

Wheat varieties ready for commercialization



HD 3386

It is a bread wheat variety released for timely sown irrigation conditions of NWPZ. Its average yield is 62.5 q/ha. It possesses resistance to yellow and brown rust and moderate resistance against leaf blight, powdery mildew, Karnal bunt and flag smut

Average Yield (q/ha)	62.5
Plant Height	101 cm
Sowing Time	Timely sown irrigated (1 November - 15
	November)
Maturity Time (Days)	144 days
Recommended Area	Punjab, Haryana, Delhi, Rajasthan (Except Kota and Udaipur division), Western UP(Except Jhansi division), Part of J & K (Kathua District), HP

HD 3385

Registered under PPV&FRA for timely sown irrigated conditions. Resistant to stripe and leaf rusts, and Karnal Bunt.

- It is a heat-tolerant, high-yielding wheat variety resistant to all three rusts (yellow, brown, black) and Karnal Bunt.
- It is suitable for early, timely, and late sowing conditions and has strong lodging tolerance due to its moderate plant height.

Average Yield (q/ha) Plant Height Sowing Time Maturity Time (Days) **Recommended Area**

62.62 q/ha under NWPZ and CZ, 52.3 under NEPZ 98 cm

Suitable for all sowing Early sowing (150 days) & Timely Sowing (141 days) under NWPZ; 135-140 days under CZ NWPZ (Except Kota and Udaipur Divisions), (Except Jhansi Division), Jammu and

Kathua district of J&K, Una district and Paonta Valley of H.P and Uttarakhand (Tarai region), NEPZ (East of UP, Bihar, Jharkhand, West Bengal (excluding hills), Orissa, Assam and plains of N. E. States), CZ (Madhya Pradesh, Chhattisgarh, Gujarat, Rajasthan (excluding Kota and Udaipur), and parts of Maharashtra)



ai region)

HD 3406(Unnat HD2967)



Bread wheat variety HD 3406 (Unnat HD2967) is Timely sown, Irrigated conditions of North Western Plain Zone.

- Resistant to leaf and stripe rusts, good levels of resistance to wheat blast and Karnal bunt.
- High Yielding Rust Resistant Variety with Excellent End Product Quality.

Average Yield (q/ha)	54.73
Plant Height	104 cm
Sowing Time	Timely sown irrigated (1 November - 15 November)
Maturity Time (Days)	146
Recommended Area	Punjab, Haryana, Delhi, Rajasthan, Western UP, J& K



HD 3390

HD 3390 is a biofortified, high-yielding wheat variety with excellent grain appearance, high hectoliter weight (78.2 kg/hl), and good chapati quality. It has strong heat tolerance (HSI: 0.89) and is resistant to all three rusts (yellow, brown, black rusts) and Karnal Bunt

• Special Features: Superior grain appearance, high grain weight, biofortified with high protein.

Average Yield (q/ha)
Plant Height
Sowing Time
Maturity Time (Days)
Recommended Area

62.36 102 cm 1 November - 15 November 140 Delhi-NCR (timely sown irrigated conditions)

HD 3388 (Pusa Yashodhara)

HD 3388 is a biofortified wheat variety with high protein content (11.47%), excellent chapati-making quality, and high heat tolerance (HSI: 0.89). It is resistant to major wheat diseases, making it a promising choice for farmers.

• Excellent chapati quality (score 8.0) and resistant to all three rusts (yellow, brown, black rusts) and Karnal Bunt

Average Yield (q/ha) Plant Height Sowing Time Maturity Time (Days) Recommended Area 52 100 cm 1 November - 15 November 124 •NEPZ (East of UP, Bihar, Jharkhand, West Bengal (excluding hills), Orissa, Assam and plains of N. E. States)





HD 3410

HD 3410 is a biofortified, high-protein wheat variety recommended for early sowing in Madhya Pradesh and Delhi-NCR. It performs well under conventional tillage and conservation agriculture (CA), producing high yields with good grain quality.

• Resistant to all three rusts (yellow, brown, black rusts) and Karnal Bunt

10			
		Average Yield (q/ha)	65.91
		Plant Height	103 cm
		Sowing Time	Irrigated early sown (25 October - 5
Ŕ	y l		November) conventional tillage and
			conservation agriculture (CA)
4			environments
		Maturity Time (Days)	135-140 (MP), 150 (Delhi NCR)
		Recommended Area	Delhi state and NCR; Madhya Pradesh

Pusa Ojaswi HI 1650

Released for Central Zone – Timely sown and Restricted Irrigated conditions.

- Average yield
- Potential yield
- Maturity
- Plant height
- 1000 grain weight
- Recommended Area

73.8 q/ha 1115-120 days

57.2 q/ha

89 cm

47 g (Approx)

MP, Chattisgarh, Gujrat, Kota, Udaipur division of Rajasthan & Jhansi division of UP.

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Paddy varieties ready for commercialization



Pusa Basmati 1979

Pusa Basmati 1979 is one of the first Non-GM herbicide tolerant Basmati rice variety released for cultivation in India. It is a MAS derived herbicide tolerant near-isogenic line of Basmati rice variety "PB 1121" possessing mutated AHAS allele governing Imazethapyr tolerance

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area

45.8 110-120 cm 21 days after sowing June 15 to June 20, before the rain starts 130-133 Days Fourth week of October Delhi, Punjab and Haryana

Pusa Basmati 1985

Pusa Basmati 1985 is one of the first non-GM herbicide tolerant Basmati rice variety released for cultivation in India. It is a MAS derived herbicide tolerant near-isogenic line of Basmati rice variety "PB 1509" possessing mutated AHAS allele governing Imazethapyr tolerance



Average Yield (q/ha) Plant Height Nursery days Sowing Time

Maturity Time (Days) 110-Harvest time Sec Recommended Area Del

52 85-110 cm 21 days after sowing Between June 15 and June 20, before the rain starts. 110-115 Second week of October Delhi, Punjab and Western Uttar Pradesh



PUSA BASMATI 1847

Ave Pla Nui Sov Ma Hai Rec

Pusa Basmati 1847 is a MAS derived near isogenic line (NIL) of a popular short-duration Basmati rice variety, Pusa Basmati 1509.

- Resistance to both bacterial blight and blast diseases.
- Avoids the use of antibiotics and fungicides in the management of two major diseases, bacterial blight and blast, respectively.
- Possessing two genes for bacterial blight resistance xal3 and Xa21; and two genes for blast resistance, Pi54 and Pi2

erage Yield (q/ha)	57
nt Height	108 cm
rsery days	21 days after sowing
ving Time	First to second week of June
turity Time (Days)	125-128
rvest time	Second week of October
commended Area	Delhi, Punjab and Western Uttar Pradesh



PUSA BASMATI 1885

Pusa Basmati 1885 is a MAS derived near isogenic line (NIL) of a popular short-duration Basmati rice variety, Pusa Basmati 1121.

• Resistance to both bacterial blight and blast



Pusa Basmati 1886 is a MAS derived near isogenic line (NIL) of a popular short-duration Basmati rice variety, Pusa Basmati 6.

AUSA BASMATI 1886

- Resistance to both bacterial blight and blast
- diseases.
- Avoids the use of antibiotics and fungicides in the management of two major diseases, bacterial blight and blast, respectively.

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area 46.8 120 cm 21 days after sowing First to second week of June 135-140 First week of November

Delhi, Punjab and Haryana

diseases.

 Avoids the use of antibiotics and fungicides in the management of two major diseases, bacterial blight and blast, respectively.

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area 50-55 90-100 cm 21 days after sowing First to second week of June 140-145 First week of November Haryana and Uttarakhand



PUSA BASMATI 1509

First early maturing Basmati rice variety with seed to seed maturity of only 115-120 days.

Moderate resistance to leaf blast and brown spot diseases.

- Its semi-dwarf stature, non- lodging and nonshattering habit, reduced duration, yield on par
- Very good kernel length after cooking (18.2 mm) , desirable ASV (7.0)

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area

42.5 94-101 cm 21 days after sowing Second week of June 115-120 Second week of October Western Uttar Pradesh, Punjab and Delhi



PUSA BASMATI 1692

Pusa Basmati 1692 is a semi-dwarf Basmati variety with a seed-to-seed maturity of 110-115 days. Timely clearing of fields will also help in reducing the environmental pollution and help in timely sowing of the succeeding wheat crop in



PUSA BASMATI 1718

PB 1718 is a near isogenic line of Pusa Basmati 1121 with bacterial blight resistance governed by *xa13* and *Xa21* which were transferred through molecular marker assisted breeding.

the Basmati GI area.

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area

52.6 101 cm 21 days after sowing Second week of June 110-115 Second Week of October Delhi, Haryana and western

Uttar Pradesh

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area

45-50 120 cm 21 days after sowing First to second week of June 130-135 First week of November Punjab, Haryana & Delhi





Pusa 1824

Early maturing with a seed-to-seed maturity of 120-122 days. It has semi-dwarf, non-lodging and non-shattering habit with very sturdy stem. Owing to its early maturity, it can help timely harvest of paddy crop in the Delhi-NCT area, which can help providing sufficient time for afterharvest operations.

Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area

95 90-93 cm 21 days after sowing First to second week of June 120-122 Second week of October Delhi NCT area

Pusa 2090

Early maturing with a seed-to-seed maturity of 127 days. It has semi-dwarf, non-lodging and non-shattering habit with very sturdy stem. Owing to its early maturity, it can help timely harvest of paddy crop in the Delhi-NCT area, which can help providing sufficient time for after-harvest operations. NCT area.



Average Yield (q/ha) Plant Height Nursery days Sowing Time Maturity Time (Days) Harvest time Recommended Area

88.4 104 21 days after sowing First to second week of June 129–129 Second week of October Delhi NCT area

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Maize varieties ready for commercilization





A high-sugar-content sweet corn hybrid containing the recessive shrunken-2 gene (sh2), which enhances sweetness levels to 15.9° Brix. This variety has excellent eating quality, making it ideal for fresh consumption, processing, and food industries. It is suitable for multiple agro-climatic regions and performs well in irrigated conditions.

Average Yield

Sowing Time:81 days (NHZ), 74 dayMaturity Time (Days):77 days (PZ)Recommended Area:NHZ, NWPZ, NEPZ & PZ

98.4 (NHZ), 97.0 (NWPZ), 75.3 (NEPZ), 101.6 (PZ) Kharif season 81 days (NHZ), 74 days (NWPZ), 78 days (NEPZ) and 77 days (PZ)

PUSA SUPER SWEET CORN-2

Pusa Super Sweet Corn-2 (sh2sh2) is a high-yielding sweet corn hybrid developed by the Indian Agricultural Research Institute (IARI). It is characterized by the presence of the shrunken-2 (sh2) gene, which significantly enhances the sweetness of the kernels. This variety boasts a Brix value of 16.4%, indicating its high sugar content.

12.8



Avg. green cob yield (t/ha) Sowing Time: Maturity Time (Days):

Recommended Area:

kharif Season 75.3 days Himachal Pradesh, Haryana, Uttarakhand, Uttar Pradesh, Tamil Nadu, Karnataka, Rajasthan & Chhattisgarh

PUSA HM4 MALE STERILE BABY CORN (SHISHU)

India's first male sterile baby corn hybrid, developed for highquality, early-maturing baby corn with light cream-colored ears (8.7-9.2 cm length, 1.2-1.3 cm girth). It also produces high green fodder yield (271 q/ha), making it a dual-purpose variety for both human consumption and animal feed.

Average dehusked baby corn cob yield22.Potential dehusked baby corn cob yield32.Sowing Time:KhMaturity Time (Days):51.Recommended Area:No

22.7 q/ha 32.6 q/ha Kharif 51 days North Western Plain Zone (NWPZ)

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PUSA BIOFORTIFIED MAIZE HYBRID-1

This hybrid is developed for nutritional security, with high levels of provitamin-A (6.60 ppm), lysine (3.37%), and tryptophan (0.72%). It is highly adaptable and offers good performance under irrigated conditions.

Average Yield (q/ha) Sowing Time: Maturity Time (Days): **Recommended Area:**

76.2 (NHZ), 54.4 (NEPZ) Kharif season 107 days (NHZ) and 86 days (NEPZ) NHZ & NEPZ

PUSA HQPM1 IMPROVED

Pusa HQPM-1 Improved is a high-quality protein maize hybrid developed through the introgression of crtRB1 and lcyE genes. It is rich in provitamin-A (7.02 ppm), lysine (4.59%), and tryptophan (0.85%), making it nutritionally superior to conventional maize.

81.9 q/ha (NHZ), 69.7 q/ha (NWPZ), 59.5 q/ha (NEPZ), Average Yield (q/ha)79.3 q/ha (PZ), 50.9 q/ha (CWZ) Kharif season Sowing Time: 111 days (NHZ), 94 days (NWPZ), 90 days (NEPZ), 96 days Maturity Time (Days) (PZ), 92 days (CWZ) NHZ, NWPZ, NEPZ, PZ and CWZ

Recommended Area:



PUSA BIOFORTIFIED MAIZE HYBRID-2

A nutritionally superior hybrid with high provitamin-A (5.90 ppm), lysine (3.47%), and tryptophan (0.92%). It is well-suited for nutritional security and has excellent yield potential in different agro-climatic zones.

Average Yield (q/ha) 75.4 (NWPZ), 53.7 (NEPZ), 51.1 (CWZ)

Sowing Time: Maturity Time (Days): **Recommended Area:**

Kharif season 91 days (NWPZ), 88 days (NEPZ) & 89 days (CWZ) NWPZ, NEPZ & CWZ

PUSA BIOFORTIFIED MAIZE HYBRID-3

A MAS-derived hybrid with high nutritional value (provitamin-A 5.70 ppm, lysine 3.52%, tryptophan 0.87%). It is recommended for cultivation in multiple agro-climatic zones.

Sowing Time: Recommended Area:

Average Yield (q/ha) 82.2 (NWPZ), 71.6 (PZ), 58.5 (CWZ) Kharif Maturity Time (Days): 92 days (NWPZ), 84 days (PZ) & 87 days (CWZ) NWPZ, PZ & CWZ





PUSA HQPM5 IMPROVED

Pusa HQPM5 Improved is a biofortified maize hybrid with high provitamin-A (6.77 ppm), lysine (4.25%), and tryptophan (0.94%) content. It is developed for improved nutritional quality and better yield potential. Average Yield (q/ha) 72.6 q/ha (NHZ), 75.1 q/ha (NWPZ), 53.5 q/ha (NEPZ), 71.2 q/ha (PZ), 51.2 q/ha (CWZ) Kharif season Sowing Time: Maturity Time (Days): 111 days (NHZ), 92 days (NWPZ), 88 days (NEPZ), 98 days

Recommended Area: (PZ), 91 days (CWZ) NHZ, NWPZ, NEPZ, PZ and CWZ





Mustard varieties ready for commercialization

PUSA MUSTARD 27

Featured Properties

Pusa Mustard 27 (PM 27) is a short duration, early-maturing brown seeded mustard variety developed by ICAR-IARI. This variety is tolerant to high temperature stress at germination stage making it suitable for early sowing conditions in diverse agro-climatic conditions.

Average Yield (q/ha) Plant Height Sowing Time Maturity Time (Days) Harvest time Recommended Area

15.35
195 cm
Second fortnight of September
118
Second fortnight of January
Zone-III; Uttar Pradesh, Uttrakhand, Madhya
Pradesh and Kota region of Rajasthan

PUSA MUSTARD 28

Featured Properties

Pusa Mustard 28 (PM 28) is a short duration, early-maturing brown seeded mustard variety developed by ICAR-IARI. This variety is tolerant to high temperature stress at germination stage making it suitable for early sowing conditions in diverse agro-climatic conditions.



Average Yield (q/ha)
Plant Height
Sowing Time
Maturity Time (Days)
Harvest time
Recommended Area

19.93
185 cm
Second fortnight of September
107
Second fortnight of January
Zone-II: Punjab, Haryana, Delhi, Jammu and Rajasthan

पूसा सरसाँ - 2 PM-28 (2012)

PUSA MUSTARD 29

Featured Properties

Pusa Mustard 29 (PM 29) is a brown-seeded, single zero mustard variety developed by ICAR-IARI. The erucic acid content in the oil of this variety is less than 2%. With superior oil quality, PM 30 is a reliable choice for mustard growing farmers aiming for enhanced yield and profitability.

Average Yield (q/ha) Plant Height Sowing Time Maturity Time (Days) Harvest time Recommended Area

21.7
232 cm
Second fortnight of october
143
Second fortnight of March
Zone-II: Punjab, Haryana, Delhi, Jammu and
Northern Rajasthan



PUSA MUSTARD 30

Featured Properties

Pusa Mustard 30 (PM 30) is a brown and bold-seeded, single zero mustard variety developed by ICAR-IARI. The erucic acid content in the oil of this variety is less than 2%. With superior oil quality PM 30 is a reliable choice for mustard growing farmers aiming for enhanced yield and profitability.

Average Yield (q/ha)	18.24
Plant Height	200 cm
Sowing Time	Second fortnight of Oct
Maturity Time (Days)	137
Harvest time	Second fortnight of March
Recommended Area	Zone-III; Uttar Pradesh, Uttrakhand, Madhya Pradesh
	and Eastern Rajasthan

PUSA DOUBLE ZERO MUSTARD 31

Featured Properties

Pusa Double Zero Mustard 31 (PDZM 31) is a canola-quality mustard variety developed by ICAR-IARI. It is yellow-seeded variety with <2% erucic acid in oil along with < 30 ppm glucosinolate in seed meal, making it suitable for health-conscious consumers and cattle feed industries. This variety has 40.6% oil content ensuring productivity and profitability for farmers.

Average Yield (q/ha)
Plant Height
Sowing Time
Maturity Time (Days)
Harvest time
Recommended Area

23.24 196 cm Second fortnight of Oct 144 Second fortnight of March Zone-II: Punjab, Haryana, Delhi, Jammu and Northern Rajasthan

PUSA MUSTARD 32

Featured Properties



Pusa Mustard 32 (PM 32) is a high yielding, brown seeded, single zero mustard variety developed by ICAR-IARI. The erucic acid content in the oil of this variety is less than 2%. With premium oil quality, PM 32 is a dependable option for mustard farmers seeking higher yields and increased profitability.

Average Yield (q/ha)**Plant Height** Sowing Time Maturity Time (Days) Harvest time **Recommended Area**

27.13 205 cm Second fortnight of Oct 145

Second fortnight of March

Zone-II; Rajasthan (Northern and Western Parts), Punjab, Haryana, Delhi, Western Uttar Pradesh, plains of Jammu and Kashmir and Himachal Pradesh

PUSA DOUBLE ZERO MUSTARD 33

Featured Properties

Pusa Double Zero Mustard 33 (PDZM 33) is a high yielding canolaquality mustard variety developed by ICAR-IARI. It is yellow seeded variety with <2% erucic acid in oil along with < 30 ppm glucosinolate in seed meal, making it suitable for health-conscious consumers and cattle feed industries.

Average Yield (q/ha) 26.44 **Plant Height** 205 cm Sowing Time Second fortnight of Oct Maturity Time (Days) 141 Second fortnight of March Harvest time Recommended Area Zone-II, Jammu, Punjab, Haryana, Delhi, and Northern Rajasthan. पी डी जेड एम-33 PDZM-33 (2021)



Vegetable varieties ready for commercialization

Brinjal cv Pusa Vaibhav

Major Characterstics:

The plant has medium-sized leaves with light purple mid-rib & veins and medium-sized purple flowers. The round, shiny purple fruits with a non-spiny green calyx and pistil scar. Borne solitarily and average fruit weight 250 g.

- Area of adaptation
- Breeding method
- Season
- Yield
- Potential yield

Punjab, UP, Bihar, Jharkhand Single plant selection Kharif 41 t/ha

58 t/ha



Brinjal cv Pusa Krishna

Major Characterstics:

The tall plants have non-spiny, erect branches and medium-sized leaves with sinuate margins and light purple pigmentation on the mid-rib and veins. The medium-sized purple flowers, shiny, oval-round fruits borne solitarily, average fruit weight 200 g.

- Area of adaptation
- Zone VII (Madhya Pradesh, Maharashtra)

Hybridization followed by selection

- Breeding method
- Season
- Yield
- Potential yield
- 49 t/ha • Days to first harvest 55-60 days from transplanting

Kharif

39 t/ha

Onion cv Pusa Riddhi

Major Characterstics:

The compact, flat-globe bulbs, dark red, with an equatorial diameter of 4.5–6.0 cm and a polar diameter of 4.8–6.3 cm. Weighing 70–100 g, pungent, rich in antioxidants (quercetin 105 mg/100g), and suitable for storage and export.

- Area of adaptation
- Breeding method
- Season
- Yield
- Potential yield
- Days to first harvest

NCT Delhi Selfing and massing

- Rabi
- 31 t/ha
- 35 t/ha
- 130-140 days after transplanting



<image>

Onion cv Pusa Shobha

Major Characterstics:

The compact, flat-globe brown bulbs, with an equatorial diameter of 4.5-6.0 cm and a polar diameter of 4.5-6.5 cm, weigh 70–100 g. High TSS (17 ± 2°Brix) and suitable for storage, drying, processing, & export.

- Area of adaptation
- Delhi, U.P., Haryana, Bihar and Punjab, Rajasthan and Gujarat, M.P., Chattishgarh and Odisha



- Breeding method
- Season
- Yield
- Potential yield
- 30 t/ha

25 t/ha

Rabi

• Days to first harvest 140-160 days after transplanting

Selfing and massing

Muskmelon cv Pusa Madhurima

Major Characterstics:

The weakly lobed leaves exhibit andromonoecious sex expression, ovate to obovate fruits (700–800 g) have a deeply pointed peduncle end and an intermediate blossom end. The creamish-yellow rind with green sutures encloses 3.4 cm thick, green, juicy, and crispy flesh with a medium musky flavor and high sweetness (TSS 12°Brix). The grooved fruit surface has moderate netting and becomes slipable at maturity.

- Area of adaptation
- Breeding method
- Season
- Yield
- Potential yield
- Days to first harvest
- Individual plant selection
- Spring summer
- 22 t/ha

NCT Delhi

- 25 t/ha
- vest 80 days after sowing



Muskmelon cv Pusa Hybrid 2

Major Characterstics:

It is an early maturing hybrid, fruits are flat-round with thick, green, juicy, and crispy flesh, a medium musky flavor, and high sweetness (TSS 12° Brix). It shows field tolerance to Fusarium wilt.

- Area of adaptation
- Season
- n Maharashtra & Madhya Pradesh
- Average fruit weight
- Potential yield
- Days to first harvest
- Spring summer 800 gram
- 221.7 q/ha
 - 221.7 y/114
 - 71 days after sowing



Cucumber cv Pusa Gynoecious Cucumber Hybrid-18

Major Characterstics:

An early-maturing hybrid produces attractive green fruits with mild whitish-green stripes from the blossom end and brownish-green blotchy patches near the stem end. The fruits are 18–20 cm long, with soft skin, crispy, tender flesh, and an average weight of 200–210 g.

• Area of adaptation Zone I [Jammu & Kashmir, Himachal Pradesh and Uttarakhand]

Heterosis breeding

Spring-summer and Kharif



- Breeding method
- Season
- Yield
- Potential yield
- 24 t/ha 30 t/ha
- Days to first harvest 40-45 days from sowing

Tomato cv Pusa Shakti

Major Characterstics:

It is an indeterminate, high-yielding, produces round, deep red fruit (avg. wt. 75g) with a thick pericarp (7.0 mm), 4.8° Brix TSS, and 6.0 mg/100g lycopene content. The variety is ready for harvest in 70-75 days.

Pedigree Method

- Area of adaptation
 - tion Zone V(Chhattisgarh, Odisha, Andhra Pradesh and Telangana)

Suitable for cultivation from October to

- Breeding method
- Season
- Yield
- Potential yield
- Days to first harvest 70-75 days after transplanting

450 q/ha

May



Carrot cv Pusa Prateek

Major Characterstics:

Root obtriangular & red in colour, self-cored, juicy, sweet, with an average length of 20-22 cm and a weight of 100–120 g. Rich in total carotenoids (6000 μ g/100g), lycopene (1550 μ g/100g), and TSS of 9.25°Brix.

• Area of adaptation Zone VI (Rajasthan, Gujarat, Haryana, Delhi), Zone VIII (Karnataka, Tamil Nadu, Kerala, Puducherry)

- Breeding method
- Season
- Yield
- Potential yield
- Days to harvest

Rabi (Winter season) 30 t/ha 33 t/ha 85-90 days after seed sowing

Selfing and massing



Palak cv All Green

Major Characterstics:

It is a high-yielding, dark green and superior in nutritional value. It is ideal for diverse climatic conditions and ensures a consistent harvest, making it a preferred choice for farmers and consumers alike.

- Area of adaptation
- Well-suited for diverse agro-climatic regions, primarily grown in North and Central India.
- Breeding method

Season

• Yield



- Suitable for sowing in September onward heavy yielder, 5-6 cuttings at 15-20 days interval
- Days to first harvest Around 30-40 days after sowing

Self

Methicv PEB

Major Characterstics:

An early-maturing variety known for its quick growth, uniform bunching, and high yield. It has dark green, tender leaves and is well-suited for multiple harvests, making it ideal for commercial cultivation and kitchen gardens.

- Area of adaptation Well-suited for diverse agro-climatic regions, primarily grown in North and Central India.
- Breeding method
- Season
- Yield
- Suitable for sowing in September to November
 - heavy yielder, 5-6 cuttings at 15-20 days interval
- Days to first harvest Around 30-40 days after sowing

Self



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CITRUS FRUIT VARIETIES READY FOR COMMERCIALIZATION



SWEET ORANGE CV. PUSA ROUND

Featured Properties

Attractive round and uniform bigger sized fruits. Average fruit weight (260-275g) and higher juice recovery (48.26%). High TSS (10.14 °Brix) with moderate acidity (0.92%). Yields about 3.5-fold higher than Jaffa and 2.4-fold higher than Valencia. Fruits are free from granulation disorder

- Area of adaptation: NCT of Delhi, Uttarakhand
- Breeding Method: Clonal Selection.
- Planting Distance: 5 m × 5 m.
- Harvesting: October-November
- Yield: 14-18 t/ha

SWEET ORANGE CV. PUSA SHARAD

Featured Properties

Fruits attractive, bigger sized (225-240g), round and highly juicy (50.12%). TSS (9.25 °Brix) and moderate acidity (0.77%). Yields 2.6 fold higher than Jaffa and 1.8 fold higher than Valencia. Fruits are free from granulation disorder

- Area of adaptation: NCT of Delhi, Uttarakhand
- Breeding Method: Clonal Selection.
- Planting Distance: 4 m × 4 m.
- Harvesting: March-April and August-September
- Yield: 12-16 t/ha



ACID LIME CV. PUSA ABHINAV (ALC-40)

Featured Properties

Attractive bright yellow round fruits. Medium sized fruit (38-40g), highly juicy (56.92%) with higher acidity (7.72%). Highly suitable for commercial cultivation as well as in Kitchen gardens. Fruits are harvested twice in a year.

- Area of adaptation: NCT of Delhi, NCR region and North India
- Breeding Method: Clonal Selection.
- Planting Distance: 4 m × 4 m.
- Harvesting: March-April and August-September
- Yield: 14-16 t/ha

ACID LIME CV. PUSA UDIT

Featured Properties

Round bright yellow medium sized fruits (40–42g). Peel thin (1.1 mm) and low seed content (8–10 seeds/fruit). Higher juice content (48.13%) and acidity (7.43%). Highly suitable for commercial cultivation as well as in Kitchen gardens. Fruits are harvested twice in a year.

- Area of adaptation: NCT of Delhi and NCR region
- Breeding Method: Clonal Selection.
- Planting Distance: 4 m × 4 m.
- Harvesting: August-September and February-March
- Yield: 14-16 t/ha

LEMON CV. PUSA LEMON-1

Featured Properties

Improved selection over Kagzi Kalan lemon. Average fruit weight (67.42g), high juice (42.88%) and acidity (5.93%). Matures 15-20 days earlier than Kagzi Kalan. Produces seedless fruits in solid block planting. Fruits are harvested twice in a year.

- Area of adaptation: NCT of Delhi and NCR region
- Breeding Method: Clonal Selection.
- Planting Distance: 4 m × 4 m.
- Harvesting: June-July and December-January
- Yield: 7.5 t/ha

PUMMELO CV. PUSA ARUN

Featured Properties

First seedless pummelo variety of country with high juice recovery (41.43%) and very low acidity (0.39%). Average fruit weight (496.95g) with medium thick peel (13.19 mm). It matures 15 days earlier than other sweet citrus varieties. Fruits are free from granulation disorder.

- Area of adaptation: NCT of Delhi.
- Breeding Method: Chance mutant.
- Planting Distance: 4 m × 4 m.
- Harvesting: First week of October
- Yield: 28.47 t/ha

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MANGO CV. PUSA MANOHARI

Featured Properties

Trees are semi-vigorous, medium-sized fruits (223 g) having greenish-yellow peel with red tinge on shoulders, yellowish-orange pulp, fibreless, good TSS (20.38%), acidity (0.27%), ascorbic acid (39.78 mg/100 g pulp) and β carotene content (9.73 mg per kg pulp). It has a field tolerance to mango malformation (10-15%).

- Area of Adaptation NCT of Delhi and NCR
- Breeding method Hybridization
- Planting Distance 6m × 6m
- Yield (fruit)
 - Second week of July
- Harvesting 15-17 t/ha

MANGO ROOTSTOCK: PUSA AAM MOOLVRANT-1 (PAM-1)

Featured Properties

- An open-pollinated chance seedling of polyembryonic collection, highly polyembryonic, fruits non-edible.
- · Highly compatible as rootstock with Pusa Arunima variety of mango.
- PAM-1 reduces >30% tree vigour of mango variety Pusa Arunima as compared to standard rootstock Kurukkan.
- Suitable rootstock for high-density orcharding of mango variety Pusa Arunima.

<u>आम का रूटस्टॉक: पूसा आम मूलवृंत-2 (पीएएम-2)</u>

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Featured Properties

- Open-pollinated zygotic seedling of Kurukkan, highly compatible as rootstock with mango varieties Pusa Arunima, Pusa Surya and Amrapali.
- Highly polyembryonic, fruits edible.
- PAM-2 rootstock reduces >20% tree vigour of mango varieties Pusa Surya and Amrapali and >50% vigour of Pusa Arunima as compared to standard Kurukkan rootstocks.
- Suitable rootstock for high density • orcharding of mango varieties Pusa Arunima, Pusa Surya and Amrapali

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PUSA KRISHI



MANGO VARIETIES READY FOR COMMERCIALIZATION

MANGO CV. MALLIKA

Featured Properties

It is a regular bearing variety. Average fruits weight about 350-400 g and have a deep yellow firm pulp, high TSS (240Brix), good flavour, uniform fruit size and moderate keeping quality (6 days). It is suitable for processing and export purpose.

- Area of Adaptation All over the country
- Breeding method
- Hybridization Planting Distance
- Yield (fruit)
- Harvesting
- $6m \times 6m$ Third week of July 16-18 t/ha

MANGO CV. AMRAPALI

Featured Properties

It is a regular bearing variety. Average fruits weight about 350-400 g and have a deep yellow firm pulp, high TSS (240Brix), good flavour, uniform fruit size and moderate keepina quality (6 days). It is suitable for processing and export purpose.

- Area of Adaptation
- Breeding method
- Planting Distance
- Yield (fruit)
- Harvesting
- All over the country **Hvbridization**
- 5m × 5m Fourth week of July
 - 14-16 t/ha



MANGO CV. PUSA ARUNIMA

Featured Properties

The fruits size is medium (250 g) having attractive red peel colour. It has medium total soluble solids (19.56%) and is rich in vitamin C (43.6 ma /100 a pup) and rich beta-carotene content, and has a good flavour with very good shelf-life (10 to 12 days) at room temperature after ripening. It is suitable for domestic market and has good acceptability in international markets.

- Area of Adaptation All over the country
- Breeding method Hybridization
- Planting Distance $6m \times 6m$
- Yield (fruit)
- Harvestina
- First week of August 15-18 t/ha



MANGO CV. PUSA PRATIBHA

Featured Properties

It is a regular-bearing variety, with an attractive fruit shape, bright-red peel and orange pulp. It has oblong, uniform-sized fruits and good sugar: acid blend. It has 7 to 8 days shelf-life at room temperature after ripening. It is suitable for the domestic as well as international markets.

- Area of Adaptation
- Breeding method Hybridization
- Planting Distance
- Yield (fruit)
- Harvesting
- Third week of July 13-15 t/ha

6m × 6m

All over the country

MANGO CV. PUSA SHRESHTH

Featured Properties

Trees are semi-vigorous, regular-bearing, with elongated fruits and an attractive red peel. The pulp is orange in colour, fibreless and firm when ripe, has a moderate sugar:acid blend, with the uniform fruit-size (228g). It contains good amounts of beta-carotene and ascorbic acid. It has 7 to 8 days shelf-life at room temperature after ripening.

12-16 t/ha

- Area of Adaptation All over the country Hybridization
- Breeding method
- 6m × 6m **Planting Distance** Third week of July
- Yield (fruit)
- Harvesting



MANGO CV. PUSA LALIMA

Featured Properties

The plants are semi-vigorous, regular-bearing, with attractive oblong fruits and bright-red peel on a yellowish green background, with an orange pulp and good sugar: acid blend. It has a 5 to 6-day shelf-life at room temperature after ripening.

- Area of Adaptation All over the country
- Breeding method
- Planting Distance
- Yield (fruit)
- Harvesting
- First week of June

Hybridization

6m × 6m

- 12-15 t/ha

MANGO CV. PUSA PEETAMBER

Featured Properties

The plants are semi-vigorous, regularbearing, with attractive oblong fruits and bright-red peel on a yellowish green background, with an orange pulp and good sugar: acid blend. It has a 5 to 6-day shelf-life at room temperature after ripening.

- Area of Adaptation All over the country
- Breeding method **Hybridization**
 - **Planting Distance** 6m × 6m

12-16 t/ha

- Yield (fruit) First week of July
- Harvesting

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MANGO CV. PUSA DEEPSHIKHA

Featured Properties

The plants are semi-dwarf, fruits oblong in shape, bright red peel with orange-yellow pulp, moderate TSS (18.7%), high pulp (70%), ascorbic acid (35.34 mg/100 g pulp) and β -carotene content (9.48 mg per kg pulp) and good shelflife (7 to 8 days) at room temperature. It is suitable for the domestic as well as international markets.

- Area of Adaptation NCT of Delhi and NCR regions
- Breeding method Hybridization 6m × 6m
- Planting Distance
- Yield (fruit)
- Second week of July Harvesting

13-15 t/ha



PAPAYA CV. PUSA DWARF

Featured Properties

Dioecious variety, plants are dwarf and precocious in nature. Fruiting height of 40 cm. Fruit size is small to medium with flesh colour is vellow to orange and TSS 6.5 to 8 Brix. Average fruit weight about 1.0 to 1.5 kg.

- Area of adaptation: All over the country
- Breeding Method: Selection
- Planting Distance: 1.8 m × 1.8 m.
- Harvesting: October April.
- Yield: 30-40 kg/plant

PAPAYA CV. PUSA NANHA

Featured Properties

Ultra dwarf dioecious variety. Fruiting height of 30 cm. Fruit size is small to medium with yellow coloured 3.0 cm thick flesh. TSS 9 Brix and each average fruit weight varies from 0.5 to 1.0 kg. Highly suitable for high density planting and kitchen gardening.

- Area of adaptation: All over the country
- Breeding Method: Mutation breeding
- Planting Distance: 1.5 m × 1.5 m.
- Harvesting: October February.
- Yield: 25-30 kg/plant



PAPAYA CV. PUSA PEET

Featured Properties

This variety has Semi-dwarf plant architecture with gynodioecious flowering. Fruit size is small to medium in size (972-1035 g). Early flowering (71 DAP), fruiting zone 107-118 cm. The total soluble solids 11.0 to 12.1 Brix with yellow pulp colour.

- Area of adaptation: NCT of Delhi and NCR regions
- Breeding Method: Open pollinated
- Planting Distance: 1.5 m × 1.5 m.
- Harvesting: October February.
- Yield: 35-40 kg/plant

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FRUIT VARIETIES READY FOR COMMERCIALIZATION

GUAVA CV. PUSA AARUSHI

Featured Properties

Guava hybrid with pink pulp, suitable for the high density planting, fruit medium size (200-240 g) with high TSS (12.5-13.6 °Brix), soft and less number of seeds, fruit with high Vitamin C (150.0 to 172.0 mg per 100 g pulp) and suitable for processina.

- Area of adaptation: National Capital territory of Delhi.
- Breeding Method: Hybridization.
- Planting Distance: 4 m × 4 m.
- Harvesting: July-August and November-December.
- Yield: 37–39 t/ha

GUAVA CV. PUSA PRATIKSHA

Featured Properties

Hybrid guava variety with white pulp, fruit medium size (175-180 g) green yellow with high TSS (11.3-13.6 °Brix), soft and less number of seeds, fruit with high Vitamin C (155.0 to 180.0 mg per 100 g pulp).

- Area of adaptation: National Capital territory of Delhi.
- Breeding Method: Hybridization.
- Planting Distance: 4 m × 4 m.
- Harvesting: Rainy season (July-August) and winter season (November - December).
- Yield: 40-43 t/ha



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GRAPE CV. PUSA TRISHAR

Featured Properties

Elongated loose bunch (455 g), greenish yellow seedless berries, suitable for table purpose with good TSS 17-18 °Brix.

- Area of adaptation: National Capital territory of Delhi.
- Breeding Method: Hybridization.
- Planting Distance: 2.5 m × 3 m.
- Harvesting: 1st week of June.
- Yield: 10–12 t/ha



GRAPE CV. PUSA ADITI

Featured Properties

Large bunch size (565 g), yellowish seedless berries, GA3 responsive good TSS 18.6 °Brix and suitable for table purpose.

- Area of adaptation: National Capital territory of Delhi, Uttar Pradesh, Chhattisgarh, Madhya Pradesh, Punjab, Rajasthan, Telangana, Andhra Pradesh, West Bengal, Mizoram, Jharkhand and Odisha.
- Breeding Method: Hybridization.
- Planting Distance: 2.5 m × 3 m.
- Harvesting: 1st week of June.
- Yield: 8-10 t/ha

GRAPE CV. PUSA SEEDLESS

Featured Properties

Bunches are semi-compact, large in size (320 g), uniformly round, seedless berries (2.4 g), greenish yellow in colour, GA3 responsive, TSS 21 °Brix and ideal TSS/acid ratio.

- Area of adaptation: National Capital Region of Delhi.
- Breeding Method: Clonal Selection.
- Planting Distance: 2.5 m × 3 m
- Harvesting: 2nd week of June
- Yield: 10-12 t/ha





GRAPE CV. PUSA PURPLE SEEDLESS

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Featured Properties

and Karnataka.

Yield: 10-12 t/ha

and suitable for table purpose.

Seedless hybrid, GA3 responsive, TSS 20 °Brix

 Area of adaptation: National Capital territory of Delhi, Punjab, Andhra Pradesh

Breeding Method: Hybridization.

• Harvesting: 1st to 2nd week of June.

• Planting Distance: 2.5 m × 3 m.

Featured Properties

High yield, purple berries bunch, berries seedless, GA3 responsive, high TSS 22 °Brix and suitable for table purpose.

- Area of adaptation: National Capital territory of Delhi.
- Breeding Method: Hybridization with in ovulo embryo rescue.
- Planting Distance: 2.5 m × 3 m.
- Harvesting: Last week of May.
- Yield: 8–10 t/ha



GRAPE CV. PUSA NAVRANG

Featured Properties

India's first teinturier (coloured peel, pulp and juice) hybrid and best suited for juice and wine making.

- Area of adaptation: National Capital Region of Delhi.
- Breeding Method: Hybridization.
- Planting Distance: 2.5 m × 3 m.
- Harvesting: 1st week of June .
- Yield: 10-12 t/ha

PUSA BAHAR



- Plant height (cm)-75-85
- Days to flowering-90-100
- Flower size(cm)-8-9
- Number of flowers/plants-50-60
- Flower yield (qt/ha)-250-300
- Flower Colour-Yellow (Group 9A)
- It is suitable for loose flowers, garden beds as well as potted flowering plants.







FLOWER VARIETIES READY FOR COMMERCIALIZATION

ROSE PUSA ALPANA

- Weight of single flower in fully open stage (g): 6.60
- Shelf Life (days): 2.00
- Flower/Plant weight(grams): 301.00
- Number of petals/flowers: 39.43
- This is a repeatedly blooming and flowering variety.
- The flowers are dense, pale pink in color (N-65A (RHS color chart)) and highly fragrant.

PUSA ARPITA

- Plant Height(cm): 90-100
- Plant spread (cm): 60-70
- Days of bud initiation: 95-105
- Days to flowering: 120-130
- Flowering period(days): 60-70
- Number of flowers/plants: 220-250
- Number of petals/flowers: 55-70
- Flower diameter: 4-5 cm
- Flower color-light orange
- Flower yield/hectare (quintal): 180-200





PUSA DEEP



- Plant height (cm): 55-65
- Flower size(cm): 4.0-4.20
- It is an early flowering variety of French Marigold which flowers 85-95 days after sowing.
- This variety produces an average of 80-90 flowers per plant resulting in high flower yield (18-20 t/ha).

PUSA RAJAT GLADIOLUS

- Plant height (cm): 143.66
- Number of shoots per corm: 3.11
- Days to flowering: 106.66
- Spike Length(cm): 127.99
- Length of rachis (cm): 82.00
- Number of flowers per spike: 20.55
- Floret diameter(cm): 10.16
- Stem thickness at base (cm): 2.74
- Number of corms per plant: 3.33
- Number of flowers that remain open at one time: 7.11
- Spike longevity (field life, in days): 27.44



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PUSA MANMOHAK

- Plant height (cm): 108.55
- Number of shoots per corm: 2.33
- Days to flowering: 104.66
- Spike length (cm): 92.00
- Rachis length (cm): 56.00
- Number of florets per spike: 19.99
- Floret diameter (cm): 10.57
- Stem thickness (cm): 1.90
- Number of corms per plant: 2.22
- No. of florets remain open at a time: 5.22
- Spike longevity (field life, in days): 12.00

CHRYSANTHEMUM PUSA CENTENARY

- Plant height (cm): 59.60
 - No. of branches: 5.20
 - No. of leaves/branch: 79.30
 - Leaf length (cm): 6.80
 - Length of petiole (cm): 1.40
 - No. of flowers: 65.30
 - Flower bud dia. (cm): 2.50
 - Flower dia. (cm): 9.80
 - Pedicle length (cm): 11.20
 - It takes 100-110 days to bloom and the blooms remain fresh for 20-24 days

PUSA SONA

- Plant height (cm): 26.4
- No. of leaves/branch: 45.7

- Flower dia. (cm): 3.06
- The variety is early flowering by at least 20 days when compared to other varieties



- Plant Height (cm): 41.46
- No. of branches: 8.47 •
- No. of leaves/Branch: 38.25
- Leaf length (cm): 11.49
- Leaf width (cm): 6.21
- Length of petiole (cm): 2.91
- No. of flowers: 112.98
- Flower bud dia. (cm): 1.06
- Flower dia. (cm): 6.05
- Pedicle length (cm): 10.73
- The flowers stay for a longer duration (40 days) under field conditions

- No. of branches: 25.9
- Leaf length (cm): 4.1
- Length of petiole (cm): 1.81
- No. of flowers: 374.6
- Flower bud dia. (cm): 0.65
- Pedicle length (cm): 4.6



PUSA GULDSATA

- Plant height (cm): 57.56
- No. of branches: 7.86
- No. of leaves/branch: 21.53
- Leaf length (cm): 8.20
- Length of petiole (cm): 3.62
- No. of flowers: 244.08
- Flower bud dia. (cm): 0.98
- Flower dia. (cm): 3.82
- Pedicle length (cm): 8.29
- The flowers stay for a longer duration (48 days) under field conditions.

• It takes 111 days to bloom.



MARIGOLD PUSA NARANGI GAINDA

- Plant height (cm): 70-80
- Foliage colour-Dark green
- Days to flowering: 125-130
- Flower diameter(cm): 7.0 8.0
- No. of flowers/plant: 60-70
- Flower yield-250-300 guintals/ha
- Flower colour-Orange Group (N 25 B)



Farm Machinery ready for commercilization



VARIABLE HEIGHT PLATFORM

This platform helps in greenhouse operations by allowing workers to adjust their working height easily. It significantly reduces labor requirements and enhances safety by providing a stable and adjustable work surface.

- Reduces labor effort by up to 60% in greenhouse operations.
- Covers a 2000 m² area with a single unit.
- Hydraulic pump with manual and power pack operation.
- Double-scissor lifting mechanism for adjustable height.
- Maximum lifting capacity of 120 kg, with a turning radius of 200 cm.
- Battery-powered, self-propelled, and equipped with a telescopic steering system.



ELECTRIC POLLINATOR FOR GREENHOUSE

Designed to improve pollination efficiency in greenhouse conditions, this device uses a pulsating air jet to facilitate effective pollination. It enhances fruit setting and increases tomato yield, overcoming the challenge of limited natural pollinators in greenhouses.

- Uses pulsating air jets for effective pollination.
- Achieves a pollination efficiency of 83.66%.
- Optimized with airflow at 1.99 m³/min and pulsation frequency of 23.50 Hz.
- Increases tomato yield to 19.52 kg per 5-meter plant row.
- Ensures consistent fruit setting and productivity in controlled environments.
- Reduces dependence on natural pollinators, making greenhouse cultivation more reliable.

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ROBOTIC PESTICIDE APPLICATOR FOR GREENHOUSE

This telerobotic system is designed for targeted pesticide application in greenhouses, reducing chemical exposure for operators and optimizing pesticide use. It is remotely operated and equipped with sensors to detect plant canopies, ensuring efficient and precise spraying while improving operator safety.

- Remote-controlled operation prevents direct chemical exposure.
- Uses ultrasonic sensors for plant detection and targeted spraying.
- Powered by a pair of 24V 42Ah DC batteries, ensuring reliable performance.
- Environmental sensors assess weather conditions for optimal operation.
- Reduces pesticide wastage by 24%, making it costeffective.

SENSOR-BASED SAFETY DEVICE FOR CHAFF CUTTER

This safety device prevents accidents caused by chaff cutters, which are widely used for cutting fodder. It integrates multiple sensors to detect human presence and instantly stops the machine, preventing serious injuries. It can be mounted on conventional chaff cutters and even runs on solar power for energy efficiency.

- Uses PIR and LDR sensors to detect human presence near the feed rollers.
- Automatically stops the machine within seconds to prevent accidents.
- Generates visual and audio alerts to warn operators.
- Equipped with temperature and humidity sensors for better detection.
- Solar-powered option ensures continuous and ecofriendly operation.
- Can be retrofitted to existing chaff cutters for enhanced safety.





ELECTRIC MULTI-TOOL CARRIER FOR GREENHOUSE

This battery-powered machine is designed for multiple greenhouse operations, including bed formation, spraying, pollination, and haulage. It improves efficiency and reduces labor dependency by automating essential tasks.

- Versatile equipment for multiple greenhouse functions.
- Can carry up to 400 kg while maintaining a speed of 20 km/h.
- Battery-operated for environmentally friendly operation.
- Has a minimum turning radius of 3.5m and ground clearance of 40cm.
- Reduces labor costs and increases productivity.
- Costs ₹2,12,000, with an operational cost of ₹206 per hour.



AQUA FERTI SEED DRILL

Utility: It makes possible the application of aqueous fertilizer alongside the seed which helps in better germination and initial development of crop. Machine is suitable for sowing Rabi crops like wheat gram and others.

Capacity: It is able to apply 8000-10000 litres of aqueous fertilizer per hectare in a controlled manner as per the need and recommendation. Field capacity of the machine is 0.25 ha / h

Savings: A 53% increase in germination and 35% increase in yield in wheat crop have been observed in comparison to control. Suitable for pulses also. Timely sowing of Rabi crops like wheat, gram, mustard etc in rain fed areas.

POWER INTEGRAL EQUIPMENT:

Utility: Powered Integral Equipment is a tri-wheel riding (mini-tractor) farm equipment for small type mechanization. The Powered Integral Equipment is in single chassis with better stability and steerablity, less turning radius and with hydraulic depth control system for tillage equipment. The Powered Integral Equipment is operated with an 8 hp diesel engine with power transmission system designed for both rotary and pull type equipment. It can perform multiple operations like shallow ploughing, interculture, weeding, sowing, rototilling, and irrigation water pumping with a single power source. **Capacity:**0.04-0.2 ha/h.



Savings: A solution for small farm mechanization. The technology facilities ownership of machinery in small land holding farmers for whom ownership of large machines and single function equipment is not economically feasible.



PUSA COMPOST TURNER CUM MIXER

Utility: Pusa Compost turner cum mixer facilitates thorough mixing of crop biomass including rice residues for quality compost production by windrow method. The machine causes turning and mixing of material in bulk with simultaneous application of inncoulum. This leads to improved aeration of compost material creating favourable conditions for microbial growth and material degradation. The turner-cum-mixer reduces the energy consumption per tonne of the material handled and is used for mass production of quality compost using windrow/pile method of composting.

Capacity: 1000 tonnes per hour

Savings:

- Pusa Compost turner cum mixer facilitates quality compost production in bulk.
- Compost preparation by manual method is labour-intensive. Also, handling cowdung manually is full of drudgery. The use of machines overcomes the labour problem and hastens the compost preparation process while imparting dignity to labour.
- The technology facilitates compost making in 60-80 days as compared to 6 month period required in traditional pit method.



MULTI-CROP PLANTER FOR VEGETABLE SEEDS

Utility: This is a manual seeding machine operated by single person. Planting of small and bold vegetables seeds with adjustable seed spacing. Seed spacings are changed by replacing the vertical rollers and changing the sprocket positions.

Capacity: This is a manual seeding machine operated by single person. The field capacity of the planter is 0.03 ha.h-1.

Savings: Precision planting of vegetable seeds in small plots, 15% saving in seed with 85-90% singulation.

PUSA MANUAL PADDY THRESHER

Utility: It is pedal operated manual thresher for threshing of paddy. It facilitated detachment of paddy seeds with the help of rotating drum and its spikes.

Capacity: Threshing capacity of the machine is 35-40 kg paddy per hour.

Savings: Overall weight of the machine is 26kg and machine can be operated by single person





PRE-GERMINATED PADDY SEEDER

Utility: Pre-germinated paddy seeder facilitates sowing of pre-germinated paddy seed in puddled field maintaining proper row to row spacing.

Capacity: Pusa Pre-germinated Paddy Seeder is available in two forms - three and six rows with per day field capacity of 0.2 ha and 0.4 ha, respectively.

Savings: It reduces the cost of transplanting and also helps in subsequent operation of weeding and inter-cultivation.

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Technologies ready for commercialization



PROPOLIS PURIFICATION TECHNOLOGY

The Process for Purification of Raw Propolis is a technology designed to purify dark brown or black raw propolis into a yellowish or brownish extract. This purified propolis, containing beneficial bioactive compounds like phenolics and terpenoids, can be directly used in health care, pharmaceuticals, cosmetics, veterinary products, and agrochemicals. The purification process ensures a high recovery rate (90-95%) and enhances the usability of propolis in various industries.

Key Features

- Efficient Purification Process: Removes unwanted materials from raw propolis, yielding a high-quality extract.
- High Recovery Rate: Achieves over 90-95% recovery of useful bioactive compounds.
- Rich in Bioactive Compounds: Contains terpenoids, phenolics, and flavonoids with antioxidant and health-protecting properties.
- Versatile Applications: Suitable for pharmaceuticals, cosmetics, functional foods, agrochemicals, and veterinary products.
- Market Potential: High demand in global markets, with the potential for Indian industries to tap into premium product sales.
- Lab-Scale Developed: Proven at the lab scale with potential for industrial upscaling.
- Safe and Long Shelf Life: Can be stored in airtight containers for up to 1-2 years without special handling requirements.
- Sustainable and Environmentally Friendly: No known environmental hazards, making it safe for largescale production.





GARLIC BASED PRODUCT AS BIONEMATICIDE

The Garlic-Based Bionematicide Technology is an eco-friendly and effective method for managing root-knot nematodes (Meloidogyne incognita), which cause significant damage to agricultural crops. This green technology involves extracting a non-polar fraction from garlic bulbs and formulating an emulsion concentrate that can be applied to the soil. The product is a natural alternative to synthetic nematicides, offering a safer and biodegradable solution for nematode control in crops like tomatoes.

Key Features

- Eco-Friendly & Biodegradable: A plant-based alternative to toxic synthetic nematicides.
- High Efficiency: Demonstrated 61-100% mortality of nematodes in 24 to 96 hours in lab studies.
- No Organic Solvents Used: Ensures a safe formulation for farmers and the environment.
- Field-Proven Effectiveness: Successfully tested on tomato plants in greenhouse and field conditions.
- Versatile Application: Can be applied via soil drenching or drip irrigation.
- Long Shelf Life: Stable for up to 2 years in proper storage conditions.
- Cost-Effective & Scalable: Can be manufactured with small investment, making it accessible for commercial use.
- Regulatory Compliance: A potential substitute for restricted or banned synthetic nematicides like carbofuran and methyl bromide.
- Safe for Non-Target Organisms: Unlike chemical nematicides, it does not harm humans, birds, fish, or bees.



SPEEDYSEED

The SpeedySeed Viability Kit is an innovative colorimetric testing method designed to differentiate between viable and non-viable seeds rapidly. Unlike traditional seed germination tests, which can take up to 14 days, this kit provides results within 4 to 8 hours, allowing farmers and seed companies to make quick and informed decisions about seed sowing and marketing.

Key Features of SpeedySeed Viability Kit:

- Fast and reliable seed viability testing within 4-8 hours.
- Works on the principle of seed respiration, detecting CO₂ levels to

Developed by Division of Seed Science and Technology ICAR-Indian Agricultural Research Institute New Delhi-110012

- distinguish live and dead seeds.
- User-friendly can be performed on-farm by farmers without requiring specialized equipment.
- Cost-effective and time-saving compared to conventional germination tests.
- Beneficial for farmers, seed companies, and the agricultural industry for ensuring seed quality before sowing or sale.
- High commercialization potential due to the universal need for seed viability assessment.

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Plant Protection Technologies ready for commercialization

EASY PCR KIT FOR MUNGBEAN YELLOWMOSAIC INDIA VIRUS (MYMIV)

The Diagnostic Kits for Begomoviruses Infecting Grain Legumes are PCRbased tools designed for the detection of Mungbean Yellow Mosaic India Virus (MYMIV) and Mungbean Yellow Mosaic Virus (MYMV), which cause yellow mosaic disease in mungbean, blackgram, cowpea, and soybean. Due to their genomic similarity, species-specific primers were developed for accurate identification, along with a common PCR kit for detecting either virus. These kits offer a fast, reliable, and cost-effective solution for breeders and seed companies to screen plant material and develop highyield, disease-resistant legume varieties. Each kit contains 50 PCR reactions, a manual, positive control, and negative control for accurate diagnosis.



Key Features & Benefits

- Species-Specific Detection: Uses novel primers for precise identification of MYMIV and MYMV.
- Common PCR Kit for Broad Detection: Allows generic screening of both viruses.
- Fast & Reliable Diagnosis: Enables early virus detection to prevent crop losses.
- User-Friendly & Cost-Effective: Requires standard PCR setup with simple protocols.
- Supports Resistance Breeding: Helps breeders develop virus-resistant, high-yielding varieties.



EASY PCR KIT FOR BHENDI YELLOW VEIN MOSAIC VIRUS (BYVMV)

The Diagnostic Kits for Begomoviruses Infecting Okra are PCR-based tools designed to detect Bhendi Yellow Vein Mosaic Virus (BYVMV) and Okra Enation Leaf Curl Virus (OELCV). These kits use species-specific primers and a duplex PCR kit for detecting mixed infections. They offer a quick, reliable, and cost-effective solution for breeders and seed companies to identify virus-free plant material, aiding in the development of high-yield, disease-resistant okra varieties. Each kit includes 50 PCR reactions, a manual, positive control, and negative control for accurate and easy diagnosis.

- Species-Specific Detection: Uses novel primers for accurate identification of BYVMV and OELCV.
- Duplex PCR for Mixed Infections: Detects both viruses in a single test, simplifying analysis.
- Easy-to-Use & Reliable: Each kit includes 50 PCR reactions, along with positive and negative controls.
- Rapid & Cost-Effective: Helps breeders and seed companies ensure virus-free plant material.
- Enhances Resistance Breeding: Aids in the selection of high-yield, virusresistant okra varieties

Pusa MeFly Kit

PUSA MeFly KIT" employs a distinctive and efficient approach to attract and eliminate male fruit flies of the Bactrocera speciesthrough the use of parapheromoneimpregnation, and is sufficient for entire season

Key Benefits:

- Fast & Accurate Detection: Identifies fruit fly infestation early, preventing major crop damage.
- User-Friendly & Field Deployable: Simple to use, requiring no specialized training.
- Eco-Friendly Solution: Reduces the need for excessive chemical pesticide application.
- Cost-Effective Pest Management: Helps farmers save on crop protection expenses.
- Scalable for Large-Scale Use: Suitable for commercial farms, orchards, and research stations.





Pusa Whitefly Attractant

Pusa Whitefly Attractant" is recommended for use in field/horticultural crops in the field and under protected cultivation conditions. It can be used as a monitoring and mass trapping device for effective control of whiteflies. Key Benefits:

- Boosts Trap Efficiency: Increases yellow sticky trap catch by 50-300%, improving whitefly monitoring.
- Eco-Friendly & Cost-Effective: Leaves no hazardous residue and reduces insecticide use.
- Field & Greenhouse Compatible: Effective in open fields and protected cultivation systems.
- Supports Integrated Pest Management (IPM): Can be combined with other pest control strategies.
- Ideal for Organic Farming: Helps control whiteflies without chemical pesticides.

Pusa CueFly Kit

PUSA CueFlyKIT" is an adequate approach to attract and eliminate male fruit flies (Zeugodacuscucurbitae) using parapheromone impregnation method and can be employed up to three times per season.

Key Benefits:

• Early Detection & Monitoring: Helps identify fruit fly infestations before they cause severe damage.



- Simple & Farmer-Friendly: Requires no specialized training for use.
- Eco-Friendly Solution: Supports integrated pest management (IPM) by reducing chemical pesticide dependency.
- Cost-Effective & Scalable: Saves farmers money on pest control and is suitable for large-scale use.
- Improves Crop Yield & Quality: Ensures healthier cucurbit crops by controlling pest populations efficiently.

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Post Harvest Technologies ready for commercialization

	Fa (Instant p Rich in Prot	st fea earl mil cein, Fibre,	I ST let Dalia) Iron, & Zinc	About the product Fast feast (Instant pearl mille Dalia) has been formulated from Pearl millet. It can b
	10	0% Natura Juten Free	4	consumed by all age people as healthy breakfast option, eas
White the state of the	fow to P our 150 ml arm milk to sast (Instant agar as per th ater (80 °C) acket.	(one cu four tables pearl mill te taste or with spices	e p) pre-boile ipoons of Fa iet Dalia) an 150 ml of h provided in t	to cook by adding just hot wate with salt and spices or hot mill with sugar. d Ingredients Peart mile Data, spices for salty flavour (black paper, cortander, salt, red fulli powder, dry manga powder, turmeric, cumin powder)
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HEALTHT BREAKPAST	Net Wt. – 1 Price (INR Nutritiona Serving size (1)) — ₹ 65 facts 0g) Energy	(Kcal) 361	<u>fssaf</u> Lk. No. 10017011004518 Storage Condition
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FAST FEAST: INSTANT PEARL MILLET DALIA

Fast Feast: Instant Pearl Millet Dalia is a ready-to-eat nutritious breakfast meal developed to provide a healthy and convenient food options for all the age groups. Made from pearl millet, a nutrient-dense grain, this product comes in both sweet and savory flavors, making it a versatile and easy-to-prepare meal. Key Features of the Product:

- Made from pearl millet, which is rich in protein (9-21%), fiber (8-13%), and essential nutrients like iron and zinc.
- Available in two flavors: Sweet (just add hot milk and sugar) and Savory (with a unique magic masala blend).
- Includes dehydrated vegetables like carrots and green peas for added nutrition and taste.
- Requires only hot water or hot milk for instant preparation.
- Ideal for breakfast, travel, and areas with limited cooking facilities.
- Shelf life of up to 6 months without rancidity, maintaining its nutritional quality.

HYDRO, HYDRO- THERMAL AND THERMAL NEAR INFRARED TREATMENTS TO REDUCE RANCIDITY IN PEARL MILLET FLOUR

- Pearl millet is a nutrient-dense grain with high protein (12-15%), iron (11.2 mg/100g), and zinc (5-7 mg/100g), along with a high PUFA content (70% of total lipids), making it a valuable source of energy and essential nutrients. However, its high-fat content leads to rancidity, limiting its shelf life and commercialization potential.
- Extends the shelf life of pearl millet flour up to 6 months by preventing rancidity.
- Uses hydro, hydrothermal, and near-infrared ray treatments without chemicals.
- Retains high nutritional value, including protein, iron, zinc, and PUFA.
- Enhances commercial viability for bakery, infant foods, beverages, and health drinks.
- Supports gluten-free, diabetic-friendly, and heart-healthy food markets.







DIVINE DOUGH – A FORTIFIED FLOUR FOR BALANCED NUTRITION

Divine Dough is a specially formulated flour developed using pearl millet as a

base, enriched with buckwheat, resistant starch from sweet potato, chickpea protein, and iron/zinc from barnyard millet. This nutrient-rich flour is designed to offer a low-glycemic index (GI) option, making it ideal for diabetic individuals and health-conscious consumers. The formulation ensures a balanced intake of macronutrients and micronutrients while maintaining a great taste and making fluffy chapattis with easy dough preparation.

- Key Features of Divine Dough:
- Fortified with essential nutrients, including quality protein, fiber, iron, and zinc.
- Low Glycemic Index (GI: 47), suitable for diabetics and all age groups.
- Chemical-free starch extraction from sweet potato, converted into resistant starch.
- Easy to prepare dough that forms soft, gluten-free chapattis.
- Rich in dietary fibre and resistant starch to aid digestion and gut health.
- A balanced mix of grains: Pearl millet, Buckwheat, resistant starch from sweet potato, Chickpea protein, and Barnyard millet.



WELLNESS CHOICE - PEARL MILLET FLOUR MIX (GLUTEN FREE) FOR SOFT AND FLUFFY DOUGH

- The Wellness Choice Pearl Millet Flour Mix is a gluten-free flour blend designed to create soft and fluffy dough for bakery applications like bread, pizza, burgers, and cakes. This formulation replaces gluten-based structure-building proteins with hydrocolloid-binding agents, ensuring excellent viscoelasticity, film-forming ability, and high water absorption capacity. The product is a healthier alternative for individuals with celiac disease, gluten intolerance, and those seeking nutritious options.
- Key Features & Benefits:
- 100% Gluten-Free: Suitable for individuals with celiac disease and gluten sensitivity.
- Soft & Elastic Dough: Achieves wheat-like texture without gluten.
- Nutrient-Rich: High in iron, zinc, and protein, making it a better alternative to refined flours.
- Versatile Applications: Ideal for making bread, cakes, pizza, and burger buns.
- Highly Acceptable Taste & Texture: Rated 9/10 in sensory evaluation tests.

PEARLY LOAF: 100% PEARL MILLET BREAD PRE-MIX. MILLET MAGIC IN EVERY SLICE

PearlyLoaf is a scientifically formulated gluten-free bread pre-mix made exclusively from whole pearl millet flour (Pennisetum glaucum). This innovative product addresses the challenges of gluten-free baking by incorporating hydrocolloids like Hydroxypropyl Methylcellulose (HPMC) to replicate the structural and functional properties of gluten. It ensures better texture, loaf volume, and overall bread quality, making it an excellent alternative to wheat bread for health-conscious consumers and individuals with gluten intolerance or celiac disease.

Key Features & Benefits:

- 100% Gluten-Free & Wheat-Free: Safe for individuals with celiac disease and gluten sensitivity.
- Rich in Dietary Fiber & Essential Nutrients: Pearl millet is a whole grain powerhouse with high fiber, vitamins, and minerals.
- Low Glycemic Index (GI: 68-69%) Helps manage blood sugar levels, making it ideal for diabetics.
- High Consumer Acceptance: Rated 8/9 on sensory evaluation, ensuring excellent taste and texture.
- Versatile & Easy to Use: Pre-mix format simplifies bread-making for home bakers and commercial bakeries.



Overview of Processing Strategies & % RS Increment

SMART FLOUR: RICH IN RETROGRADED RS TYPE III

Smart Flour is an innovative, health-focused flour enriched with Resistant Starch Type III (RS III) using a novel physico-enzymatic processing method. This specially developed flour is designed to support better blood sugar management, gut health, and overall well-being, making it an excellent dietary choice for diabetics and health-conscious consumers.



Key Features & Benefits:

- Rich in RS III (up to 300% increase) Enhances digestion, gut health, and blood sugar regulation.
- Ideal for Diabetics & Health Enthusiasts Low glycemic index, helping in diabetes management.
- Versatile Applications Can be used for chapattis, bread, and baked goods, replacing conventional rice flour.
- Optimized through Microwave, Autoclave & Enzyme Treatment Ensures better texture and nutritional quality.
- Cost-Effective & Scalable Developed using a low-cost, robust processing method, making it suitable for large-scale production.

Browntop Millet Pasta

MINOR MILLETS PASTA

- Minor Millets Pasta is a functional food innovation that utilizes kodo millet, browntop millet, and little millet to enhance pasta's nutritional value. These millets are high in fiber, micronutrients, and antioxidants, making them a healthier option than conventional wheat-based pasta.
- Key Features & Nutritional Benefits:
- Rich in Iron, Zinc, and Functional Compounds, offering superior nutritional value.
- Lower in Carbohydrates and Glycemic Index (GI: 25-32 vs. 33 in semolina pasta), making it suitable for diabetics.
- Malting Treatments Improve Digestibility, cooking properties, and extrusion quality.
- Acceptable taste and cooking quality at upto 60% millets incorporation level.
- Shelf Life: Long-lasting and ideal for commercial-scale production.

CALCIUM FORTIFIED PUMPKIN CRISP

Calcium Fortified Pumpkin Crisps are nutrient-enriched snacks developed using vaccum impregnation method to enhance calcium absorption. Pumpkin, being a rich source of carotenoids and fiber, was fortified with calcium lactate, making it a functional snack for bone health and nutrition.

Key Features & Nutritional Benefits:

- High Calcium Content (1428.33 mg/100g) Supports bone health and prevents osteoporosis.
- Rich in Total Carotenoids (7.85 mg/100g) Acts as an antioxidant for improved immunity.
- Retains a Crispy, Crunchy Texture while maintaining natural flavor.
- Vacuum Impregnation Ensures higher Calcium Absorption, making it a superior alternative to standard fried snacks.
- Shelf Life: Acceptable for 2 months at room temperature.





LENTIL CRACKERS

Lentil crackers are a nutritious, protein-rich snack developed using lentil (Lens esculenta) flour, which is packed with complex carbohydrates, dietary fiber, and essential micronutrients. These crispy, light, and flavorful crackers provide a healthier alternative to

conventional snacks and are ideal for health-conscious individuals, children, and those looking to reduce fat intake.

Key Benefits:

- High Protein Content: Ranges from 17.17% to 18.74%, making it a rich plant-based protein source.
- Rich in Essential Minerals: Higher levels of iron (51.58 μg/g), zinc (36.60 μg/g), and calcium (52.34 mg/100g).
- Fiber-Rich & Low-Fat: Lentil hulls enhance fiber content, promoting better digestion and gut health.
- Crunchy & Highly Acceptable: Incorporation of hull content gives an optimal texture and taste, preferred by sensory panelists.
- Also standardized on improved biofortified lentil varieties from IARI.





PEARL MILLETS COOKIES

Pearl Millet Cookies are fiber-rich, antioxidant-packed cookies developed using pearl millet flour, whole wheat flour, and powdered jaggery. This formulation enhances nutritional quality while reducing refined sugar content, making it an excellent option for healthconscious consumers.

Key Features & Nutritional Benefits:

- Higher Protein, Fiber, and Mineral Content compared to regular cookies.
- Replacement of Sugar with Jaggery (Up to 60%) increases antioxidant activity.
- Calcium (145.26 mg/100g) & Iron (3.48 mg/100g) content supports bone and blood health.
- Soft Texture & Good Sensory Appeal, ensuring consumer satisfaction.
- Shelf Life: 3 months in LDPE packets (50-micron thickness).

FINGERMILLET CRACKERS

Fingermillet Crackers are baked, low-fat snacks prepared with a blend of finger millet, chickpea flour, and wheat flour. These crackers are a healthier alternative to refined flour-based biscuits and cookies, making them ideal for tea-time snacks and weight management.

Key Features & Nutritional Benefits:

• Rich in Calcium, Antioxidants, and Fiber, supporting bone health and digestion.



- Low-Fat Content, making it suitable for weight-conscious consumers.
- Slow-Release Carbohydrates, providing steady energy levels without blood sugar spikes.
- Crispy and Highly Acceptable Texture, similar to commercial counter parts biscuits but more nutritious.
- Shelf Life: 4 months.

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Spirulina Technologies ready for commercialization



SPIRULINA ENRICHED PASTA

A nutrient-dense pasta formulation enriched with dried Spirulina powder or fresh Spirulina biomass, increasing its protein and mineral content significantly.

Key Benefits:

- Higher protein (+77.47%), iron (+296.99%), calcium (+57.27%), and flavonoids (+162.88%).
- Highly acceptable texture and taste.
- Best formulation: 12.5% dried or 20% fresh Spirulina for optimal nutritional and sensory quality.
- Long shelf life, making it a sustainable functional food product.

SPIRULINA ENRICHED COOKIES

Cookies fortified with dried Spirulina to improve protein, calcium, iron, and zinc levels, providing a nutritious alternative to regular cookies. **Key Benefits:**



- Protein content increased to 10.10%, compared to 5.68% in regular cookies.
- Higher calcium (+22.99 mg/100g), iron (+2.99 mg/100g), and zinc (+1.18 mg/100g).
- Highly acceptable texture and flavor.
- Vegan & sustainable protien source.
- Long self life.
- Low investment required.





SPIRULINA ENRICHED GRANOLA BAR

A nutrient-dense, high-energy snack, these granola bars provide a rich source of protein and minerals, making them an excellent choice for on-thego nutrition, sports diets, and rural nutrition programs. Key Benefits:

- Increased protein content by 14.34% compared to standard granola bars.
- Contains 57.69 mg calcium, 4.88 mg iron, and 1.62 mg zinc per 100g, boosting mineral intake.
- Maintains crunchy texture, extended shelf life, and consumer appeal upto 3 months.
- Ideal for health-conscious consumers, athletes, and meal replacement options.
- Health benefit of spruilina can be inherent in the most convient and acceptance form.

SPIRULINA FORTIFIED YOGHURT-FORMULATION

A protein-enriched probiotic dairy product, Spirulina-fortified yogurt enhances digestive health and overall nutrition, making it an ideal functional food for gut health and immunity support. Key Benefits:

- Protein content increased by 7.87%, improving nutritional value.
- High calcium (1.91 mg/100g), iron (2.74 µg/g), and zinc (0.068 µg/g), supporting bone and immune health.
- Smooth texture and natural yogurt taste, with high consumer acceptance.
- Perfect for probiotic and health-food market, offering a plant-based protein boost.



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