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SPICES VARIETIES & TECHNOLOGIES FOR FARMERS WELFARE (2024)

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Phone: 0495 2731954, Fax : 0495 2731954

email: aicrp.spices@icar.gov.in, aicrspices@gmail.com

Website : www.aicrps.res.in

Compiled and Edited by

S. Mukesh Sankar

C. N. Biju

Sharon Aravind

H. J. Akshitha

Nafid C

D. Prasath

Cover Design

A. Sudhakaran

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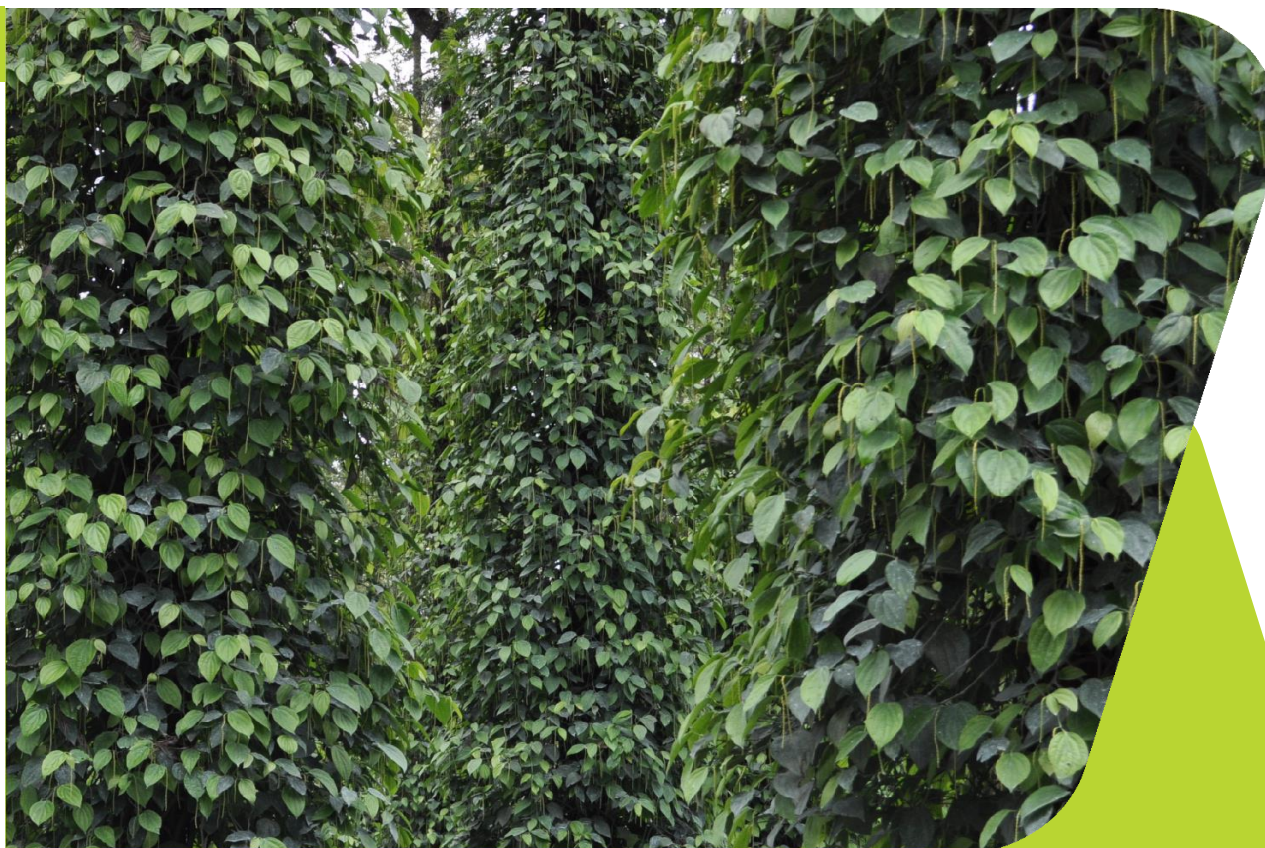
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SPICES **VARIETIES** 2024



BLACK PEPPER

IISR Thevam



Quality attributes

Piperine (%)	1.6
Oleoresin (%)	8.5
Essential oil (%)	3.1

Morphological characters

Leaf length/breadth (cm)	14.2/ 7.0
Leaf shape	Ovate-elliptic
Spike length (cm)	8.2

Spike composition

Bisexual (%)	96.9
Female (%)	2.06
Male (%)	1.03
Fruit set (%)	80
Number of fruits per spike	40
1000 fruit volume (cc)	120
1000 fruit weight (g)	155
Dry recovery (%)	35

Special characteristics

Tolerant to *Phytophthora* foot rot disease. Suited to high altitude areas and plains.

Specific recommendations

Use only clonal planting material. Strictly follow the package of practices recommended by ICAR-IISR.

Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Clonal selection from Thevanmundi
Areas of adoption	Suited to high altitude areas and plains of Kerala
Maturity group	Medium
Yield per vine	5.17 kg green pepper



BLACK PEPPER

IISR Girimunda

Quality attributes	
Piperine (%)	2.2
Oleoresin (%)	9.65
Essential oil (%)	3.4
Morphological characters	
Leaf length/breadth (cm)	12.9/8.6
Leaf shape	Ovate-elliptic
Spike length (cm)	9.2
Spike composition	
Bisexual (%)	94.3
Female (%)	3.27
Male (%)	3.38
Fruit set (%)	90
Number of fruits per spike	47
1000 fruit volume (cc)	115
1000 fruit weight (g)	112
Dry recovery (%)	32

Special characteristics
 Suited to high altitude areas, coffee and tea estates.

Specific recommendations
 Use only clonal planting material. Strictly follow the package of practices recommended by ICAR-IISR.

Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Hybrid of <i>Naranyakodi</i> x <i>Neelamundi</i>
Areas of adoption	Suited to high altitude hilly regions of Kerala
Maturity group	Medium
Yield per vine	6.14 kg green pepper



BLACK PEPPER

IISR Malabar Excel



Quality attributes

Piperine (%)	2.96
Oleoresin (%)	13.5
Essential oil (%)	3.2

Morphological characters

Leaf length/breadth (cm)	17/8
Leaf shape	Elliptic-lanceolate
Spike length (cm)	8.8

Spike composition

Bisexual (%)	96.8
Female (%)	2.48
Male (%)	0.62
Fruit set (%)	70
Number of fruits per spike	70
1000 fruit volume (cc)	100
1000 fruit weight (g)	103
Dry recovery (%)	34

Special characteristics

Suited to high altitude areas, coffee and tea estates.

Specific recommendations

Use only clonal planting material. Strictly follow the package of practices recommended by ICAR-IISR.

Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Hybrid of <i>Cholamundi</i> x <i>Panniyur 1</i>
Areas of adoption	Suited to high altitude hilly regions of Kerala
Maturity group	Medium
Yield per vine	2.78 kg green pepper

CARDAMOM

IISR Manushree



Quality attributes

Essential oil (%)	8.74
Dry recovery (%)	18.6
α -terpinyl acetate (%)	32.23
1, 8-cineole (%)	42.08

Morphological characters

Plant height (cm)	240-280
No. of tillers per clump	11-14
No. of panicles per clump	21-24
No. of flowers per panicle	120
No. of capsules per panicle	90-110

Reactions to biotic/abiotic factors

Drought	Tolerant
Thrips	Tolerant
Leaf blight	Moderately resistant

Special characteristics

Highly tolerant to moisture stress and produces 50% bold (8 mm and above) capsules.

Specific recommendations

Use of clonal planting material recommended. High production technology recommended by ICAR-IISR are to be followed.

Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Clonal selection from IC 349537
Areas of adoption	All cardamom-growing tracts of Kerala and Karnataka
Maturity group	Medium
Yield (per hectare)	Normal condition: 550 kg dry capsules Under moisture stress: 360 kg dry capsules
Potential yield	1325 kg dry capsules



CARDAMOM

IISR Kaveri

Quality attributes	
Essential oil (%)	9.08
Dry recovery (%)	19.0
α -terpinyl acetate (%)	31.14
1, 8-cineole (%)	48.05
Morphological characters	
Plant height (cm)	277.36
No. of tillers per clump	18-29
No. of panicles per clump	15-36
No. of flowers per panicle	110
No. of capsules per panicle	14-44
Reactions to biotic/abiotic factors	
Drought	Tolerant
Thrips	Resistant
Leaf blight	Resistant
Special characteristics	
Highly tolerant to moisture stress and produces 70% bold (8 mm and above) capsules.	
Specific recommendations	
Use of clonal planting material recommended. High production technology recommended by ICAR-IISR are to be followed.	

Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Clonal selection from IC 584058
Areas of adoption	All cardamom-growing tracts of Karnataka
Maturity group	Medium
Yield (per hectare)	Normal condition: 482 kg dry capsules Under moisture stress: 308 kg dry capsules
Potential yield	562.5 kg dry capsules

MANGO GINGER

IISR Amrit



Quality attributes

Essential oil (%)	0.32
Dry recovery (%)	20.7
Myrcene (%)	55.54
β pinene (%)	14.53

Morphological characters

Colour of aerial shoot	Green
Plant height (cm)	110-120
Leaf length/breadth (cm)	53.13/12.33
Number of tillers per clump	3.6
Number of leaves per tiller	7-8
Colour of rhizome core	Light yellow
Shape of rhizome	Straight
Colour of scale	Brown

Special characteristics

High yielding, bold and plumpy rhizomes having high essential oil, desirable mango flavour owing to its high myrcene (55.54%) and β pinene content (14.53%). Rhizome bold with light yellow core.

Specific recommendations

Recommended package of practices of ICAR-IISR/SAUs are to be followed.

Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Clonal selection from Acc. 347 (IC 348622)
Areas of adoption	Kerala, Bihar, Odisha, West Bengal, Chhattisgarh and Gujarat
Crop duration	220-240 days
Average yield (per ha)	31 tonnes fresh rhizomes
Potential yield (per ha)	45 tonnes fresh rhizomes



GINGER

OUAT Kalinga Ginger 1 (Subhada)

Quality attributes

Essential oil (%)	1.8
Dry recovery (%)	22.4
Oleoresin (%)	5.4
Fiber (%)	4.3

Morphological characters

Plant height (cm)	Short (54.4 - 68.3)
Leaf length/breadth (cm)	18.2/1.9
Number of tillers per clump	14.2
Number of leaves per tiller	15.6
Colour of rhizome core	Yellow core
Colour of scale	Brown

Reactions to biotic/abiotic factors

Rhizome rot	Moderately resistant
Bacterial wilt	Resistant
Shoot borer	Moderately resistant

Special characteristics

Plumpy cylindrical rhizome having medium bold fingers and dark glazy skin, milky yellow core colour. Can be used as vegetable ginger.

Specific recommendations

Use only disease-free clonal planting material. Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, High Altitude Research Station (OUAT), Pottangi, Odisha
Pedigree	γ-ray mutagenesis and clonal selection from Rio-de-Janeiro
Areas of adoption	Both hills and plains of Odisha
Crop duration	220 days (as vegetable ginger: 160 days)
Average yield (per ha)	20 tonnes fresh rhizomes
Potential yield (per ha)	29.1 tonnes fresh rhizomes



GINGER

OUAT Kalinga Ginger 2 (Sourabh)

Quality attributes	
Essential oil (%)	1.6
Dry recovery (%)	21.7
Oleoresin (%)	4.8
Fiber (%)	3.5
Morphological characters	
Plant height (cm)	Short (59.4)
Leaf length/breadth (cm)	18.2/2
Number of tillers per clump	12.2
Number of leaves per tiller	15
Colour of rhizome core	Milky yellow
Colour of scale	Brown
Reactions to biotic/abiotic factors	
Rhizome rot	Moderately resistant
Bacterial wilt	Resistant
Shoot borer	Moderately resistant
Special characteristics	
Plumpy cylindrical rhizome having medium bold finger with shortened internodes and dark glazy skin and brown scale leaves.	
Specific recommendations	
Use only disease-free clonal planting material. Recommended POPs of SAU are to be followed.	

Breeding centre	AICRP on Spices, High Altitude Research Station (OUAT), Pottangi, Odisha
Pedigree	Sodium azide-based mutagenesis of Rio-de-Janeiro followed by clonal selection
Areas of adoption	Both hills and plains of Odisha
Crop duration	218 days
Average yield (per ha)	18.8 tonnes fresh rhizomes
Potential yield (per ha)	24.9 tonnes fresh rhizomes





GINGER

OUAT Kalinga Ginger 3 (Prayag)

Quality attributes

Essential oil (%)	1.5
Dry recovery (%)	20.9
Oleoresin (%)	3.9
Fiber (%)	5.5

Morphological characters

Plant height (cm)	Short (30.8 to 68)
Leaf length/breadth (cm)	18.2/2
Number of tillers per clump	8.8
Number of leaves per tiller	16
Colour of rhizome core	Bluish yellow
Colour of scale	Brown

Reactions to biotic/abiotic factors

Rhizome rot	Tolerant
Bacterial wilt	Resistant
Shoot borer	Moderately resistant

Special characteristics

Plumpy cylindrical rhizome having medium bold finger with shortened internodes and dark glazy skin and brown scale leaves. Can be used as vegetable ginger.

Specific recommendations

Use only disease-free clonal planting material. Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, High Altitude Research Station (OUAT), Pottangi, Odisha
Pedigree	Clonal selection (PGS-121) from Kunduli Local
Areas of adoption	Both hills and plains of Odisha
Crop duration	225 days (as vegetable ginger: 160 days)
Average yield (per ha)	13.7 tonnes fresh rhizomes
Potential yield (per ha)	18.2 tonnes fresh rhizomes



TURMERIC

OUAT Kalinga Turmeric 1 (Surangi)

Quality attributes

Essential oil (%)	2.1
Dry recovery (%)	28
Curcumin (%)	6.0
Oleoresin (%)	8.5

Morphological characters

Plant height (cm)	84.2
Number of tillers per clump	3
Number of leaves per clump	21.6
Yield of rhizomes/clump (g)	492
Number of mother rhizomes	1
Weight of mother rhizome (g)	36.4
Number of primaries	26
Weight of primaries (g)	182
Number of secondaries	36
Weight of secondaries (g)	94
Rhizome colour	Deep orange yellow

Reactions to biotic/abiotic factors

Rhizome rot	Resistant
Leaf blotch	Resistant
Shoot borer	Moderately resistant

Special characteristics

High yielding, short duration variety, performs well under early and late planting conditions. Produces orange-yellow powder, with wider adaptability

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, High Altitude Research Station (OUAT), Pottangi, Odisha
Pedigree	Clonal selection (PTS-59) from T Sunder
Areas of adoption	Both hills and plains of Odisha
Crop duration	200 days
Average yield (per ha)	23.4 tonnes fresh rhizomes
Potential yield (per ha)	44 tonnes fresh rhizomes



TURMERIC

OUAT Kalinga Turmeric 2 (Gourabh)

Quality attributes

Essential oil (%)	3.9
Dry recovery (%)	24.3
Curcumin (%)	5.9
Oleoresin (%)	13.26

Morphological characters

Plant height (cm)	110
Number of tillers per clump	4
Number of leaves per clump	21.6
Yield of rhizomes/clump (g)	450
Number of mother rhizomes	2
Weight of mother rhizome (g)	40
Number of primaries	26
Weight of primaries (g)	182.4
Number of secondaries	30
Weight of secondaries (g)	94
Rhizome colour	Deep orange yellow

Reactions to biotic/abiotic factors

Rhizome rot	Resistant
Leaf blotch	Resistant
Shoot borer	Moderately resistant

Special characteristics

Medium duration variety with high curcumin content, good plumpy bold long dry fingers. Resistant to rhizome rot, leaf blotch and scale insect under natural field condition

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, High Altitude Research Station (OUAT), Pottangi, Odisha
Pedigree	Clonal selection from Daringibadi local
Areas of adoption	Both hills and plains of Odisha
Crop duration	218 days
Average yield (per ha)	23.1 tonnes fresh rhizomes
Potential yield (per ha)	34 tonnes fresh rhizomes



TURMERIC

Chhattisgarh Haldi 2 (IT 10) (Shri Haldi)

Quality attributes

Essential oil (%)	6.3
Dry recovery (%)	21.6-27.0
Curcumin (%)	5.9
Oleoresin (%)	11.54

Morphological characters

Plant height (cm)	119.8 (82.2 -140)
Number of tillers per clump	3-5
Number of leaves per clump	18
Yield of rhizomes/clump (g)	140
Number of mother rhizomes	1
Weight of mother rhizome (g)	20
Number of primaries	5-6
Weight of primaries (g)	182.4
Number of secondaries	7-8
Weight of secondaries (g)	94
Rhizome colour	Yellow

Reactions to biotic/abiotic factors

Rhizome rot	Moderately resistant
Leaf blotch	Moderately resistant
Shoot borer	Moderately resistant

Special characteristics

High-yielding, medium duration variety with high curcumin content with yellow powder, good bold long dry fingers. Moderately resistant to leaf blotch, leaf spot and shoot borer under natural field condition.

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, College of Agriculture and Research Station (CARS), Raigarh, Chhattisgarh
Pedigree	Clonal selection (IT 10) from acc. <i>RTS 10</i>
Areas of adoption	Both rainfed and irrigated areas of Chhattisgarh
Crop duration	215-220 days
Average yield (per ha)	23.6 tonnes fresh rhizomes
Potential yield (per ha)	32.3 tonnes fresh rhizomes

TURMERIC

Narendra Haldi 4 (NDH-11)



Quality attributes

Essential oil (%)	6.9-7.1
Dry recovery (%)	20.9
Curcumin (%)	6.69-6.67%
Oleoresin (%)	11.10-13.00

Morphological characters

Plant height (cm)	105-110
Number of tillers per clump	2-3
Rhizome colour	Deep pale yellow

Reactions to biotic/abiotic factors

Rhizome rot	Moderately resistant
Leaf blotch	Moderately resistant
Leaf spot	Moderately resistant

Special characteristics

Bold primary and secondary finger with dark brown colour. Dark pale yellow turmeric powder colour.

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, A.N.D. University of Agrl. & Tech., Kumarganj, Uttar Pradesh
Pedigree	Clonal selection from local collection from Ayodhya District of Uttar Pradesh
Areas of adoption	Both rainfed & Irrigated areas of U.P.
Crop duration	235-240 days
Average yield (per ha)	31.3 tonnes fresh rhizomes
Potential yield (per ha)	43.4 tonnes fresh rhizomes



TURMERIC

PDKV-Waigaon (GDT-06-02)

Quality attributes

Essential oil (%)	6.3
Dry recovery (%)	21.0
Curcumin (%)	6.2-6.5
Oleo-resin (%)	14.2

Morphological characters

Plant height (cm)	90-100
Number of tillers per clump	2-3
Number of leaves per clump	12.41
Yield of rhizomes/clump (g)	296
Number of mother rhizomes	1
Weight of mother rhizome (g)	60
Number of primaries	6-8
Weight of primaries (g)	105.9
Number of secondaries	10-12
Weight of secondaries (g)	130
Rhizome colour	Deep orange

Reactions to biotic/abiotic factors

Rhizome rot	Resistant
Leaf blotch	Resistant
Rhizome scales	Moderately resistant

Special characteristics

High yielding, early duration variety with very high curcumin content with deep yellow powder, good bold long dry fingers. Moderately resistant to leaf blotch, leaf spot and shoot borer under natural field condition.

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra
Pedigree	Clonal selection from Waigaon turmeric
Areas of adoption	Both rainfed and irrigated areas of Maharashtra
Crop duration	180-200 days
Average yield (per ha)	27.6 tonnes fresh rhizomes
Potential yield (per ha)	34.5 tonnes fresh rhizomes

NUTMEG

Kerala Shree (Acc No.A9-69)

Quality attributes

Nut oil (%)	5.9
Mace oil (%)	7.5
Nut recovery (%)	70
Mace recovery (%)	35
Oleoresin in nut (%)	9.1
Oleoresin in mace (%)	-
Butter in nut (%)	24.9

Morphological characters

Flowering nature	Profuse
Time taken for 1 st flowering	4 years after planting
Average yield per tree	2000 fruits, 4.2 kg mace, 21 kg dry nut
Colour of mace	Dark red
Colour of seed	Brownish black
Shape of fruit	Elongate/Oblong
Size of nut	Bold

Reactions to biotic/abiotic factors

Low incidence of fruit rot caused by *Diplodia* sp.

Special characteristics

First nutmeg variety developed by farmer's participatory breeding. The mace and nut oils are rich in sabinene and myrcene with low myristicin and elemicin.

Specific recommendations

Recommended package of practices of IISR/ SAU are to be followed



Breeding centre	ICAR-Indian Institute of Spices Research, Kozhikode, Kerala
Pedigree	Selection from the seedlings from elite mother tree from Burliar, Nilgiris, Tamil Nadu
Areas of adoption	Kerala, Tamil Nadu, and other nutmeg-growing areas of India
Crop duration	6 years for first harvest
Average yield (per tree)	1512 kg dry mace: 7560 kg dry nuts

NUTMEG

Konkan Sankuytaka



Quality attributes

Nut oil (%)	27
Mace oil (%)	17.75
Nut recovery (%)	33
Mace recovery (%)	2.85
Oleoresin in nut (%)	--
Oleoresin in mace (%)	--
Butter in nut (%)	--

Morphological characters

Flowering nature	Monoecious
Time taken for 1 st flowering	6 years
Average yield per tree	500 fruits, 1.07 kg mace, 9.2 kg dry nut
Colour of mace	Dark red
Colour of seed	Brownish black
Shape of fruit	Ovate
Size of nut	Bold

Reactions to biotic/abiotic factors

Low incidence of dieback, shot hole and fruit rot diseases and very low incidence of scale insect pests.

Special characteristics

First nutmeg variety of monoecious nature bearing bold nuts (9.20 g) and mace weight (1.07 g).

Specific recommendations

Recommended package of practices of IISR/ SAU are to be followed.



Breeding centre	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Maharashtra
Pedigree	Selection of seedling progeny of Acc. No. A 9/20 received from ICAR-IISR, Kozhikode
Areas of adoption	Konkan region of Maharashtra
Crop duration	6 years for first harvest
Average yield (per tree)	192.6 kg dry mace; 1656 kg dry nuts

NUTMEG

Goa Jayphal-1 (Tamsuli-1)

Quality attributes

Nut oil (%)	9.0
Mace oil (%)	6.0
Nut recovery (%)	71.2
Mace recovery (%)	36.8
Oleoresin in nut (%)	25.77
Oleoresin in mace (%)	16.59
Butter in nut (%)	30.8

Morphological characters

Flowering nature	Female-dominated monoecious flower
Time taken for 1 st flowering	6 years
Average yield per tree	1450 fruits, 4.6 kg mace, 12 kg dry nut
Colour of mace	Dark red
Colour of seed	Brownish shining black
Size of nut	Bold (9.88 g)

Reactions to biotic/abiotic factors

Not noticed

Special characteristics

A high yielding, farmer's variety selected for its unique features like jumbo seed size, higher dry recovery and thick reticulate (entire) mace. variety with long flowering and fruiting season

Specific recommendations

Recommended package of practices of SAU are to be followed.



Breeding centre	ICAR-Central Coastal Agricultural Research Institute, Ela, Old Goa
Pedigree	Clonal selection from elite trees
Areas of adoption	All nutmeg-growing areas of Goa
Crop duration	6 years for first harvest
Average yield (per tree)	4.6-4.8 kg dry mace; 12-12.6 kg dry nuts



NUTMEG

Goa Jayphal-2 (NMD-2)

Quality attributes

Nut oil (%)	10.0
Mace oil (%)	12.0
Nut recovery (%)	71.2
Mace recovery (%)	35.8
Oleoresin in nut (%)	26.8
Oleoresin in mace (%)	19.94
Butter in nut (%)	32.2

Morphological characters

Flowering nature	Female-dominated monoecious flower.
Time taken for 1 st flowering	1880 fruits, 2.5 kg mace, 12 kg dry nut
Average yield per tree	Dark red
Colour of mace	Brownish shining black
Colour of seed	Medium bold (6.94g)
Size of nut	1880 fruits, 2.5 kg mace, 12 kg dry nut

Reactions to biotic/abiotic factors

Not noticed

Special characteristics

High yielding variety selected for its unique quality features like high oil, oleoresin content and nut butter yields. Variety with long flowering and fruiting season.

Specific recommendations

Recommended package of practices of SAU are to be followed

Breeding centre	ICAR-Central Coastal Agricultural Research Institute, Ela, Old Goa
Pedigree	Clonal selection from elite trees
Areas of adoption	All nutmeg-growing areas of Goa
Crop duration	6 years for first harvest
Average yield (per tree)	2.3-2.5 kg dry mace 11.5-12 kg dry nuts



CINNAMON

Goa Dalchini-1 (GT-C-3)

Quality attributes

Bark oil (%)	2.66
Leaf oil (%)	3.1
Bark oleoresin (%)	8
Bark recovery (%)	39.8
Cinnamaldehyde in bark oil (%)	73
Cinnamaldehyde in leaf oil (%)	15
Eugenol in bark oil (%)	7.03

Morphological characters

Height of tree at 5 years (m)	4.8
Trunk girth at 5 years (cm)	41
Colour of young flushes	Young leaves are red and turn to deep green on maturity
Leaf length/breadth (cm)	13.42/6.2
Nature of flowering	Terminal and axillary
Colour of dark bark	Light brown

Reactions to biotic/abiotic factors

No major pest or disease attack noticed.

Special characteristics

A selection shortlisted for better quality of bark and also higher leaf essential oil contents. Higher cinnamaldehyde and oleoresin in bark.

Specific recommendations

Recommended package of practices of SAU are to be followed.

Breeding centre	ICAR-Central Coastal Agricultural Research Institute, Ela, Old Goa
Pedigree	Seedling selection from Indian true cinnamon progeny
Areas of adoption	All cinnamon growing areas of Goa
Crop duration	4 years for first harvest
Average yield (per tree)	275-325 g quills

CASSIA

Goa Dalchini-1 (GT-C-3)



Quality attributes

Bark oil (%)	2.4
Bark thickness (cm)	0.23
Coumarin content	19.9 mg/kg
Bark recovery (%)	50

Morphological characters

Height of tree at 5 years (m)	3.28
Trunk girth at 5 years (cm)	32
Colour of young flushes	Olive green with reddish tinge at center of lamina
Leaf length/breadth (cm)	19.25/5.7
Nature of flowering	Terminal and axillary
Colour of dark bark	Dark brown

Reactions to biotic/abiotic factors

Low incidence of leaf spot and pink diseases are observed.

Special characteristics

First variety of cassia characterized by low coumarin content.

Specific recommendations

Recommended package of practices of IISR/ SAU are to be followed.

Breeding centre	AICRP on Spices, Dapoli, Maharashtra and ICAR-Indian Institute of Spices Research, Kerala
Pedigree	Clonal selection from Acc. D1 belongs to ICAR-IISR, Kozhikode collection (IC 370423).
Areas of adoption	Maharashtra, Kerala, and Tamil Nadu
Crop duration	4 years for first harvest
Average yield (pertree)	108 g dry quills

LEAFY CORIANDER

Co-5 (CS-38)



Quality attributes

Leaf essential oil content (%)	0.03
Seed essential oil content (%)	0.65
Leaf linalool content (%)	73
Geranyl acetate (%)	12.99
Ascorbic acid content (mg/100 g)	116
Leaf iron content (mg/100 g)	1.18
Leaf calcium content (mg/100 g)	138
Leaf protein content (mg/100 g)	3.13

Morphological characters

Days taken for germination (days)	6.33
Number of leaves per plant	6.5
Plant height (cm)	22.6
Number of primary branches	6.2
Number of secondary branches	15.49

Reactions to biotic/abiotic factors

No major pest or disease attack noticed as crop is harvested before disease incidence.

Special characteristics

Variety suitable for leafy purpose suitable for multi-cut or multi-clipping (1-2cut possible). Late bolting type of 60 days with an extended vegetative phase of 40 days grows vigorously, leaves are attractive, good aroma and keeping quality.

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	Horticultural College and Research Institute, Coimbatore, Tamil Nadu
Pedigree	Selection from leafy type germplasm collected from Jobner, Rajasthan
Areas of adoption	Tamil Nadu; both irrigated and rainfed
Crop duration	35-55 days
Average yield (per ha)	5457 kg
Potential yield (per ha)	10,000 kg

CORIANDER

Krishnaprabha Varadevi 2 (DCC-81)

Quality attributes

Essential content (%)	0.28
Linalool content (%)	--

Morphological characters

Growth habit	Erect and short stature
Plant height (cm)	62
Number of primary branches	4.4
Number of secondary branches	--
Number of umbel per plant	33.4
Number of umbellet per umbel	6
Number of seeds per umbel	16
1000 seed weight (g)	15.5

Reactions to biotic/abiotic factors

Powdery mildew	Moderate resistant
Aphids	Moderately resistant

Special characteristics

High seed yielding, more essential oil containing, bold and brownish yellow coloured seeds with good aroma. Withstand drought (moderately).

Specific recommendations

Recommended POPs of SAU are to be followed.



Breeding centre	University of Hort. Sci., Bagalkot, Horticulture Research and Extension Centre, Devihosur, Karnataka
Pedigree	Selection from local collection of Coimbatore
Areas of adoption	Karnataka
Crop duration	Medium, 95 days (90-100 days)
Average yield (per ha)	900 kg
Potential yield (per ha)	1216 kg



FENNEL

RF- 289

(Karan Saunf-I)/(UF- 289)

Crop duration	Medium, 115 days (140-150 days)
Average yield (perha)	1934 kg
Potential yield (perha)	2881 kg
Quality attributes	
Essential content (%)	2.18
Morphological characters	
Growth habit	Erect and medium tall stature
Plant height (cm)	140 cm (134-150 cm)
Number of primary branches	9.51
Number of secondary branches	2.62
Number of umbel per plant	21.58
Number of umbellet per umbel	27.55
Number of seeds per umbel	802
1000 seed weight (g)	7.23
Reactions to biotic/abiotic factors	
Leaf Blight	Moderate resistant

Special characteristics
 RF-289 has high seed and oil yield potential, with erect and medium-tall plant stature. Express moderate resistance to Ramularia blight disease

Specific recommendations
 Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, S.K.N. College of Agriculture, (SKN Agriculture University) Jobner, Rajasthan
Pedigree	Recurrent selection on half-sib progeny derived from UF-186 local collection of Todaraisingh, Tonk, Rajasthan
Areas of adoption	Rajasthan, Gujarat, Uttar Pradesh Bihar, Madhya Pradesh and Haryana





FENNEL

RF-290 (UF-290)

Crop duration	Medium. 108.78 days (140-150 days)
Average yield (per ha)	2065 kg
Potential yield (per ha)	4866 kg
Quality attributes	
Essential content (%)	1.85
Morphological characters	
Growth habit	Erect and medium tall stature
Plant height (cm)	145.6 cm (121-185cm)
Number of primary branches	9.47
Number of secondary branches	2.78
Number of umbel per plant	29.42
Number of umbellet per umbel	23.47
Number of seeds per umbel	507.13
1000 seed weight (g)	8.81
Reactions to biotic/abiotic factors	
Leaf Blight	Resistant
Special characteristics	
RF-290 has high seed and oil yield potential, with erect and medium-tall plant stature. Express resistance to Ramularia blight disease.	
Specific recommendations	
Recommended POPs of SAU are to be followed.	

Breeding centre	AICRP on Spices, S.K.N. College of Agriculture, (SKN Agriculture University) Jobner, Rajasthan
Pedigree	Recurrent selection on half-sib progeny derived from local collection of Todaraisingh, Tonk, Rajasthan
Areas of adoption	Rajasthan, Gujarat, Uttar Pradesh, Bihar, and Haryana

FENUGREEK

GM-4

(Supriya/ NFG-202)



Quality attributes

Total protein content (%)	29.75
Crude fibre content (%)	22.01
Diosgenin content (mg/100g)	317

Morphological characters

Growth habit	Erect & indeterminate
Plant height (cm)	60.26 cm (29.67-80.1 cm)
Number of primary branches	5.95
Number of secondary branches	2.8
Number of pods per plant	39.22
Pod length (cm)	11.65
Number of seeds per pod	15.78
1000 seed weight (g)	17.39

Reactions to biotic/abiotic factors

Powdery mildew	Moderately resistant
Root rot disease	Moderately resistant

Special characteristics

High yielding, indeterminate, early maturing variety with strongly curved medium pods, suitable for dense planting. Express moderately resistant to powdery mildew as well as root rot diseases.

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, College of Agriculture, Navsari Agricultural University, Navsari, Gujarat
Pedigree	Pure line selection (13NFGPOP-3-1-1-1)
Areas of adoption	Fenugreek growing areas of Gujarat
Crop duration	Early: 94.86 days (89.33-99.33 days)
Average yield (per ha)	1538 kg
Potential yield (per ha)	2787 kg

FENUGREEK

Krishnapraba Devimenthi (DFC-21)

Quality attributes

Total protein content (%)	29.56
Crude fiber content (%)	22.01
Diosgenin content (mg/100g seed)	--

Morphological characters

Growth habit	Semi-erect and determinate
Plant height (cm)	39 cm (29.67-80.1 cm)
Number of primary branches	11.9
Number of secondary branches	2.5
Number of pods per plant	30.7
Pod length (cm)	11
Number of seeds per pod	10.5
1000 seed weight (g)	13.2

Reactions to biotic/abiotic factors

Powdery mildew	Moderately resistant
Leaf miner	Moderately tolerant

Special characteristics

A high yielding, determinate, medium-maturing variety with bold seeds and high protein content. Moderately resistant to powdery mildew as well as leaf miner.

Specific recommendations

Recommended POPs of SAU are to be followed.



Breeding centre	University of Horticultural Sciences, Bagalkot, Karnataka
Pedigree	Selection from Coimbatore Local
Areas of adoption	Fenugreek growing areas of Karnataka
Crop duration	105 days
Average yield (per ha)	1068 kg
Potential yield (per ha)	1351 kg



AJWAIN

Gujarat Ajwain 3 (GA-3)

Quality attributes

Volatile oil content (%)	5.5
Thymol (%)	48.17

Morphological characters

Growth habit	Erect
Plant height (cm)	115
Number of primary branches	10.2
Number of secondary branches	3
Number of umbel per plant	163
Number of umbellet per umbel	17.6
Number of seeds per umbel	236
1000 seed weight (g)	1.158

Reactions to biotic/abiotic factors

No major pest or disease attack noticed.

Special characteristics

A high yielding, medium maturing variety (165 days) having higher umbel per plant. This variety has more number of seeds per umbel, and bold seed size. Thymol content is 48.17% of total oil content.

Specific recommendations

Recommended POPs of SAU are to be followed.

Breeding centre	AICRP on Spices, Sardarkrushinagar Dantiwada Agricultural University, Gujarat
Pedigree	Mass selection from germplasm JA-63
Areas of adoption	Gujarat, Rajasthan, Haryana, Andhra Pradesh, Uttar Pradesh and Chhattisgarh
Crop duration	164 days (160-165 days)
Average yield (per ha)	1035 kg
Potential yield (per ha)	1800 kg



SPICES **TECHNOLOGIES** 2024



BLACK PEPPER

Black pepper-based mixed cropping system for sustainable productivity and food security



Mixed cropping systems in pepper with elephant foot yam is highly productive and profitable technology, effectively utilizing pepper crop interspaces. With an average yield of 0.84 kg of dry pepper per vine, along with a 6.12 kg yield of EFY from an 8m² interspace, the system can achieve a commendable benefit-to-cost (B:C) ratio of 3.21, compared to the sole cropped control of 1.77.

This technology is recommended for regions of Karnataka, Kerala, and Maharashtra

BLACK PEPPER

Biological control of soil borne pathogens in black pepper



Soil application of *Trichoderma harzianum* and *Pochonia chlamydosporia* at 50g/vine (twice) during the months of May/Jun and Aug/Sep along with the foliar spray with Bordeaux mixture (1%)

This technology is recommended for regions of Karnataka, Kerala, and Maharashtra

CARDAMOM

Management of pseudostem rot in cardamom



Application of *Trichoderma harzianum* (50g with 1kg neem cake) + *Pseudomonas fluorescens* (2% spray) is effective in controlling pseudostem rot in cardamom

This technology is recommended for Karnataka region



CORIANDER

Intercropping of seed spices with vegetables for higher yield and income

Intercropping of coriander with garlic is an excellent way to increase productivity (44.2 over 14.8 q/ha) and profitability, with the highest benefit-to-cost (B:C) ratio (2.86 over 1.8) from the coriander sole cropped area.

This technology is recommended for Bihar, Uttar Pradesh, Chhattisgarh and Madhya Pradesh



CORIANDER

Integrated pest and disease management in coriander

Bihar	Two foliar sprays of <i>Lecanicillium lecanii</i> 1.15WP (1x10 ⁹ cfu/g) (40g/10 L) + spray of Propiconazole 25 EC @ 0.05% (first spray) + Carbendazim @ 0.1% (second spray) is recommended for the control of stemgall and aphid
Uttar Pradesh	Three sprays of Hexaconazole 5 EC@ 0.005% + First foliar spray of Emamectin benzoate-5%SG@ 4.0g/10 lit and second spray of Azadiractin 3000 ppm @ 3 ml/lit is effective for the management of stem gall, PM and aphid
Chhattisgarh	Spray of Carbendazim 0.1% at 45 DAS and wettable sulphur 0.2% at 65 DAS + Imidacloprid @0.03% is effective for the management of Aphid and PM
Rajasthan and Gujarat	Sprays of propiconazole 25 EC @ 0.025 % (first & second spray) + two sprays of acetamiprid 20SP (0.004%) is effective for the management of powdery mildew and aphid.
Madhya Pradesh	Two foliar sprays of Acetamiprid 20SP (0.004%) + Propiconazole 25 EC @0.05% (first spray)+ Carbendazim 50 WP @ 0.1% second spray effective for the management of Aphid and PM
Uttarakhand	Spray of Carbendazim 50 WP @ 0.1% (20 g/10 L water) (first & second spray) + Two foliar sprays of Acetamiprid 20SP (0.004%) is effective for the management of PM



FENNEL

Intercropping of seed spices with vegetables for higher yield and income

Intercropping of fennel with garlic is highly productive (35.7 over 18.2 q/ha) and profitable with a BC ratio of 5.4 over 3.25 in sole fennel-cropped area

This technology is recommended for Rajasthan

FENNEL

Intercropping of seed spices with vegetables for higher yield and income



Intercropping of fennel with carrot is highly productive (18.9 over 12.07 q/ha in sole fennel plot), with a profitable BC ratio of 1.8 over 1.2 in sole cropped area

This technology is recommended for Gujarat



FENNEL

Foliar application of iron and zinc on growth, yield and quality of fennel

Foliar spray of zinc sulphate and iron sulphate, each @ 4g/l with RDF at 60, 75 and 90 days after sowing in fennel is recommended for higher yield of 14.7% over untreated and net returns with high BC ratio of 20.8% over untreated plot.

This technology is recommended for Rajasthan, Gujarat, UP and Bihar.



FENUGREEK

Fertigation schedule for fenugreek

Drip irrigation (2.1L discharge/hrs) at four-day interval along with recommended dose of fertigation NPK (20:30:30 kg/ha) and micronutrients ZnSO₄ (15 kg/ha), FeSO₄ (25 kg/ha), MnO (14 kg/ha) and B (10 kg/ha) in two splits (flowering and pod filling stage) is recommended for higher yield of 0.78%, increasing from 1,427 Kg/ha in the control to 1,738 kg/ha in the recommended treatment. This approach enhances water use efficiency by 23.7%, rising from 7.16 in the control to 8.86 kg ha⁻¹ mm in the recommended method, leading to improved economic returns and a higher B:C ratio of 6.3%, increasing from 2.11 to 2.85 (control over recommended method)

This technology is recommended for Tamil Nadu and Uttarakhand regions.



CUMIN

Integrated aphid management in cumin

Two foliar sprays of thiamethoxam 25WG @ 0.0084% (First spray at initiation of aphid and the second spray after 10 days of the first spray) were found effective against aphid infestation in cumin.

This technology is recommended for Gujarat and Rajasthan regions



ICAR-All India Coordinated Research Project on Spices (AICRPS)

ICAR-Indian Institute of Spices Research

Post bag No. 1701, Marikunnu P.O.,
Kozhikode- 673 012, Kerala, India.

Phone: 0495-2731794/2731410, Fax: 0495-2731794,
e-mail: aicrspices@gmail.com; aicrp.spices@icar.gov.in
Web site: www.aicrps.res.in