

FORM GI – 1

Application for Registration of a GI in part A of the Register : Section 11(3), Rule 23(5)

- a. Names of Applicants : Chairman, Tamil Nadu Hill Banana Growers Federation
- b. Address : 6-3-17, Main Road, Pattiveeranpatti,
Dindigul District, Tamil Nadu,
Pin : 624 211.
- c. List of areas of persons/ producers/
Organizations/ Authorities : Attached
Tamil Nadu Hill Banana Grower Federation
- d. Type of the Goods : **Agricultural – Horticultural Products – Hill
banana – Virupakshi**
- e. Specifications : 1. Confined to a latitude 10° North Longitude
77° East
2. Altitude – 600 m to 1400 m above MSL
3. This ecotype is confined to lower Palani
hill especially Virupakshi at Dindigul
district of Tamil Nadu
4. It is distributed in eastern parts of western
ghats and parts of eastern ghats
- f. Name of the GI & particulars : 1. It belongs to pome group genome AAB
2. Grown under rainfed conditions perennial
eco system
3. Fruits are having shelf life upto 8-10 days
under ambient temperature and available
throughout the year
4. The sugar content is upto 19-21° brix with
a sugar acid ratio of 15:1
- g. Description of the Goods :

Agriculture – Horticultural products

- Grown under laterite soil rich in organic matter
- pH – 5.5 to 6.5
- Annual rainfall 1500 mm distributed in 90 days
- The fruits are having medicinal value liked by persons of different ages
- The fruits are useful for clearing constipation and easy bowel movement
- The fruits are having potassium content which is essential for effective functioning of nervous system in human being.

Special feature

- Pseudostem has blackish brown blotches. Tall, stout and grows up to 300-330 cm
- It is maintained in clumps with mother plant and suckers.
- Fruits have thick peel. Ripe fruits are yellow in colour and each fruit has five prominent angles.

- The pedicel attachment is very strong which is very useful for long transportation.
- The skin can easily slip away from the pulp even at fully ripened condition. The pulp is having less moisture content and leads to long self life.
- The pulp will not spoil even if the fruit skin is in black spot.
- The fruits are being used to prepare a value added product called 'Panchamirdham'
- The bunch can be harvested 15 months after planting. The followers can come to harvest in next 10 months. The clump can be economically maintained upto 15 years.
- It is being grown as pure crop and also as one of the components under multitier system where coffee is the main component.
- It is grown in an area of 5000 hectares with a production of 25 tons /ha as pure crop and 10-15 tons /ha under multitier system.
- The area is on increase because of the increased demand. The Government of Tamil Nadu and Government of India, APEDA, NHB, TNAU and NRC Banana are helping to increase the area under Hill Banana area expansion scheme.

- h. Geographical Area of Production and map : Hill banana Virupakshi cultivation is distributed in eastern parts of western ghats and parts of eastern ghats viz., Lower Palani hills, Sirumalai, Kalrayan hills, Patcha malai Chitheri hills, Kolli hills, Aranuthu malai, Shervaroy hills.
- i. Proof of Origin : Enclosed
- j. Method of Production :

Soil

It is grown in fertile forest soil rich in organic matter with pH ranging from 5.5 to 6.5.

Climate

It prefers humid tropical climate. Temperature ranging from 17-35°C.

Relative humidity 65-85%

Rainfall 1500 mm distributed in 90-110 days

Planting material

Tissue culture plants. Sword suckers of 60-75 cm length weighing 5 kg.

Season

April – May upto July

Planting

Pit size 45cm³

The pits should be filled with forest oils, top soil and arm yard manure.

Special

Pure crop 2.4 x 2.4 m

Inter crop 3.6 x 3.6 m

The plants should be maintained by providing water in the early stages.

No. of functional leaves to be maintained : 5 to 8

After cultivation practices

- Removal of dried and degreened leaves. They are cut into pieces and spread on the soil surface as mulch.
- Removal of pseudostem sheaths of dried and degreened leaves during July, November and March to reduce the transpiration loss and toward off pseudostem weevil.

- Application of organic manures like FYM 10-15kg /clump, 5g each of Azospirillum and phosphobacteria per plant.
- Maintenance of 2 numbers of suckers. Yield – 20-25 t as pure crop; 10-15 t as intercrop in coffee ecosystem
- Crop duration 15 years
- Time taken for harvest of fruits from the date of planting : 12 to 15 months

k. Characteristics and uniqueness :

- Hill banana Virupakshi plant is tall, stout, strong and growing upto a height of 300 cm. the pseudo stems have brownish black blotches.
- Leaves are long.
- Ripe fruits are yellow.
- Fruit have thick peel. With five angels. The fruit skin peels off easily.
- Good flavour.
- Pulp is sweet in taste, TSS 19-21⁰ brix
- Acidity 0.56%
- Good sugar and acid ratio of 15:1.
- Good keeping quality upto 8-10 days.
- Medicinal value – cures constipation.
- Fruits contain good amount of potassium pulp contain good flavour and odour.

- l. Inspection Body :
1. The Dean, HC&RI, Coimbatore and Periyakulam
 2. The Professor and Head,
Horticultural Research Station, Thadiyankudisai
 3. JDH, Dept. of Horticulture
 4. Hill Banana Growers Federation Members

- m. Other Information :
- Fruits are used for preparation of value added product “Panchamirtham” which is offered to Lord Muruga temple of Palani.

Name and signatures of the :
applicant

Place :
Date :

List of Enclosure

1. Statement of the case

**EXPERIENCE WHILE GRADING
STANDARD HILL BANANA BEFORE SALE**

Sl.No.	Gross weight of a bunch in Kgs.	Weight of a flower stem in Kgs	Weight of the stem removed	Weight of wastage stem while separating hands from bunch	Weight of hands after removal from stem	Avg. No. of hands from a bunch	Avg. No. of fruits in bunch	Avg. Weight of a fruit in grams	Grade awarded to this bunch
1.	4.000	0.450	0.450	0.100	3.000	4-5	50	50-60	III
2.	5.100	0.500	0.500	0.100	4.000	6	60	60-70	III/II
3.	7.500	0.500	0.850	0.150	6.000	7	80	70-80	II/I
4.	9.250	0.500	1.050	0.200	7.500	8	95	80-90	I/S
5.	11.500	0.500	1.300	0.200	9.500	9	110	90-00	S
6.	13.500	0.600	1.650	0.250	11.000	10-11	125	80-90	I/S

Nutritive value of banana

Carbohydrate	22%
Protein	1.1%
Fat	0.2%
Phosphorus	27 mg/100 g pulp
Potassium	460 mg/100 g pulp
Calcium	7 mg / 100 g pulp
Magnesium	36 mg/100 g pulp
Sulphur	34 mg/100 g pulp
Thiamine	0.04 mg/100 g pulp
Riboflavin	0.07 mg/100 g of pulp
Pyridoxine	0.51 mg/100 g of pulp
Ascorbic acid & vitamin c	10 mg/100 g of pulp

Method of Production

Virupakshi (AAB)

Soil and Climate: Well drained loamy soils are suitable. Alkaline and saline soils should be avoided.

Season of planting

April – May (lower Palani hills), June – August (Sirumalai)

Selection and pre-treatment of suckers: Select sword suckers of 1.5 to 2.0 kg weight, free from diseases and nematodes. Trim the roots and decayed portion of the corm, cut the pseudostem leaving 20 cm from the corm and grade the suckers to size. To avoid wilt disease, infected portions of the corm may be pared, dipped for 5 minutes in Carbendazim 0.1% (1 g in 1 lit of water) for wilt. Pralinage with 40 g of Carbofuran 3 G granules per sucker. (Dip the corm in slurry solution of 4 parts clay plus 5 parts water and sprinkle Carbofuran to control nematodes). Use tissue cultured banana plants with 5-6 leaves. At time of planting, apply 25 g *Pseudomonas fluorescence* / plant.

Field preparation: Remove scrub jungle and construct contour stone walls.

Digging Pits

Dig pits of 45 cm x 45 cm x 45 cm size. The pits are refilled with topsoil, mixed with 10 kg of FYM, 250 g of Neem cake and 50 g of Lindane 1.3 %.

Spacing: 3.6 x 3.6 m : 750 plants/ha

(When mixed with coffee)

Fertilizer application

After forming semicircular basins on uphill side, apply 375 g of 40:30:40 NPK mixture, plus 130 g muriate of potash per clump per application during October, January and April. Apply *Azospirillum* and *Phosphobacteria* 20 gm each at planting and 5th month. Apply N and K in 3 splits on 3rd, 5th and 7th month, Phosphorous at 3rd month of planting. Apply 20 g in each of *Azospirillum* and *Phosphobacteria* at planting and five months after planting. (This should be applied prior to chemical fertilizer application).

Intercultivation: Give four forkings in January, April, July and October. Remove outer sheaths to keep the corm inside the soil and ward off borer. Maintain two bearing plants and two followers per clump along the contour.

Growth regulators: To improve the grade of bunches 2,4-D at 25 ppm (25 mg/lit.). Spray plantozyme @ 2ml/lit at 6th and 8th month after planting to get higher yield.

Micronutrients: Spray micronutrients viz., ZnSO₄ (0.5%), FeSO₄ (0.2%), CuSO₄ (0.2%) and H₃BO₃ (0.1%) at 3, 5 and 7 MAP to increase yield and quality of banana.

Plant protection

Pests

Corm weevil: Apply lindane 1.3% @ 20 g/plant or carbaryl @ 10 – 20 g/plant in the soil around the stem.

Pseudostem weevil (*Odoiporus longicollis*): Remove dried leaves periodically and keep the plantation clean. Alternatively, dilute 54 ml of monocrotophos 36 WSC with 350 ml of water and inject 4 ml (2 ml at 45 cm from the ground level another 2 ml 150 cm from the ground level) in the pseudostem at monthly interval from 5th to 8th month. Do not dump infected materials in the manure pit. Infected trees should be uprooted, chopped into pieces and burnt.

Manana aphid: Aphid is the vector for Bunchy – top virus disease. Spray any one of the following systemic insecticides to control it. Phosphamidon 2 ml/lit or methyl demeton 2 ml/lit or monocrotophos 1 ml/lit or dimethoate 30 EC 2 ml/lit.

Nematode: Pre-treat the suckers with 40 g of Carbofuran 3G. If pre-treatment is not done, apply 40 g of Carbofuran around each plant one month after planting (refer selection and pretreatment for alternate technology) or pare and dip the corm into 0.75% Monocrotophos solution; shade dry and plant. Then grow Sunhemp after 45th day and incorporate one month later

Diseases

Sigatoka leaf spot: Remove affected leaves and burn. Spray any one of the following chemicals : Carbendazim 1 g/lit., Benomyl 1 g/ lit., Mancozeb 2 g/lit., Copper oxychloride 2.5 g/lit., Ziram 2 ml/lit, Chlorothalonil 2 g/lit.

Bunchy-top:

To prevent the disease,

- i) Use virus-free suckers
- ii) Paring and pralinage
- iii) Destroy virus affected plants.

Panama wilt Disease:

Uproot and destroy severely affected plants. Apply lime at 1 – 2 kg in the pits after removal of the affected plants. A small portion of soil is removed to expose the upper portion of the corm. An oblique hole at 45° angle is made to a depth of 10 cm. Immediately, a gelatin capsule containing 60 mg of Carbendazim or 3 ml of 2 % Carbendazim solution or of 50 mg of *Pseudomonas fluorescens* is inserted / injected into the hole with the help of ‘corm injector’ on 2nd, 4th and 6th month after planting.

Null Banana (Virupakshi) – AAB

1. Pseudostem Height	-	300-330 cm
2. No. of leaves	-	32-33
3. Phylacron	-	8-9 days
4. Length of the Petiole	-	54-55 cm
5. Depth of the Petiolar canal-		3.50 cm
6. Peduncle length	-	42.50 cm
7. Number of hands	-	7-8
8. Number of fingers	-	77-84
9. Bunch weight	-	11-18 kg
10. Fruit length	-	14-15 cm
11. Fruit girth	-	12-13 cm
12. Fruit weight	-	105-137.00 g
13. Pulp weight	-	92-95 g
14. T.S.S	-	21° Brix
15. Titrable acidity	-	0.58%
16. Sugar / acid ratio	-	15:1
17. No. of days for shooting	-	280 days
18. No. of days for fruit maturity		180 days
19. Crop Duration	-	450-460 days

Differences between Virupakshi and Sirumalai ecotypes

	Virupakshi	Sirumalai
1.	From the bunch, hands cannot be easily separated. Normally hands are removed by cutting with a sickle	From the bunch, hands can be easily separated. Normally hands are removed from the bunch peeling using hand
2.	K : 460 mg / 100 g of pulp TSS : 21-22° Brix	K : 500 - 550 mg / 100 g of pulp TSS : 24-26° Brix
3.	Ribs on the fruit skin (peel) are prominent	Ribs on the fruit skin (peel) are less prominent
4.	Fruits can be easily separated during Post harvest stage i.e., 7-10 days after harvest	Fruits are slightly difficult to separate from the hand. Pedicel attachment is strong even 7-10 days after harvest
5.	Sweetness gets reduced during post harvest stage (i.e. 7-10 days after harvest)	Sweetness gets increased during post harvest s stage (i.e. 7-10 days after harvest)
6.	Fruit size is bigger There is difference in fruit size. Grade 'B' of Virupakshi will be equal to Grade 'A' of Sirumalai	. Grade 'A' of Sirumalai is equal to Grade 'B' of Virupakshi
7.	No. of fingers 11-12	No. of fingers 11-14
8.	When Virupakshi is planted in Sirumalai, it will express the characters of Sirumalai	When Sirumalai ecotype is planted in lower Pulneys, it will be similar to Virupakshi.