application. CPA residue levels decline over time after an application. When CPAs are used carelessly and more than the required amount, residues on tobacco will be higher.

There are residue limits set for each CPA. For this reason, tobacco sample should be taken regularly from tobacco farmers for residue analysis.

In order to prevent unacceptable residues:

- Registered CPAs should be used only for specific target pests of tobacco, i.e., Indoxacarb, should only be used to control budworms and cutworms.
- Compliance with application dosage indicated on the label is required.
- Compliance with the number and time of application of the CPA is required.
- CPAs should not be misused.
- Compliance with the pre-harvesting interval is required.

Tobacco with CPA residues above the acceptable limits has no commercial value. Application dosage and pre-harvest interval must be in line with the label instructions.

Toxicity classification: The toxicity of CPAs to humans and the environment must be well understood. The degree of toxicity of CPAs is divided into four categories. When using CPAs, choose those that cause minimum harm to human health and the environment.

Category I	EXTREMELY HAZARDOUS
Category II	HIGHLY HAZARDOUS
Category III	MODERATELY HAZARDOUS
Category IV	SLIGHTLY HAZARDOUS

Selection, Preparation and Application of CPAs

- Observations should be made regularly in the seedbed and field, and disease and pest levels should be determined precisely.
- CPA applications should be carried out only when required and the appropriate CPAs should be used for pests and diseases.
- It is recommended to wait for the level of pests to reach the economic threshold level to necessitate pest control; otherwise, applications may be made unnecessarily and entail extra cost to the farmers.

- The label of the CPAs should be read carefully and compliance with the instructions is required.
- Before applying CPAs, children and pets should be taken away from the site.
- When preparing the CPA, kitchen utensils, and laundry materials should not be used.
- The CPAs should be well stirred.
- The materials to be used for the CPA application should be carefully selected and checked.

During the preparation and application of CPAs, appropriate Personal Protective Equipment (PPE) or clothing should be used as follows: rubber gloves, masks, goggles, rubber boots or shoes, long-sleeved shirts, and long pants.

- Should any of the CPAs come in contact with the body during the application, wash with soap and water.
- Applications should not be made on windy or rainy days.
- Obstructed nozzles and hoses should never be unclogged by blowing.
- The CPAs should be applied so as to cover all parts of the plant. The CPA particles and vapor should not be breathed in.
- Persons suffering from colds, bronchitis, and stomach disorders, or those having cracks and lesions on their hands are more sensitive to toxic substances. Such persons should not apply CPAs.
- Nursing mothers, pregnant women, children under 18, and sick or disabled persons should not be involved in CPAs' application.
- Any spilled CPAs should be carefully cleaned up.
- After each application, the hands, face, and PPE should be washed with plenty of water.

Farmer wearing complete set of PPEs

- Any remaining CPA mixture should be applied to the crop. It should never be poured out to the environment.

After CPA Applications

- 
Empty CPA sachets left in the field


Empty CPA bottles left in the field


Empty CPA containers stored inside the CPA lock-up storage

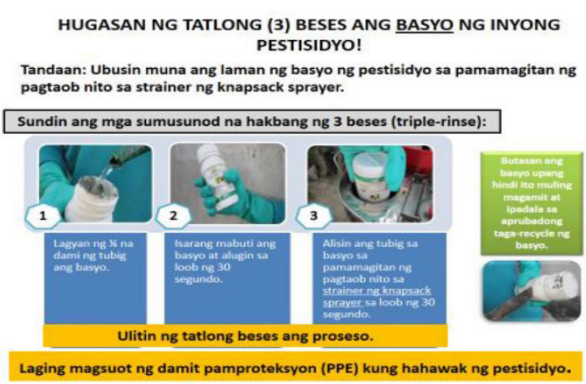

Proper segregation of of empty CPA containers for disposal

Empty CPA container should never be used for other purposes and should not be left around the seedbed or field.

Disposal of Empty CPA Containers

- Empty CPA containers should be rinsed out with clean water at least three times and this rinsing water should be poured into the prepared CPA solution.

Triple rinsing:



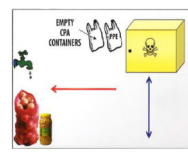
Empty CPA containers should be crushed and punctured, then stored in closed bags off the ground and out of reach of children. Empty CPA containers may be returned to CPA suppliers for proper disposal.

Storage of CPAs

- CPAs should be stored in their original containers, tightly closed, away from children, and locked in a cool, dry place.
- CPAs should always be kept in their original packages and not be transferred to other containers.
- CPAs should not be stored or prepared in living quarters such as kitchens, bedrooms, and stables.

Safekeeping of CPA containers inside the CPA lock-up storage

- There should be no foodstuff and drinks in places where CPAs are stored.
- Warning signs should be placed where CPAs are kept.



Annex C: INTEGRATED PEST MANAGEMENT

INTEGRATED PEST MANAGEMENT

INSECT SCOUTING – the process of determining insect pest damages and their population in the tobacco field in order to know if there is a need to spray, and what kind of pesticide to spray. The need to spray will always depend on the **ETL** for specific pests.

Scouting Procedure:

1. Determine the area of the tobacco field to be scouted and make an outline. Take samples in **N or Z pattern across the field**. Do not sample the same plants each week.
2. Choose **10 sections** in each field.
3. Randomly sample **5 consecutive plants in each section**. These are the counts mostly used to determine if the economic threshold has been reached.
4. Sample **5 additional consecutive plants** in each outside row. This will help identify which pests are moving into the field.
5. Examine tobacco plants for insect presence, number and damage. Make counts and record the data (Refer to the Scouting Form).
6. After scouting is completed, compare the results with the treatment thresholds. *Avoid the temptation to make decisions on several fields based only on information from 1 or 2. Insect levels may vary greatly, even among similar fields.*

PROCEDURE FOR INSECT COUNTING

1	Sample 10 places per field and get 5 plants each -a total of 50 plants per lot
2	Record how many plants were infested with the pest per spot. It is not important the quantity of insects in each plant, except flee beetle
3	To have the result in percentage multiply the total plant infested from the 10 sampling places by 2
4	See the result if it is over or below Economic Threshold Levels.

ECONOMIC THRESHOLD

- The density of pest at which a control treatment will provide an economic return.

INSECT PESTS	ECONOMIC THRESHOLD LEVEL
Cutworm, Mole Crickets	Treat when 5% of small plants are cut-off (recent damage).
Aphids	Treat when 10% or more of plants have as many as 50 aphids on any upper leaf before topping. At or after topping, treat when 20% or more of plants are infested.
Budworm	Before flowering, treat when 10% or more of the plants checked are infested with live budworms of any size. Do not count plants that have damage but no live worms.
Hornworm	Treat when at least one worm larger than 1 inch without parasitic cocoons is found per 10 plants (10%).
Katydid	Treat when 10 katydids are seen per 50 plants.
Cabbage Looper	Treat when 10% or more of the plants checked are infested with live worms of any size.
Army worm	Treat when 10% or more of the plants checked are infested with live worms of any size.

Annex D: ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRMs)

NTRM is anything that is **NOT** tobacco. It is an important issue because its presence may jeopardize the **integrity** and **quality** of tobacco. NTRM is a major industry concern and must be addressed effectively.

Most of the NTRMs originate at the farm level and, therefore, this is where most of the efforts should be concentrated. NTRMs are categorized as follows:

CATEGORIES

1A	1B	2A	2B	3	4
ARTIFICIAL "Controllable"	**NATURAL "Limited Control"**	**ORGANIC "Man-made"**	**ORGANIC "Natural"**	**METALS**	**ROCKS/ MULTI-MATERIALS**
Foams (Stryrofoam) Nylon strings/ netting Rubber Plastics Leathers Unknown materials Cigarette butts	Feathers Cocoons Insects	Cigarette papers Cotton Cotton strings Burlap Burlap strings Manufactured woods Papers Metallic papers	Grass Herbs Natural woods Fruits	Nails Clips Metal shavings Bolts Nuts Blades (knife, razor)	Rocks Stones Multi-materials

Examples of Sources of Common Non-Tobacco Related Materials

From this material

To this in the tobacco leaves

Other Non-Tobacco Related Materials


Feathers


Cocoons


Jute sack strings


Stones


Metals


Grasses

We must ensure that an effective NTRM elimination program is implemented and it should cover all the activities from the field until the cured tobacco leaves are delivered to the buying stations.

NTRM can be eliminated from tobacco by practicing the following at different stages of the crop:

Growing period

- Always keep the field weed-free and free from synthetic and non-biodegradable wastes especially plastics and rubber materials.
- Never dispose of garbage, especially plastic wastes, into the field or near the field.

Harvesting and hauling

- Use cheesecloth or jute sacks and other non-fibrous, non-treated biodegradable materials as leaf wraps during harvesting, hauling, and transport.
- Never use woven plastic sacks as leaf wrap during hauling and transport of leaves.

Sticking, sorting and baling

- Never eat and smoke at all times in the work area.
- *Buri* mat, bamboo slats, C48 cartons, cheesecloth and jute sacks can be used as matting during sticking, stripping, sorting, and baling.
- Farmers must use natural, non-treated materials for stringing and baling.
- Do not allow any fowl or domestic animals to roam around the curing sheds and work areas during the tobacco season to prevent introduction of feathers and waste matters to the tobacco.
- Never use polypropylene fabrics as temporary roofing as the material disintegrates once it gets brittle due to exposure to weather elements.
- Remove all biodegradable and non-biodegradable materials like animal manure, weeds and other plant debris, feathers, plastic wrapper, etc., in the work area.
- Put all garbage/trash bins very far away from the work area.

Annex E: NTA HARMONIZED GRADING FOR LOCALLY GROWN VIRGINIA

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Oil	Intensity	Width	Uniformity (%)	Tolerance (%)	
											Injury	Waste
Tips (T)*	T3L	Good Quality Lemon Tips	Ripe	Medium	Firm	Lemon	Oily	Strong	Normal	80	25	15
	T4L	Fair Quality Lemon Tips	Ripe	Medium	Firm	Lemon	Oily	Moderate	Normal	70	30	20
	T5L	Low Quality Lemon Tips	Ripe	Medium	Firm	Lemon	Lean	Weak	Narrow	65	45	30
	T3O	Good Quality Orange Tips	Ripe	Fleshy	Firm	Orange	Oily	Strong	Normal	80	25	15
	T4O	Fair Quality Orange Tips	Ripe	Fleshy	Firm	Orange	Oily	Moderate	Normal	70	30	20
	T5O	Low Quality Orange Tips	Ripe	Fleshy	Firm	Orange	Lean	Weak	Narrow	65	45	30
	T3R	Good Quality Orange red Tips	Ripe	Fleshy	Firm	Orange red	Oily	Strong	Normal	80	25	15
	T4R	Fair Quality Orange red Tips	Ripe	Fleshy	Firm	Orange red	Oily	Moderate	Normal	70	30	20
	T5R	Low Quality Orange red Tips	Ripe	Fleshy	Firm	Orange red	Lean	Weak	Narrow	65	45	30
	T3V	Good Quality Running green Tips	Mature	Fleshy	Firm	Running green	Oily	n/a	Normal	80	25	15
	T4V	Fair Quality Running green Tips	Mature	Fleshy	Firm	Running green	Oily	n/a	Normal	70	30	20
	T5V	Low Quality Running green Tips	Mature	Fleshy	Firm	Running green	Lean	n/a	Narrow	65	45	30
15 grades	T3K	Good Quality Variegated Tips	Unripe	Heavy	Close	Variegated	n/a	n/a	Normal	80	25	15
	T4K	Fair Quality Variegated Tips	Unripe	Heavy	Close	Variegated	n/a	n/a	Normal	70	30	20
	T5K	Low Quality Variegated Tips	Unripe	Heavy	Close	Variegated	n/a	n/a	Narrow	65	45	30

*Tips (T Group) - Specifications same as corresponding qualities and colors in Leaf (B Group)except for the length which is under 12 inches.

Annex E. Continuation…

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Oil	Intensity	Width	Uniformity (%) Injury		Tolerance (%) Waste	
Leaf (B)	B1L	Choice Quality Lemon Leaf	Ripe	Medium	Firm	Lemon	Oily	Deep	Spready	90	15	5	
	B2L	Fine Quality Lemon Leaf	Ripe	Medium	Firm	Lemon	Oily	Strong	Normal	85	20	10	
	B3L	Good Quality Lemon Leaf	Ripe	Medium	Firm	Lemon	Oily	Strong	Normal	80	25	15	
	B4L	Fair Quality Lemon Leaf	Ripe	Medium	Firm	Lemon	Oily	Moderate	Normal	70	30	20	
	B5L	Low Quality Lemon Leaf	Ripe	Medium	Firm	Lemon	Lean	Weak	Narrow	65	45	30	
	B1O	Choice Quality Orange Leaf	Ripe	Fleshy	Firm	Orange	Oily	Deep	Spready	90	15	5	
	B2O	Fine Quality Orange Leaf	Ripe	Fleshy	Firm	Orange	Oily	Strong	Normal	85	20	10	
	B3O	Good Quality Orange Leaf	Ripe	Fleshy	Firm	Orange	Oily	Strong	Normal	80	25	15	
	B4O	Fair Quality Orange Leaf	Ripe	Fleshy	Firm	Orange	Oily	Moderate	Normal	70	30	20	
	B5O	Low Quality Orange Leaf	Ripe	Fleshy	Firm	Orange	Lean	Weak	Narrow	65	45	30	
	B1R	Choice Quality Orange red Leaf	Ripe	Fleshy	Firm	Orange red	Oily	Deep	Spready	90	15	5	
	B2R	Fine Quality Orange red Leaf	Ripe	Fleshy	Firm	Orange red	Oily	Strong	Normal	85	20	10	
	B3R	Good Quality Orange red Leaf	Ripe	Fleshy	Firm	Orange red	Oily	Strong	Normal	80	25	15	
	B4R	Fair Quality Orange red Leaf	Ripe	Fleshy	Firm	Orange red	Oily	Moderate	Normal	70	30	20	
	B5R	Low Quality Orange red Leaf	Ripe	Fleshy	Firm	Orange red	Lean	Weak	Narrow	65	45	30	
	B3V	Good Quality Running green Leaf	Mature	Fleshy	Firm	Running green	Oily	n/a	Normal	80	25	15	
	B4V	Fair Quality Running green Leaf	Mature	Fleshy	Firm	Running green	Oily	n/a	Normal	70	30	20	
	B5V	Low Quality Running green Leaf	Mature	Fleshy	Firm	Running green	Lean	n/a	Narrow	65	45	30	
	B3K	Good Quality Variegated Leaf	Unripe	Heavy	Close	Variegated	n/a	n/a	Normal	80	25	15	
	B4K	Fair Quality Variegated Leaf	Unripe	Heavy	Close	Variegated	n/a	n/a	Normal	70	30	20	
21 grades	B5K	Low Quality Variegated Leaf	Unripe	Heavy	Close	Variegated	n/a	n/a	Narrow	65	45	30	

Annex E. Continuation…

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Oil	Intensity	Width	Uniformity (%)	Tolerance (%)	
											Injury	Waste
Cutters (C)	C1L	Choice Quality Lemon Cutters	Ripe	Thin	Open	Lemon	Oily	Deep	Spready	90	15	5
	C2L	Fine Quality Lemon Cutters	Ripe	Thin	Open	Lemon	Oily	Strong	Spready	85	20	10
	C3L	Good Quality Lemon Cutters	Ripe	Thin	Open	Lemon	Oily	Strong	Normal	80	25	15
	C4L	Fair Quality Lemon Cutters	Ripe	Thin	Open	Lemon	Lean	Moderate	Normal	70	30	20
	C5L	Low Quality Lemon Cutters	Ripe	Thin	Open	Lemon	Lean	Weak	Normal	65	40	25
	C1O	Choice Quality Orange Cutters	Ripe	Medium	Open	Orange	Oily	Deep	Spready	90	15	5
	C2O	Fine Quality Orange Cutters	Ripe	Medium	Open	Orange	Oily	Strong	Spready	85	20	10
	C3O	Good Quality Orange Cutters	Ripe	Medium	Open	Orange	Oily	Strong	Normal	80	25	15
	C4O	Fair Quality Orange Cutters	Ripe	Medium	Open	Orange	Lean	Moderate	Normal	70	30	20
	C5O	Low Quality Orange Cutters	Ripe	Medium	Open	Orange	Lean	Weak	Normal	65	40	25
	C3V	Good Quality Running green Cutters	Mature	Medium	Open	Running green	Lean	n/a	Normal	80	25	15
	C4V	Fair Quality Running green Cutters	Mature	Medium	Open	Running green	Lean	n/a	Normal	70	30	20
	C5V	Low Quality Running green Cutters	Mature	Medium	Open	Running green	Lean	n/a	Normal	65	40	25
	C3K	Good Quality Variegated Cutters	Unripe	Medium	Close	Variegated	n/a	n/a	Normal	80	25	15
	C4K	Fair Quality Variegated Cutters	Unripe	Medium	Close	Variegated	n/a	n/a	Normal	70	30	20
16 grades	C5K	Low Quality Variegated Cutters	Unripe	Medium	Close	Variegated	n/a	n/a	Normal	65	40	25

Annex E. Continuation…

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Oil	Intensity	Width	Uniformity (%)	Tolerance (%)	
											Injury	Waste
Lugs (X) 16 grades	X1L X2L X3L X4L X5L	Choice Quality Lemon Lugs Fine Quality Lemon Lugs Good Quality Lemon Lugs Fair Quality Lemon Lugs Low Quality Lemon Lugs	Ripe Ripe Ripe Overripe Overripe	Thin Thin Thin Thin Thin	Open Open Open Open Open	Lemon Lemon Lemon Lemon Lemon	Oily Oily Lean Lean Lean	Strong Strong Moderate Weak Pale	n/a n/a n/a n/a n/a	80 75 70 65 60	20 30 40 50 60	10 15 25 35 45
	X1O X2O X3O X4O X5O	Choice Quality Orange Lugs Fine Quality Orange Lugs Good Quality Orange Lugs Fair Quality Orange Lugs Low Quality Orange Lugs	Ripe Ripe Ripe Overripe Overripe	Medium Medium Medium Medium Medium	Open Open Open Open Open	Orange Orange Orange Orange Orange	Oily Oily Lean Lean Lean	Strong Strong Moderate Weak Pale	n/a n/a n/a n/a n/a	80 75 70 65 60	20 30 40 50 60	10 15 25 35 45
	X3V X4V X5V X3K X4K	Good Quality Running green Lugs Fair Quality Running green Lugs Low Quality Running green Lugs Good Quality Variegated Lugs Fair Quality Variegated Lugs	Mature Mature Mature Unripe Unripe	Medium Medium Medium Medium Medium	Open Open Open Close Close	Running green Running green Running green Variegated Variegated	Lean Lean Lean n/a n/a	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a	70 65 60 70 65	40 50 60 40 50	25 35 45 25 35
	X5K	Low Quality Variegated Lugs	Unripe	Medium	Close	Variegated	n/a	n/a	n/a	60	60	45

Annex E. Continuation…

Nondescript (ND)	TND	Non Descript Tips	Ripe	Medium	Firm	Lemon	n/a	n/a	n/a	n/a	70	50
			Ripe	Fleshy	Firm	Orange	n/a	n/a	n/a	n/a	70	50
			Ripe	Fleshy	Firm	Orange red	n/a	n/a	n/a	n/a	70	50
	TND	Non Descript Tips	Mature	Fleshy	Firm	Running	n/a	n/a	n/a	n/a	70	50
	TND	Non Descript Tips	Unripe	Heavy	Close	green	n/a	n/a	n/a	n/a	70	50
	TND	Non Descript Tips	Immature	Heavy	Tight	Variegated Green	n/a	n/a	n/a	n/a	n/a	n/a
	BND	Non Descript Leaf	Ripe	Medium	Firm	Lemon	n/a	n/a	n/a	n/a	70	50
			Ripe	Fleshy	Firm	Orange	n/a	n/a	n/a	n/a	70	50
			Ripe	Fleshy	Firm	Orange red	n/a	n/a	n/a	n/a	70	50
	BND	Non Descript Leaf	Mature	Fleshy	Firm	Running	n/a	n/a	n/a	n/a	70	50
	BND BND	Non Descript Leaf	Unripe	Heavy	Close	green	n/a	n/a	n/a	n/a	70	50
		Non Descript Leaf	Immature	Heavy	Tight	Variegated Green	n/a	n/a	n/a	n/a	n/a	n/a
4 grades	CND	Non Descript Cutters	Ripe	Thin	Open	Lemon	n/a	n/a	n/a	n/a	70	50
			Ripe	Medium	Open	Orange	n/a	n/a	n/a	n/a	70	50
	CND	Non Descript Cutters	Mature	Medium	Open	Running	n/a	n/a	n/a	n/a	70	50
	CND	Non Descript Cutters	Unripe	Medium	Close	green	n/a	n/a	n/a	n/a	70	50
	CND	Non Descript Cutters	Immature	Medium	Close	Variegated Green	n/a	n/a	n/a	n/a	n/a	n/a
	XND	Non Descript Lugs	Ripe	Thin	Open	Lemon	n/a	n/a	n/a	n/a	70	50
			Ripe	Medium	Open	Orange	n/a	n/a	n/a	n/a	70	50
	XND	Non Descript Lugs	Mature	Medium	Open	Running	n/a	n/a	n/a	n/a	70	50
	XND	Non Descript Lugs	Unripe	Medium	Close	green	n/a	n/a	n/a	n/a	70	50
	XND	Non Descript Lugs	Immature	Medium	Close	Variegated Green	n/a	n/a	n/a	n/a	n/a	n/a

General: Minimum degrees are stated. All grades are to be clean except for the normal amount of sand or dirt present in the leaf, sound, and in safe keeping order.

Source: Industrial Research Department

Annex F. Harmonized Grades for the Locally Grown Burley Tobacco

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Color Intensity	Finish	Leaf Surface (Smoothness)	Width	Uniformity (%)	Injury Tolerance (%)
Tips (T)*	T3F T4F T5F	Good Quality Tan Tips Fair Quality Tan Tips Low Quality Tan Tips	Mature Mature Mature	Medium Medium Medium	Firm Firm Firm	Tan Tan Tan	Moderate Weak Pale	Moderate Dull Dingy	Wavy Wavy Wrinkly	Normal Narrow Stringy	80 70 60	30 40 50
	T3R T4R T5R	Good Quality Tannish-red Tips Fair Quality Tannish-red Tips Low Quality Tannish-red Tips	Mature Mature Mature	Fleshy Fleshy Fleshy	Firm Firm Firm	Tannish-red Tannish-red Tannish-red	Moderate Weak Pale	Moderate Dull Dingy	Wavy Wavy Wrinkly	Normal Narrow Stringy	80 70 60	30 40 50
	T4K T5K	Fair Quality Variegated Tips Low Quality Variegated Tips	Mature Unripe	Fleshy Heavy	Firm Close	Variegated Variegated	n/a n/a	n/a n/a	Wavy Wrinkly	Narrow Stringy	70 60	 40 50
	T4V T5V	Fair Quality Running green Tips Low Quality Running green Tips	Unripe Unripe	Fleshy Fleshy	Close Close	Running green Running green	n/a n/a	Dull Dingy	Wrinkly Rough	Narrow Stringy	70 60	40 50

*Tips (T Group) – Specifications same as corresponding qualities and colors in Leaf (B Group) except for the length which is under 12 inches.

Annex F. Continuation…

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Color Intensity	Finish	Leaf Surface (Smoothness)	Width	Uniformity (%)	Injury Tolerance (%)
Leaf (B)	B1F	Choice Quality Tan Leaf	Ripe	Medium	Open	Tan	Deep	Clear	Smooth	Spready	90	20
	B2F	Fine Quality Tan Leaf	Ripe	Medium	Open	Tan	Strong	Moderate	Even	Spready	85	25
	B3F	Good Quality Tan Leaf	Mature	Medium	Firm	Tan	Moderate	Moderate	Wavy	Normal	80	30
	B4F	Fair Quality Tan Leaf	Mature	Medium	Firm	Tan	Weak	Dull	Wavy	Narrow	70	40
	B5F	Low Quality Tan Leaf	Mature	Medium	Firm	Tan	Pale	Dingy	Wrinkly	Stringy	60	50
	B1R	Choice Quality Tannish-red Leaf	Ripe	Fleshy	Open	Tannish-red	Deep	Clear	Smooth	Spready	90	20
	B2R	Fine Quality Tannish-red Leaf	Ripe	Fleshy	Open	Tannish-red	Strong	Moderate	Even	Spready	85	25
	B3R	Good Quality Tannish-red Leaf	Mature	Fleshy	Firm	Tannish-red	Moderate	Moderate	Wavy	Normal	80	30
	B4R	Fair Quality Tannish-red Leaf	Mature	Fleshy	Firm	Tannish-red	Weak	Dull	Wavy	Narrow	70	40
	B5R	Low Quality Tannish-red Leaf	Mature	Fleshy	Firm	Tannish-red	Pale	Dingy	Wrinkly	Stringy	60	50
	B3K	Good Quality Variegated Leaf	Ripe	Medium	Open	Variegated	n/a	n/a	Wavy	Normal	80	
	B4K	Fair Quality Variegated Leaf	Mature	Fleshy	Firm	Variegated	n/a	n/a	Wavy	Narrow	70	
	B5K	Low Quality Variegated Leaf	Unripe	Heavy	Close	Variegated	n/a	n/a	Wrinkly	Stringy	60	30 40 50
	B3V	Good Quality Running green Leaf	Unripe	Medium	Firm	Running green	n/a	Moderate	Even	Normal	80	30
	B4V	Fair Quality Running green Leaf	Unripe	Fleshy	Close	Running green	n/a	Dull	Wrinkly	Narrow	70	40
	B5V	Low Quality Running green Leaf	Unripe	Fleshy	Close	Running green	n/a	Dingy	Rough	Stringy	60	50

Annex F. Continuation…

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Color Intensity	Finish	Leaf Surface (Smoothness)	Width	Uniformity (%)	Injury Tolerance (%)
Cutters (C)	C1L	Choice Quality Buff Cutters	Ripe	Thin	Open	Buff	Deep	Bright	Smooth	Broad	90	20
	C2L	Fine Quality Buff Cutters	Ripe	Thin	Open	Buff	Strong	Clear	Even	Spready	85	25
	C3L	Good Quality Buff Cutters	Ripe	Thin	Open	Buff	Moderate	Clear	Even	Normal	80	30
	C4L	Fair Quality Buff Cutters	Mature	Thin	Firm	Buff	Weak	Moderate	Even	Normal	70	40
	C5L	Low Quality Buff Cutters	Mature	Thin	Firm	Buff	Pale	Dull	Wavy	Narrow	60	50
	C1F	Choice Quality Tan Cutters	Ripe	Medium	Open	Tan	Deep	Bright	Smooth	Broad	90	20
	C2F	Fine Quality Tan Cutters	Ripe	Medium	Open	Tan	Strong	Clear	Even	Spready	85	25
	C3F	Good Quality Tan Cutters	Ripe	Medium	Open	Tan	Moderate	Clear	Even	Normal	80	30
	C4F	Fair Quality Tan Cutters	Mature	Medium	Firm	Tan	Weak	Moderate	Even	Normal	70	40
	C5F	Low Quality Tan Cutters	Mature	Medium	Firm	Tan	Pale	Dull	Wavy	Narrow	60	50
	C3K	Good Quality Variegated Cutters	Ripe	Medium	Open	Variegated	n/a	n/a	Even	Normal	80	30
	C4K	Fair Quality Variegated Cutters	Mature	Medium	Firm	Variegated	n/a	n/a	Even	Normal	70	40
	C5K	Low Quality Variegated Cutters	Mature	Medium	Firm	Variegated	n/a	n/a	Wavy	Narrow	60	50
	C3V	Good Quality Running green Cutters	Unripe	thin	Open	Running green	n/a	Clear	Even	Normal	80	30
	C4V	Fair Quality Running green Cutters	Unripe	Medium	Firm	Running green	n/a	Moderate	Even	Normal	70	40
	C5V	Low Quality Running green Cutters	Unripe	Medium	Firm	Running green	n/a	Dull	Wavy	Narrow	60	50

Annex F. Continuation…

LEAF GROUP	Grade Mark	Grade Name	Maturity	Body	Leaf Structure	Color	Color Intensity	Finish	Leaf Surface (Smoothness)	Width	Uniformity (%)	Injury Tolerance (%)
Flyings (X)		Choice Quality Buff								n/a		
	X1L	Flyings	Mellow	Tissuey	Porous	Buff	Strong	Clear	Even	n/a	90	20
	X2L	Fine Quality Buff Flyings	Mellow	Tissuey	Porous	Buff	Moderate	Moderate	Even	n/a	80	30
	X3L	Good Quality Buff	Ripe	Tissuey	Porous	Buff	Weak	Dull	Wavy	n/a	70	40
	X4L	Flyings	Mature	Tissuey	Porous	Buff	Pale	Dingy	Wrinkly	n/a	60	50
	X5L	Fair Quality Buff Flyings	Mature	Tissuey	Porous	Buff	Pale	Dingy	Wrinkly		55	60
		Low Quality Buff Flyings										
		Choice Quality Tan								n/a		
	X1F	Flyings	Mellow	Thin	Open	Tan	Strong	Clear	Even	n/a	90	20
	X2F	Fine Quality Tan Flyings	Mellow	Thin	Open	Tan	Moderate	Moderate	Even	n/a	80	30
	X3F	Good Quality Tan Flyings	Ripe	Thin	Open	Tan	Weak	Dull	Wavy	n/a	70	40
	X4F	Fair Quality Tan Flyings	Mature	Thin	Open	Tan	Pale	Dingy	Wrinkly	n/a	60	50
	X5F	Low Quality Tan Flyings	Mature	Thin	Open	Tan	Pale	Dingy	Wrinkly	n/a	55	60
	X4K	Fair Quality Variegated	Ripe	Tissuey	Porous	Variegated	n/a	Dingy	Wavy	n/a	60	50
	X5K	Flyings	Mature	Medium	Firm	Variegated	n/a	Dingy	Wrinkly	n/a	55	60
		Low Quality Variegated Flyings										
	TND	Non Descript Tips	Mature	Medium	Firm	Tan	n/a	n/a	n/a	n/a	n/a	70
	TND	Non Descript Tips	Mature	Fleshy	Firm	Tannish red	n/a	n/a	n/a	n/a	n/a	70
	TND	Non Descript Tips	Unripe	Heavy	Close	Variegated	n/a	n/a	n/a	n/a	n/a	70
	TND	Non Descript Tips	Unripe	Fleshy	Close	Running green	n/a	n/a	n/a	n/a	n/a	70
	TND	Non Descript Tips	Immature	Heavy	Solid	Green	n/a	n/a	n/a	n/a	n/a	n/a
	BND	Non Descript Leaf	Mature	Medium	Firm	Tan	n/a	n/a	n/a	n/a	n/a	70
	BND	Non Descript Lea	Mature	Fleshy	Firm	Tannish red Variegated	n/a	n/a	n/a	n/a	n/a	70
	BND	Non Descript Lea	Unripe	Heavy	Close	Running	n/a	n/a	n/a	n/a	n/a	70
	BND	Non Descript Lea	Unripe	Fleshy	Close	green Green	n/a	n/a	n/a	n/a	n/a	70
	BND	Non Descript Lea	Immature	Heavy	Solid		n/a	n/a	n/a	n/a	n/a	n/a

Annex F. Continuation…

	CND	Non Descript Cutters	Mature	Thin	Firm	Buff	n/a	n/a	n/a	n/a	n/a	70
	CND	Non Descript Cutters	Mature	Medium	Firm	Tan	n/a	n/a	n/a	n/a	n/a	70
	CND	Non Descript Cutters	Mature	Medium	Firm	Variegated	n/a	n/a	n/a	n/a	n/a	70
	CND	Non Descript Cutters	Unripe	Medium	Firm	Running green	n/a	n/a	n/a	n/a	n/a	70
	CND	Non Descript Cutters	Immature	Medium	Close	Green	n/a	n/a	n/a	n/a	n/a	n/a
	XND	Non Descript Flyings	Mature	Tissuey	Porous	Buff	n/a	n/a	n/a	n/a	n/a	70
Nondescript (ND)	XND	Non Descript Flyings	Mature	Thin	Open	Tan	n/a	n/a	n/a	n/a	n/a	70
	XND	Non Descript Flyings	Mature	Medium	Firm	Variegated	n/a	n/a	n/a	n/a	n/a	70
	XND	Non Descript Flyings	Immature	Thin	Firm	Immature	n/a	n/a	n/a	n/a	n/a	n/a

General: Minimum degrees are stated. All grades should be cleaned except for the normal amount of sand or dirt present in the leaf, sound, and in safe keepder.

Source: Industrial Research Department

Annex G: TOBACCO LEAF GRADING FOR LOCALLY GROWN VIRGINIA

STANDARD NTA GRADE	Leaf Position	HG Grade Mark
AA	Lugs (X) Cutters (C) Leaf (B)	B1O B1R B1L C1O C1L X1O
A	Lugs (X) Cutters (C) Leaf (B)	B2O B2R C2O C2L X2O X1L
B	Lugs (X) Cutters (C) Leaf (B) Tip (T)	T3O T3R B3O B3R B2L C3O X3O X2L
C	Lugs (X) Cutters (C) Leaf (B) Tip (T)	T4O T4R T3L T3V T3K B4O B4R B3L B3V B3K C4O C3L C3V C3K X3L X3V X3K

Annex G. Continuation…

D	Lugs (X) Cutters (C) Leaf (B) Tip (T)	T5O T5R T4L T4V T4K B5O B5R B4L B4V B4K C5O C4L C4V C4K X4V X4K
E	Lugs (X) Cutters (C) Leaf (B) Tip (T)	T5L T5V T5K B5L B5V B5K C5L C5V C5K X5K X5K
F1	Lugs (X)	X4O X4L
F2	Lugs (X)	X5O X5L
R	Lugs (X) Cutters (C) Leaf (B) Tip (T)	XND, CND, BND, TND

Annex H: TOBACCO LEAF GRADING FOR BURLEY

Standard NTA Grade	Leaf Position	HG Grade Mark
A	Flyings (X) Cutters (C) Leaf (B)	B1F B1R ClF C1L X1F X1L
B	Flyings (X) Cutters (C) Leaf (B)	B2F B2R C2F C2L X2F X2L
C	Flyings (X) Cutters (C) Leaf (B) TIP (T)	T3F T3R B3F B3R B3K B3V C3F C3K C3V X3F X3L
D	Flyings (X) Cutters (C) Leaf (B) TIP (T)	T4F T4R T4K T4V B4F B4R B4K B4V C4F C4K C4V X4F X4L X4K

Annex H. Continuation…

E	Flyings (X) Cutters (C) Leaf (B) TIP (T)	T5F T5R T5K T5V B5F B5R B5K B5V
E	Flyings (X) Cutters (C) Leaf (B) TIP (T)	C5F C5K C5V C5F X5F X5K
F	Flyings (X) Cutters (C)	C5L X5L
R	Flyings (X) Cutters (C) Leaf (B) TIP (T)	

Annex I: REGISTERED TOBACCO VARIETIES

Bureau of Plant Industry

National Seed Industry Council

Year	Registry Number	Type	Local Name	Registrant
1997	PSB-1997 TC 1	Virginia-Improved	FCH 1	NTA
	PSB-1997 TC 2	Virginia-Improved	FCH 2	NTA
	PSB-1997 TC 3	Virginia-Improved	NC 2326	NTA
2000	PSB-2000 TC 4	Burley	BAC 2	NTA
	PSB-2000 TC 5	Virginia	K 326	NTA
2001	PSB-2001 TC 6	Virginia	DH 48	NTA
2004	NSIC-2004 TC 7	Burley	TN 90	LPI
	NSIC-2004 TC 8	Burley	KY 160	LPI
2007	NSIC-2007 TC 9		W 608	ULPI
	NSIC-2007 TC 10	Virginia	PVH 09	ULPI
	NSIC-2007 TC 11	Burley	BA 2018	ULPI
	NSIC-2007 TC 12	Burley	BA 2021	ULPI
	NSIC-2007 TC 13	Burley	BA 1012	ULPI
2015	NSIC-2015 TC 14	Burley-Improved	CC8 12G	ULPI
	NSIC-2015 TC 15	Burley-Improved	KT 206 LC	ULPI
	NSIC-2015 TC 16	Burley-Improved	NC 7	ULPI
2016	NSIC-2016 TC 17	Virginia-Improved	PVH 2254	PMFTC
	NSIC-2016 TC 18	Virginia-Improved	HB 4488	PMFTC
2017	NSIC-2017 TC 19	Virginia-Improved	PVH2310	PMFTC
	NSIC-2017 TC 20	Virginia-Improved	PVH2233	PMFTC
2018	NSIC-2018 TC 21	Virginia	CC 67	ULPI
	NSIC-2018 TC 22	Burley	GF 888	ULPI
	NSIC-2018 TC 23	Burley	PD 7318LC	ULPI
2020	NSIC-2020 TC 24	Native Batek	Pimminya	NTA
2022	NSIC-2022 TC 25	Native Batek	Lampangog	NTA
	NSIC-2022 TC 26	Native Batek	Sinai	NTA

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The **TECHNO-UPDATING TASK FORCE** of the National Tobacco Administration conducted workshops for its members to update information and technology components that are incorporated in this Tobacco Production Manual for Crop Year 2024-2025. The Task Force identified mature information and technology derived from the following sources: **NTA Research and Development (R&D)**, private sector R&D, protocol research variety adaptability trials and farmers' best practices as validated by the NTA. Unlke in previous techno-updating, this time the Task Force involved more officials, experts, and researchers for maximum inputs.

This Tobacco Production Manual for Flue-Cured (Virginia), Air-Cured (Burley), and Air-Cured (Native) is an important tool for the agency's TPROs and Agriculturists, Science Research Specialists and other Extension Service Providers, in helping the tobacco farmers get the maximum return from their tobacco farming enterprises.

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BAGONG PILIPINAS