

Improved Varieties of Fruit and Vegetables Developed by ICAR RCER



ICAR Research Complex for Eastern Region

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**Improved Varieties of Fruit and Vegetables
Developed by ICAR RCER**

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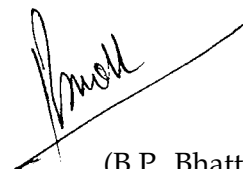
Foreword

Vegetables and fruits, a rich source of minerals, vitamins, phytochemicals, and antioxidants are integral part of human diet and there is an increasing demand with growth in income and consciousness for healthy food. During the recent years tremendous progress has been made in the increase of vegetables and fruits production. As a result India has become the second largest producer of these commodities. This has been due to development of a number of technologies like evolution of new varieties/hybrids, technologies for production and management of pest and diseases. The most visible impact has been of the new varieties/hybrids to increase the production and productivity of fruits and vegetables. A commendable work has been done by ICAR, Research Complex for Eastern Region, Patna at Research Centre, Ranchi in developing a number of improved and high yielding varieties/hybrids of fruits and vegetable crops.

A total of 49 varieties in seventeen vegetable and two fruit crops have been evolved by this organization. These include brinjal (11) *viz.*, Swarna Shree, Swarna Mani, Swarna Shobha, Swarna Pratibha, Swarna Shyamali, Swarna Abhilamb, HABR-21, Swarna Ajay (F_1), Swarna Shakti (F_1), Swarna Neelima (F_1) and Swarna Mohit (F_1); tomato (8) Swarna Naveen, Swarna Lalima, Swarna Baibhav (F_1), Swarna Samridhi (F_1), Swarna Sampada (F_1), Swarna Vijaya (F_1), Swarna Deepti (F_1), Swarna Anmol (F_1); Chilli (1) Swarna Praphulya; Sweet Pepper (1) Swarna Atulya; Cucumber (3) Swarna Ageti, Swarna Poorna and Swarna Sheetal; bottle gourd (1) Swarna Sneha; ridge gourd (2) Swarna Manjari and Swarna Uphar; ridge gourd (satputia) (1) Swarna Sawani; sponge gourd (1) Swarna Prabha; bitter gourd (1) Swarna Yamini; pumpkin (1) Swarna Amrit; pointed gourd (3) Swarna Rekha, Swarna Alaukik and Swarna Suruchi; garden pea (2) Swarna Amar and Swarna Mukti; french bean (2) Swarna Priya (bush type) and Swarna Lata (Pole type); cow pea (4) Swarna Harita, Swarna Shweta, Swarna Suphala and Swarna Mukut (bush type); dolichos bean (2) Swarna Utkrisht and Swarna Rituvar; vegetable soyabean (1) Swarna Vasundhara and snowpea (1) Swarna Tripti. Among fruit crops, litchi (1) Swarna Roopa and Jack fruit (2) Swarna Manohar and Swarna Poorti. And Shahi variety of litchi was identified for cultivation in this region.

These varieties/hybrids are becoming popular for their specific traits, which are being documented in the form of technical bulletin "Varieties Released" by ICAR Research Complex for Eastern Region, Research Centre, Ranchi. I compliment authors and all the Scientists involved in developing these varieties of different vegetable and fruit crops.

I feel extremely happy that this technical bulletin will be of much use to the growers in replacement of traditional varieties/hybrids, which in turn would increase the production and productivity of vegetable and fruit crops in the Eastern region. Further, I am confident that this publication would be highly useful to farmers, students and scientists in their endeavor.

A handwritten signature in black ink, appearing to read 'B. P. Bhatt', written over a diagonal line.

(B.P. Bhatt)
Director

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Fruit Crops

Litchi

Shahi (2001, AICRP-STF)

- Identified through germplasm evaluation.
- **Fruit** : Attractive deep red in colour with highly fragrant pulp (65%) and TSS 20.4°B.
- Earliest maturity by second week of May.
- Recommended for Bihar, Jhar-khand, Uttarakhand, West Bengal and Odisha.
- **Time of planting** : July-August.
- **Spacing** : 10 m x 10 m.
- **No. of plant/ha** : 100.
- **Fruiting period** : January-June.
- **Fruit maturity** : May-June.
- **Average yield** : 100-120 kg/tree.



Shahi

Swarna Roopa (1996, IVRC)

- Developed through clonal selection.
- **Fruit**: Attractive deep red in colour, contains high pulp (75%), small seed and TSS 19°B.
- Resistant to fruit cracking.
- **Mid late in maturity**: Earliest maturity by second week of May.
- Recommended for Bihar, Jharkhand, Uttaranchal and West Bengal.
- **Time of planting** : July-August.
- **Spacing** : 10 m x 10 m.
- **No. of plant/ha** : 100.
- **Fruiting period** : January-June.
- **Fruit maturity** : May-June.
- **Average yield** : 80-100 kg/tree.



Swarna Roopa

Jack fruit

Swarna Manohar (2004, IVRC)

- Identified through selection from the land races collected from Jharkhand, Bihar, West Bengal, U.P., Odisha.
- **Fruit** : Attractive skin colour, uniform in shape, high quality fragrant pulp, sweet and firm flake.
- Highly nutritive with natural sugars and fragrance, TSS-18.0°B, Titratable acidity – 0.09%, Total sugar – 8.33%.
- Suitable for table purpose.
- Recommended for Jharkhand and adjoining areas.
- **Fruit maturity**: Early.
- Suitable for table purpose.
- **Average fruit weight** : 13.7 kg.
- **Spacing** : 10 m x 10 m.
- **Average yield** : 548 kg/tree.



Swarna Manohar

Swarna Poorti (2004, IVRC)

- Selected from the land races collected from Jharkhand, Bihar, West Bengal, U.P., Odisha.
- **Fruit** : Attractive light green colour, roundish uniform shape.
- Highly nutritive, TSS-18.0°B, titratable acidity- 0.14%, Total sugar – 7.46%.
- Suitable for vegetable purpose.
- **Average fruit weight** : 4.20 kg.
- Recommended for Jharkhand and adjoining areas.
- **Fruit maturity**: Late.
- **Spacing** : 10 m x 10 m.
- **Average yield**: 120.0 kg/tree.



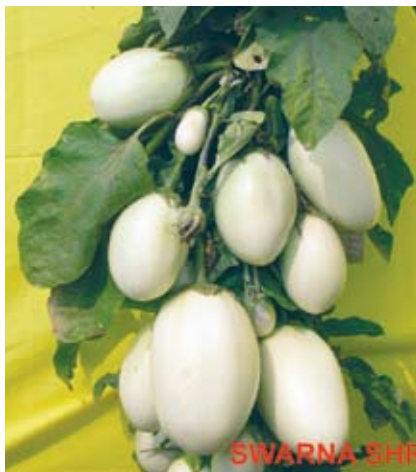
Swarna Poorti

Vegetable Crops

Brinjal

Swarna Shree (2006, Gazette No.1422)

- Developed through pure line selection.
- **Fruit :** Creamy white in colour, round to oval, soft and preferred for *bharta* preparation.
- Moderately resistant to bacterial wilt.
- Recommended for Bihar, Jharkhand and adjoining areas.
- **Time of sowing :** July-August.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate :** 250-300 g/ha.
- **Maturity:** First harvest 55-60 days after planting.
- **Average yield:** 55-60 t/ha



Swarna Shree

Swarna Mani (2004, Gazette No.493)

- Developed through hybridisation followed by pedigree selection and back cross method.
- **Fruit:** Attractive, shiny purple in colour, round in shape.
- Moderately resistant to bacterial wilt.
- Recommended for Bihar, Jharkhand and adjoining areas.
- Suitable for bacterial wilt prone areas.
- **Time of sowing:** July-August.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate:** 250-300 g/ha.
- **Maturity:** First harvest 65-70 days after planting.
- **Average yield:** 60-65 t/ha.



Swarna Mani

Swarna Shyamli (2006, Gazette No.1422)

- Developed through pure line selection.
- **Fruit** : Medium size (250 g), round, attractive green colour with white stripes.
- Locally preferred for better quality.
- Resistant to bacterial wilt.
- Recommended for round the year cultivation in Jharkhand, Bihar and adjoining areas.
- **Time of sowing** : July-August and February-March.
- **Spacing** : 60 cm x 50 cm.
- **Seed rate** : 250-300 g/ha.
- **Maturity** : First harvest 35-40 days after planting.
- **Average yield** : 60-65 t/ha.



Swarna Shyamli

Swarna Pratibha (2004, Gazette No.493)

- Developed through pure line selection.
- **Fruit**: Medium size (250 g), and shiny purple colour.
- Resistant to bacterial wilt.
- Recommended for Bihar, Jharkhand and adjoining areas.
- **Time of sowing** : July-August.
- **Spacing** : 60 cm x 50 cm.
- **Seed rate** : 250-300 g/ha.
- **Maturity** : First harvest 55-60 days after planting.
- **Average yield** : 45-50 t/ha.



Swarna Pratibha

Swarna Shobha (2006, Gazette No.398)

- Developed through hybridization followed by pedigree selection.
- **Fruit:** Round, medium size, weight (300-350 g) and attractive milky white with purple tinge.
- Tolerant to bacterial wilt disease under field condition.
- Recommended for Bihar and Jharkhand.
- **Time of sowing :** July-September
- **Spacing :** 60 cm x 50 cm.
- **Seed rate :** 250-300 g/ha.
- **Maturity :** First harvest 55-65 days after planting.
- **Average yield :** 50-60 t/ha.



Swarna Shobha

Swarna Abhilamb (2007, Gazette No.655)

- Developed through pure line selection.
- **Fruit:** Long (30-35 cm), weight (80-100g) and attractive purple blue colour.
- Resistant to bacterial wilt and phomopsis blight disease under field condition.
- Recommended for Bihar and Jharkhand, Uttranchal, Himachan Pradesh and Jammu & Kashmir.
- **Time of sowing:** July-August.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate:** 250-300 g/ha.
- **Maturity:** First harvest 55-60 days after planting.
- **Average yield:** 60-70 t/ha.



Swarna Abhilamb

Swarna Shakti (F₁) (2004, IVRC)

- Hybrid developed through heterosis breeding.
- **Fruit:** Oblong, medium length (15-17 cm), weight (250-300 g) and attractive shiny light purple colour.
- Resistant to phomopsis blight.
- Moderately resistant to bacterial wilt under field condition.
- Recommended for Bihar and Jharkhand.
- **Time of sowing:** July-September.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate:** 150-200 g/ha.
- **Maturity:** First harvest 55-65 days after planting.
- **Average yield:** 70-75 t/ha.



Swarna Shakti

Swarna Mohit (F₁) (2008 CVRC)

- Hybrid developed through heterosis breeding.
- **Fruit:** Oblong, medium length (10-15 cm), weight (100-150 g) and attractive light purple colour.
- Resistant to phomopsis blight.
- Moderately resistant to bacterial wilt and phomopsis blight under field condition.
- Recommended for Bihar and Jharkhand , Karnataka, Tamilnadu & Kerala.
- **Time of sowing:** July-September.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate:** 150-200 g/ha.
- **Maturity:** First harvest 55-60 days after planting.
- **Average yield:** 65-75 t/ha.



Swarna Mohit

Swarna Ajay (F1) (2006, Gazette No.1422)

- Hybrid developed through heterosis breeding.
- **Fruit:** Oblong, medium length (10-12 cm), weight (100-120 g) and attractive light purple colour.
- Resistant to bacterial wilt and phomopsis blight.
- Recommended for Punjab, Uttranchal, Bihar, Jharkhand and Uttar Pradesh.
- **Time of sowing:** July-September and February-March.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate:** 150-200 g/ha.
- **Maturity:** First harvest 50-55 days after planting.
- **Average yield:** 70-75 t/ha.



Swarna Ajay

Swarna Neelima (F₁) (2008, Gazette No.999)

- Hybrid developed through heterosis breeding.
- **Fruit :** Round, medium length (10-12 cm), weight (200-250 g) and attractive light purple colour.
- Resistant to bacterial wilt and phomopsis blight.
- Recommended for Punjab, Uttranchal, Bihar, Jharkhand and Uttar Pradesh.
- **Time of sowing:** July-August.
- **Spacing:** 60 cm x 50 cm.
- **Seed rate:** 150-200 g/ha.
- **Maturity:** First harvest 55-65 days after planting.
- **Average yield:** 70-75 t/ha.



Swarna Neelima

HABR-21 (2013 CVRC)

- Developed through pureline selection.
- The plants are Intermediate in growth habit, with semi upright, stems and leaves are purple.
- Fruits are attractive with black color and calyx is dark purple. Fruit length (18-20 cm), fruit breadth (7-8 cm), fruit weight (300-350 gm), and yield per plant (2-3 kg). The mean yield potential ranges from 55-60 t/ha.
- This variety has been identified for release during 31st AICRP group meeting held at CSKHPKV, Palampur from 2-5, May 2013 for Zone-IV.



HABR-21 (2013)

Tomato

Swarna Lalima (2006, Gazette No.1422)

- Developed through pure line selection
- **Fruit** : Deep red, round, weight (120-125 g) with TSS 4°B
- Resistant to bacterial wilt.
- Recommended for Jharkhand and Bihar.
- **Time of sowing**: July-September and February-April.
- **Spacing**: 60 cm x 40 cm
- **Seed rate**: 150-200 g/ha
- **Maturity**: First harvest 55-60 days after sowing.
- **Average yield**: 60-70 t/ha.



Swarna Lalima

Swarna Naveen (2006, Gazette No.1422)

- Developed through pure line selection.
- **Fruit**: Weight (40-50g), oblong, deep red with TSS 5°B
- Resistant to bacterial wilt.
- Recommended for cultivation in Jharkhand, Bihar and adjoining areas.
- **Time of sowing**: July-September and February-April.
- **Spacing**: 60 cm x 40 cm.
- **Seed rate**: 150-200 g/ha.
- **Maturity**: First harvest 60-65 days after sowing.
- **Average yield**: 60-65 t/ha.



Swarna Naveen

Swarna Baibhav (F₁) (2004, Gazette No. 493)

- Determinate F₁ hybrid.
- **Fruit:** Round, deep red colour, firm, weight (140-150 g), contain high pulp.
- Suitable for long distance transportation & processing.
- **Time of sowing:** September-October.
- **Spacing:** 60 cm x 40 cm.
- **Seed rate:** 125-150 g/ha.
- **Maturity:** First harvest 65-70 days after transplanting
- **Average yield:** 90-100 t/ha.



Swarna Baibhav

Swarna Samridhi (F₁) (2004, IVRC)

- Indeterminate F₁ hybrid, developed through heterosis breeding.
- **Fruit:** Fruits are borne in cluster (8-10), round, red, weight (40-50 g), firm, TSS 5.0-6.0°B, and contain high pulp.
- Resistant to bacterial wilt and early blight disease.
- Recommended for Punjab, Uttaranchal, Jharkhand, Bihar and Uttar Pradesh.
- **Time of sowing:** August-September and April-May.
- **Spacing:** 60 cm x 40 cm.
- **Seed rate:** 125-150 g/ha.
- **Maturity:** First harvest 55-60 days after sowing.
- **Average yield:** 100-105 t/ha.



Swarna Samridhi

Swarna Sampada (F₁) (2006, Gazette No.1422)

- Determinate F₁ hybrid, developed through heterosis breeding.
- **Fruit:** Round, red, weight (70-80g), firm, TSS 4.5-5.0°B, acidity 0.35-0.40% and contain high pulp.
- Resistant to bacterial wilt and early blight disease.
- Recommended for Punjab, Uttaranchal, Jharkhand, Bihar and Uttar Pradesh.
- **Time of sowing:** July-September and February-April.
- **Spacing :** 60 cm x 40 cm.
- **Seed rate :** 125-150 g/ha.
- **Maturity :** First harvest 55-60 days after sowing.
- **Average yield:** 100-105 t/ha.



Swarna Sampada

Swarna Vijaya (F₁) (2008, Gazette No. 999)

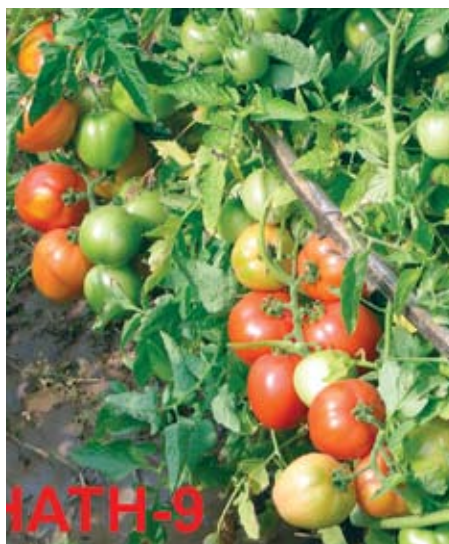
- Determinate F₁ hybrid, developed through heterosis breeding.
- **Fruit :** Weight (80-90 g), round, red, firm with TSS 4- 5°B and acidity (0.35-0.40 %) and born in cluster of 6-8.
- Resistant to bacterial wilt and early blight disease.
- Recommended for cultivation in Jharkhand, Bihar H.P., J&K and Uttarakhand.
- **Time of sowing:** July-September and February-April.
- **Spacing:** 60 cm x 40 cm.
- **Seed rate:** 150-200 g/ha.
- **Maturity:** First harvest 55-60 days after sowing.
- **Average yield:** 100-105 t/ha



Swarna Vijaya

Swarna Deepti (F₁) (2011, IVRC)

- Determinate F₁ hybrid, developed through heterosis breeding.
- **Fruit** : Round, deep red colour, firm, weight (120-130 g), with TSS 4- 5°B and acidity (0.35-0.40 %) , and born in cluster of 4-5.
- Resistant to bacterial wilt and early blight disease.
- Suitable for table & processing.
- **Time of sowing** : August-September.
- **Spacing** : 60 cm x 40 cm.
- **Seed rate** : 125-150 g/ha.
- **Maturity** : First harvest 65-70 days after transplanting.
- **Average yield** : 100-105 t/ha.



Swarna Deepti

Swarna Anmol (F₁) (2013, IVRC)

Protected Cultivation

- Swarna Anmol was developed by heterosis breeding.
- Fruits are round, red, with light green shoulder and borne in clusters of 5-6.
- Fruit weight 60-70 g, TSS 4.5-5.0° brix, acidity 0.30-0.35% and ascorbic acid 40-42 mg/100 g fruit 87.
- Swarna Anmol is indeterminate in growth habit (5.0-5.5 m), high yielding (160-180 t/ha), resistant to bacterial wilt and can be cultivated round the year.
- It recorded 110% over the check GS-600.
- Recommended for protected cultivation in Jharkhand and Bihar and adjoining areas where bacterial wilt is a problem.



Swarna Anmol

Chilli

Swarna Praphulya (2013, IVRC)

- Swarna Praphulya was developed through pureline selection from local germplasm.
- Plant is vigorous with 90-100 cm plant height and resistant to bacterial wilt under natural field conditions.
- Swarna Praphulya (20-25 t/ha) shows its superiority with 34% increase over the check KA-2.
- Fruits are long (6.0-6.5 cm), pungent, dark green and dark red when ripe.
- Recommended for cultivation in Jharkhand and Bihar and adjoining areas where bacterial wilt is a problem.



Swarna Praphulya

Sweet Pepper

Swarna Atulya (2013, IVRC)

- Swarna Atulya was developed through pureline selection from EC-596749 collected from world vegetable centre Taiwan through NBPGR.
- Plant is vigorous with 45-50 cm plant height, early flowering and fruiting and suitable for *kharif* and *rabi* season cultivation.
- Swarna Atulya (40-45t/ha) shows its superiority with 63% increase over local check (California Wonder). It is tolerant to powdery mildew.
- Fruits (120-130 g) are almost round (4.5-5.0 cm length, 5.5-6.0 cm breadth), green and are yellow coloured at maturity.
- Recommended for cultivation in Jharkhand and Bihar and adjoining areas.



Swarna Atulya

Cucumber

Swarna Ageti (2006, Gazette No. 1422)

- Developed through mutation breeding.
- **Fruit** : Cylindrical long in shape, medium size (200 g), green colour with no placental hollowness.
- Tolerant to powdery mildew.
- Recommended for Bihar, Jharkhand, Uttar Pradesh, Andhra Pradesh, Delhi and Himachal Pradesh.
- **Time of sowing**: February-March.
- **Spacing**: 2 m x 0.5 m.
- **Seed rate**: 600-700 g/ha.
- **Maturity**: First harvest 45-50 days after sowing.
- **Average yield**: 30-32.5 t/ha.



Swarna Ageti

Swarna Sheetal (2006, Gazette No. 1422)

- Developed through hybridization followed by pedigree and recurrent selection.
- **Fruit**: Cylindrical long in shape, medium size (250 g), greenish white in colour with no placental hollowness.
- Tolerant to powdery mildew.
- Recommended for Jharkhand, Bihar, Uttar Pradesh, Maharashtra, Delhi, Andhra Pradesh, Himachal Pradesh and Kerala.
- **Time of sowing**: February-March.
- **Spacing**: 2 m x 0.5 m.
- **Seed rate**: 600-700 g/ha.
- **Maturity**: First harvest 60-65 days after sowing.
- **Average yield**: 25-30 t/ha.



Swarna Sheetal

Swarna Poorna (2004, Gazette No.493)

- Developed through pure line selection.
- **Fruit:** Cylindrical long in shape, medium size (300 g), light green colour with no placental hollowness.
- Tolerant to powdery mildew.
- Recommended for Bihar, Jharkhand, Odisha, Uttar Pradesh and Pradesh.
- **Time of sowing:** February-March.
- **Spacing:** 2 m x 0.5 m.
- **Seed rate:** 600-700 g/ha.
- **Maturity:** First harvest 55-60 days after sowing.
- **Average yield:** 30-35 t/ha.



Swarna Poorna

Ponted Gourd

Swarna Rekha (2006, Gazette No. 1422)

- Developed through clonal selection.
- **Fruit:** Elongated in shape, striped green, contain soft seed.
- Recommended for Jharkhand, Bihar, Odisha, West Bengal and Eastern Uttar Pradesh.
- **Time of planting:** February (rooted plant) September (vine cutting).
- **Spacing:** 1 m x 1 m.
- **No. of plant/ha:** 10,000.
- **Average yield:** 30-35 t/ha.



Swarna Rekha

Swarna Alaukik (2006, Gazette No.1422)

- Developed through clonal selection.
- **Fruit:** Elongated in shape, light greenish in colour, suitable for table and sweet preparation.
- Recommended for Jharkhand, Bihar, Odisha, West Bengal and Eastern Uttar Pradesh.
- ***Time of planting:*** February (rooted plant) September (vine cutting).
- ***Spacing:*** 1 × 1 m.
- ***No. of plant/ha:*** 10,000.
- ***Average yield:*** 20-25 t/ha.



Swarna Alaukik

Swarna Suruchi (2011, IVRC)

- Developed through clonal selection.
- ***Fruit:*** Oval in shape having blunt end on both side, light greenish in colour, suitable for table and sweet preparation.
- Recommended for Jharkhand, Bihar, Odisha, West Bengal and Eastern Uttar Pradesh.
- ***Time of planting:*** February (rooted plant) September (vine cutting).
- ***Spacing :*** 1 × 1 m.
- ***No. of plant/ha :*** 10,000.
- ***Average yield :*** 25-30 t/ha.



Swarna Suruchi

Ridge Gourd

Swarna Manjari (2006, Gazette No. 1422)

- Developed through hybridization followed by selection.
- **Fruit:** Elongated in shape, medium size, weight (175 g), highly ridged, greenish colour, pulp soft and contain less fibre.
- Tolerant to powdery mildew.
- Recommended for Jharkhand, Bihar, Odisha, Tamil Nadu, Maharashtra and Andhra Pradesh.
- **Time of sowing:** June-July and February-March.
- **Spacing:** 2 m x 0.5 m.
- **Seed rate:** 2.0-2.5 kg/ha.
- **Maturity:** First harvest 65-70 days after sowing.
- **Average yield :** 18-20 t/ha.



Swarna Manjari

Swarna Uphar (2006, Gazette No. 1422)

- Developed through hybridization followed by pedigree selection.
- **Fruit:** Elongated in shape, medium size, weight (200 g), long ridged at edible stage, pulp soft and contain less fibre.
- Recommended for cultivation in Jharkhand, Bihar and adjoining areas.
- **Time of sowing :** June-July and February-March.
- **Spacing:** 2 m x 0.5 m.
- **Seed rate :** 2.0-2.5 kg/ha.
- **Maturity:** First harvest 65-70 days after sowing.
- **Average yield:** 20-30 t/ha



Swarna Uphar

Swarna Sawani (Satputia) (2013, IVRC)

- Swarna Sawani was developed through pureline selection from local collection.
- Plant is vigorous with 3-4m vine length early flowering and fruiting and suitable for rainy season crop.
- Swarna Sawani (20-25t/ha) shows its superiority with 42% increase over local check. It is tolerant to powdery mildew and downy mildew.
- Fruits (35-45g) borne in clusters with 6-8 fruits per cluster.
- Recommend for cultivation in Jharkhand and Bihar and adjoining areas.



Swarna Sawani

Bottle Gourd

Swarna Sneha (2013, IVRC)

- Swarna Sneha was developed through pureline selection from IC284939, collected from NBPGR, New Delhi.
- Plant is vigorous with 4-5 m vine length early flowering and fruiting and suitable for summer and rainy season crop.
- Swarna Sneha (50-55 t/ha) shows its superiority with 40% increase over local check (Arka Bahar). It is tolerant to powdery mildew and downy mildew.
- Fruits are long (30-35 cm length), light green and fruit weight 900-1000 g.
- Recommended for cultivation in Jharkhand and Bihar and adjoining areas.



Swarna Sneha

Bitter Gourd

Swarna Yamini (2013, IVRC)

- Swarna Yamini was developed through hybridization followed by pedigree selection.
- Plant is vigorous with 2.5-3.0 m vine length early flowering and fruiting and suitable for summer and rainy season crop.
- Swarna Yamini (20 t/ha) shows its superiority with 49% increase over local check (Arka Harit). It is tolerant to powdery mildew and downy mildew.
- Fruits (65-70 g) are dark green with deep tubercles.
- Recommended for cultivation in Jharkhand and Bihar and adjoining areas.



Swarna Yamini

Sponge Gourd

Swarna Prabha (2006, Gazette No. 398)

- Developed through pure line selection.
- **Fruit** : Medium length (20-25 cm), weight (150-200 g), light greenish colour, pulp soft and contain less fibre.
- Tolerant to powdery and downy mildew and resistant to leaf minor under field condition.
- Recommended for Uttar Pradesh, Jharkhand and Bihar.
- **Time of sowing** : June-July and February-March.
- **Spacing**: 2 m x 0.5 m.
- **Seed rate**: 2.0-2.5 kg/ha.
- **Maturity**: First harvest 50-60 days after sowing.
- **Average yield**: 20-25 t/ha.



Swarna Prabha

Pumpkin

Swarna Amrit (2009 CVRC)

- Developed through pure line selection.
- **Fruit** : Weight (2.5-3.0 kg), round flat dark green fruit.
- Recommended for Uttar Pradesh, Jharkhand and Bihar, Karnataka, Tamilnadu and Kerala).
- **Time of sowing** : June-July and February-March
- **Spacing**: 3 m x 0.6 m.
- **Seed rate**: 2.0-2.5 kg/ha.
- **Maturity**: First harvest 70-75 days after sowing.
- Average yield : 50-60 t/ha



Swarna Amrit

French bean

Swarna Lata (Pole type) (2007, Gazette No. 655)

- Developed through pure line selection
- **Pod**: Round, fleshy and stringless with good cooking quality
- Recommended for cultivation in Jharkhand, Jammu & Kashmir, Himachal Pradesh and Uttarakhand
- **Time of sowing** : Second fortnight of June and September
- **Spacing** : 100 cm x 15 cm
- **Seed rate** : 22-25 kg/ha
- **Maturity**: First harvest 55-60 days after sowing
- **Average yield**: 12-14 t/ha



Swarna Lata

Swarna Priya (Bush type) (2007, Gazette No.655)

- Developed through pure line selection
- **Pod** : Flat, green, fleshy having good cooking quality
- Dried seeds are bold and maroon in colour, suitable for *rajma* preparation
- Recommended for Jharkhand, Sikkim, Meghalaya, Manipur, Nagaland, Mizorum, Tripura, Arunachal Pradesh, Western Madhya Pradesh, Maharashtra and Andaman and Nicobar Islands
- **Time of sowing**: Second fortnight of September and first fortnight of February
- **Spacing** : 45 cm x 15 cm
- **Seed rate** : 75-80 kg/ha
- **Maturity** : First harvest 50-55 days after sowing
- **Average yield** : 12-14 t/ha



Swarna Priya

Garden Pea

Swarna Amar (2004, IVRC)

- Developed through pure line selection
- **Pod** : Dark green, concave with acute apex having more than 50% recovery of shelled dark green peas
- Mature dried seeds are wrinkled green
- Resistant to powdery mildew disease
- Recommended for Jharkhand and Bihar
- Time of sowing : September-October
- **Seed rate** : 75-80 kg/ha
- **Maturity** : First picking 80-90 days after sowing
- **Average fresh pod yield**: 20-25 t/ha



Swarna Amar

Swarna Mukti (2006, Gazette No.1422)

- Developed through hybridisation followed by pedigree selection.
- **Pod:** Mildly concave, obtuse apexed, long, light green pods. Shelled peas are light green and sweet in taste with very good cooking quality .
- Resistant to powdery mildew disease.
- Recommended for Jharkhand, Bihar and Rajasthan.
- **Time of sowing:** September-October.
- **Seed rate:** 75-80 kg/ha
- **Maturity:** First picking 80-90 days after sowing.
- **Average fresh pod yield:** 20-25 t/ha



Swarna Mukti

Cowpea

Swarna Harita (Pole type) (2008, Gazette No. 999)

- Developed through pure line selection.
- **Pod :** Dark green, very long (50-60 cm), straight, round and fleshy having excellent cooking quality.
- Mature dried seeds are light brown, elongated and kidney shaped.
- Tolerant to mosaic viruses and rust under field condition.
- Recommended for Jharkhand and Bihar.
- **Time of sowing:** February-March and June-July
- **Seed rate :** 5-6 kg/ha.
- **Maturity :** First harvest 50-55 days after sowing.
- Average fresh pod yield 30-35 t/ha.



Swarna Harita

Swarna Sweta (Pole type) (2004, IVRC)

- Developed through pure line selection.
- **Pod:** Medium long (30-35 cm), white, straight, round & fleshy pods having very good cooking quality.
- Resistant to mosaic viruses and rust and tolerant to pod borer under field condition.
- Recommended for Jharkhand and Bihar.
- **Time of sowing :** February-March and June-July.
- **Seed rate:** 5-6 kg/ha.
- **Maturity:** First harvest 50-55 days after sowing.
- **Average fresh pod yield:** 25-30 t/ha.



Swarna Sweta

Swarna Suphala (Pole type) (2006, Gazette No.1422)

- Developed through introduction and direct use of NBPGR germplasm line as variety.
- **Pod:** Straight light green pod (30-35 cm) with bulged appearance of seeds.
- Mature dried seeds are bicoloured (mottling of brown and sandalwood colour).
- Resistant to rust and cowpea mosaic viruses under field condition.
- Tolerant to pod borer during summer under field condition.
- Recommended for Jharkhand, Bihar, Karnataka and Kerala.
- **Time of sowing:** February-March and June-July.
- **Seed rate :** 5-6 kg/ha.
- **Maturity:** First harvest 50-55 days after sowing.
- **Average fresh pod yield :** 25-30 t/ha.



Swarna Suphala

Swarna Mukut (Bush type) (2011, IVRC)

- Developed through hybridization followed by pedigree selection.
- **Pod** : Straight round, light green pod (20-25 cm).
- Mature dried seeds are kidney shaped and yellowish brown.
- Under field conditions, the variety is least infected by cowpea mosaic viral disease and pod borer infestation.
- Recommended for Jharkhand, Bihar, West Bengal and Odisha.
- **Time of sowing** : February-March and June-July.
- **Seed rate** : 25-30 kg/ha.
- **Maturity** : First harvest 45-50 days after sowing.
- **Average fresh pod yield** : 12-15 t/ha.



Swarna Mukut

Dolichos bean

Swarna Utkrisht (Pole type) (2006, Gazette No.1422)

- Developed through pure line selection.
- **Pod**: Straight, flat, green and fleshy pods (10-12 cm) having very good cooking quality.
- Mature seeds are light brown in colour.
- Tolerant to anthracnose, mosaic viruses and pod borer under field condition.
- Recommended for Uttar Pradesh, Jharkhand, Bihar and Punjab.
- **Time of sowing** : July-August.
- **Seed rate** : 6-8 kg/ha.
- **Maturity** : First harvest 110-120 days after sowing.
- **Average fresh pod yield** : 35-40 t/ha.



Swarna Utkrisht

Swarna Rituvar (Pole type) (2011, IVRC)

- Developed through pure line selection.
- **Pod** : Flat, creamy white & fleshy pods (8-10 cm) having very good cooking quality.
- Mature seeds are black in colour.
- Tolerant to anthracnose and pod borer under field condition.
- Recommended for Jharkhand, Bihar, West Bengal and Odisha.
- **Time of sowing** : Second fortnight of May.
- **Seed rate** : 8-10 kg/ha.
- **Maturity** : First harvest 75-80 days after sowing.
- **Average fresh pod yield** : 12.5- 15 t/ha.
- Suitable for off-season cultivation in rainy season.

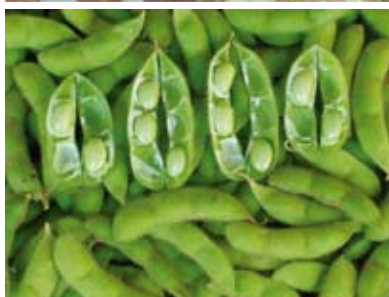


Swarna Rituvar

Vegetable Soyabean

Swarna Vasundhara (2008, Gazette No.999)

- **Pod** : Green pods (5-6 cm) having up to 50% recovery of bold green seeds. The shelled fresh green beans (grains) are having very good cooking quality and taste.
- Resistant to rust under natural epiphytotic condition.
- Recommended for Jharkhand and Bihar.
- **Time of sowing** : June-July.
- **Seed rate** : 30-40 kg/ha.
- **Maturity** : First harvest 75-80 days after sowing.
- **Average fresh pod yield** : 15-20 t/ha.



Swarna Vasundhara

Snow Pea

Swarna Tripti (2008, Gazette No. 999)

- Developed through hybridization followed by pedigree selection
- **Pod:** Fibreless, flat, green pods (7-10 cm) are suitable for direct use as sweet salad and cooked vegetable.
- Mature seeds are white in colour.
- Resistant to powdery mildew.
- Recommended for Jharkhand, Bihar and West Bengal.
- **Time of sowing:** October-November.
- **Seed rate:** 60-70 kg/ha.
- **Maturity:** First harvest 70-75 days after sowing.
- Average fresh pod yield : 25-30 t/ha.



Swarna Tripti

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NOTES

This image shows a full page of white paper with horizontal dotted lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.