

**PRODUCTION TECHNOLOGY FOR IMPROVED FLAVOR VIRGINIA TOBACCO  
CY 2015-2016**

TECHNOLOGY COMPONENT	DETAILS									
1. Variety		Bacterial Wilt	RKN	Black Shank	Fusarium Wilt	TMV/CMV				
	NC2326	S	S	LT		S				
	K326									
	PVH 50	R								
	PVH 2254	HT	R	S	S	R				
	PVH 2299	MT	R	S	S	R				
	CC67	R	R	R		R				
<i>Note: R- resistant; HT- highly tolerant; MT- moderately tolerant; S- susceptible; LT- low tolerant</i>										
2. Sowing Date	September 15 to October 30 <i>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.</i>									
3. Transplanting Cut-off Date	December 15									
4. Transplanting Method	Furrow/Ridge									
5. Distance of Planting	1.2m x 0.45-0.5m		1.1m x 0.45-0.5m							
6. Number of Plants per ha	18,000		20,000		ULPI's revised plant population is 16,667					
7. Replanting	Within 5 days after transplanting									
8. Fertilizer Rate (kg N-P <sub>2</sub> O <sub>5</sub> -K <sub>2</sub> O/ha)	ULPI	103-72-146								
		82-72-146								
	TMI	88.5-92-150								
	PMFTC	87-81-108								
9. Fertilizer Source & Timing and Method of Application	Quantity	Rate & Source	Method and Time							
103-72-146	<b>ULPI</b>									
	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							

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	Quantity	Rate & Source	Method and Time
82-72-146	<b>TMI combination 1</b>		
	8 bags	10-18-24	basal, single band along furrows, 0 DAT
	2 bag	0-0-50	basal, single band along furrows, 0 DAT
	4 bags	21-0-0	sidedress, single band along furrows, 18-21 DAT
88.5-92-150	<b>TMI combination 2</b>		
	4 bags	18-46-0	basal, single band along furrows, 0 DAT
	3 bag	0-0-50	basal, single band along furrows, 0 DAT
	3 bag	0-0-50	sidedress, single band along furrows, 18-21 DAT
	5 bags	21-0-0	sidedress, single band along furrows, 18-21 DAT
87-81-108	<b>PMFTC</b>		
	9 bags	10-18-24	basal, single band along furrows, 0 DAT
	4 bags	21-0-0	sidedress, spot application per hill followed by hilling-up, 14 DAT
10. Watering, Irrigation Method & Schedule	<b>Watering</b>		
	1st	at transplanting @ 1 li/plant	
	2nd	5 DAT @ 1 li/plant	
	3rd	14 DAT @ 2-3 li/plant	
	<b>Irrigation</b>		
	1st	18 to 28 DAT, all furrows, 15% water level of the ridge after re-ridging	
	2nd	25 to 38 DAT, in alternate furrow at 50% water level of the ridge	
	3rd	32 to 48 DAT, all furrows at 50% water level of the ridge	
	4th	after first priming, all furrows at 20% water level of the ridge	
	5th	after 3rd priming, all furrows at 10-15% water level of the ridge	
	6th	after the 5th priming depending on soil moisture	

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11. Crop Protection Agent Fungicide	<p><b>NOTE: THE FARMERS ARE ENCOURAGED TO APPLY CPAs ONLY AS NEEDED. To avoid CPA residues on tobacco, reduce farmers' exposure to CPAs, and, prevent insect resistance development, spray only when the insect or population is beyond ETL.</b></p>											
<b>INSECT</b>		<b>Economic Treshold Level (ETL)</b>										
CUTWORM		5 out of 100 plants (5%) with recent cutworm										
BUDWORM		2 budworm larvae in 4 random sample groups of 10 plants each										
APHIDS		5 out 50 plants have at least 50 aphids in a leaf										
LOOPERS		Treat when 10 % or more of the plants checked are infested with live worms of any size.										
LEAF MINERS												
KATYDID		Treat when 5 katydids are seen per 50 plants.										
<b>NOTE: REFER TO ANNEX "H" FOR THE SAFE USE AND MANAGEMENT OF CROP PROTECTION AGENTS (CPAs)</b>												
GROWTH STAGE	ACTIVE INGREDIENT	BRAND NAME	TOXICITY CATEGORY	MODE OF ACTION	TARGET PESTS	DOSAGE PER 16 L	PRODUCT VOLUME	NO. OF SPRAYINGS	Maximum Tankload/(L for seedbed) per ha	PRE-HARVEST INTERVAL (days)	RE-ENTRY PERIOD (hours)	
Seedling	Propamocarb HCl	Proplant, Previcur-N	IV	systemic	Pythium spp							
	Acephate	Blackhawk	III	contact, systemic,		30ml	57ml		1-2 liter/10		24	
		Compete 75 SP		systemic	cutworm	20g	37.5g		sqm bed	3	24	
Vegetative (10 - 34 DAT)	Acephate	Blackhawk	III	contact, systemic,	cutworm, budworm,loopers	30ml	120ml	1	4		24	
		Compete 75 SP		systemic	cutworm, budworm,loopers	20g	80g	1	4	3	24	
	Chlorantraniliprole	Prevathon 5 SC	IV	systemic	cutworm, budworm,loopers	25ml	140ml	1	7	3	12	
Early Maturity (35 – 50 DAT)	Bt + Pyridalyl	Dipel + Pleo	IV	systemic	cutworm, budworm, loopers	30g+20ml	330g+220m	1	11			
	OR Acephate	Compete 75 SP	III	systemic	cutworm, budworm,loopers, aphids	20g	220g	1	11	3	24	
		Blackhawk	III	contact, systemic, stomach	cutworm, budworm,loopers, aphids	30 ml	330 ml		11		24	
	OR Flubendiamide	Fenos 480 SC	IV	systemic	cutworm,	4ml	50-75ml	1	13-19	5	24	

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	<b>Maturity (60 DAT)</b> until the third or fourth harvest depending on insect population and crop	Bt + Pyridalyl	Dipel + Pleo	IV	systemic	cutworm, budworm, loopers	30g+20ml	360g+240 ml	1	12		
		Indoxacarb	Steward 30 WDG	III	contact, stomach, ovicidal	cutworm, budworm, loopers, leaf miners	4g sachet	40g=10 sachet	1	10	7	12
										Total Tankloads	48-56	
<b>"TOPPING before full bloom and field sanitation are important IPM strategies that can sustainably reduce insect infestation on tobacco".</b>												
12. Topping Time	Company	# of leaves	time of topping									
	TMI	18-20	30% of total plant pop at button stage									
	ULPI	16-18	bud top									
	PMFTC	18-22	50% of total plant pop at button stage									
13. Suckercide (Choose any of these)	<b>FLUMEX</b>	3-4 liters per ha Dilution rate: 1.25 ml Flumex to 98.75 ml water or 12.5ml/liter Apply 10-15 ml solution per plant within 24 hours after topping										
	<b>ART 78</b>	12 liters per hectare Dilution rate: 1ml ART 78 to 30 ml water Apply 20 ml solution per plant within 24 hours after topping										
14. Harvesting	<p><b>Harvest mature leaves as indicated by the following:</b></p> <ul style="list-style-type: none"> <li>- harvest as needed, do not wait until topping is done</li> <li>- leaf color changes from light green to yellow green</li> <li>- yellowing of the leaf tips</li> <li>- midrib turns light green</li> </ul> <p><b>Important:</b> Haul leaves immediately after harvest and unload under the shade, using cheese cloth, bamboo slats, C4 Carton and "silag" buri as matting material. File the leaves upright with the butt ends down Sort, stick, and hang the leaves inside the barn within the day</p>											

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15. Curing Barn Dimensions	<table border="1"> <tr> <td>Inside dimension</td> <td>L= 3.0 m; W= 3.8 m; H= 4.5 m</td> </tr> <tr> <td>Height of first tier</td> <td>1.5 m - 1.8m</td> </tr> <tr> <td>No. of tiers</td> <td>5</td> </tr> <tr> <td>Distance between tiers</td> <td>0.75 m</td> </tr> <tr> <td>Number of bottom vents</td> <td>8 (2 per side)</td> </tr> <tr> <td>Size of bottom vents</td> <td>L=30 cm; W=15 cm, with adjustable up and down cover</td> </tr> <tr> <td>Top Vent</td> <td>Ridge type; L = 3.6 m: W= 0.3 m</td> </tr> <tr> <td>Ratio of vent to barn volume</td> <td>1:30</td> </tr> </table>	Inside dimension	L= 3.0 m; W= 3.8 m; H= 4.5 m	Height of first tier	1.5 m - 1.8m	No. of tiers	5	Distance between tiers	0.75 m	Number of bottom vents	8 (2 per side)	Size of bottom vents	L=30 cm; W=15 cm, with adjustable up and down cover	Top Vent	Ridge type; L = 3.6 m: W= 0.3 m	Ratio of vent to barn volume	1:30	<p>Capacity:</p> <ol style="list-style-type: none"> <li>1. For 18,000 plant population per hectare or 9,000 plants per 0.5 ha            Number of sticks per load - 750            Stick length - 60 cm            Number of leaves per stick - 46            Distance between pole - 10 cm</li> <li>2. For 20,000 plant population per hectare or 10,000 plants per 0.5 ha            Number of sticks per load - 750            Stick length - 60 cm            Number of leaves per stick - 46            Distance between pole - 10 cm</li> </ol> <p>Furnace Type Modified venturi furnace Modified Anawang furnace</p> <p>Non-traditional or Additional fuel Corn Cob for Modified Anawang Furnace</p> <p>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</p>
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Top Vent	Ridge type; L = 3.6 m: W= 0.3 m																	
Ratio of vent to barn volume	1:30																	
16. Sorting Before Sticking	Harvest mature leaves as indicated by the following: Ripeness Injury Length																	

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17. Classification of Cured Leaves	<p>The cured leaves must be classified based on the following:</p> <ul style="list-style-type: none"> <li>Leaf position</li> <li>Color</li> <li>Length</li> <li>Injury/damage</li> </ul>
18. Straight Laid Open Bale (SLOB) System	<p>Size of Bale Box :</p> <p>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.</p> <p>Pre classify the leaves by leaf position</p> <p>Place 4 pieces of abaca twine inside the baling box just enough to tie the leaves in the box.</p> <p>Put leaves of similar size and quality in a bale.</p> <p>Tie leaves before removing the bale box.</p> <p><b>REMINDER: KEEP THE MOISTURE CONTENT OF THE LEAVES AT 18% OR LESS</b></p>
<b>REFER TO ANNEX "I" FOR THE ELIMINATION OF NON-TOBACCO RELATED MATERIALS (NTRM)</b>	