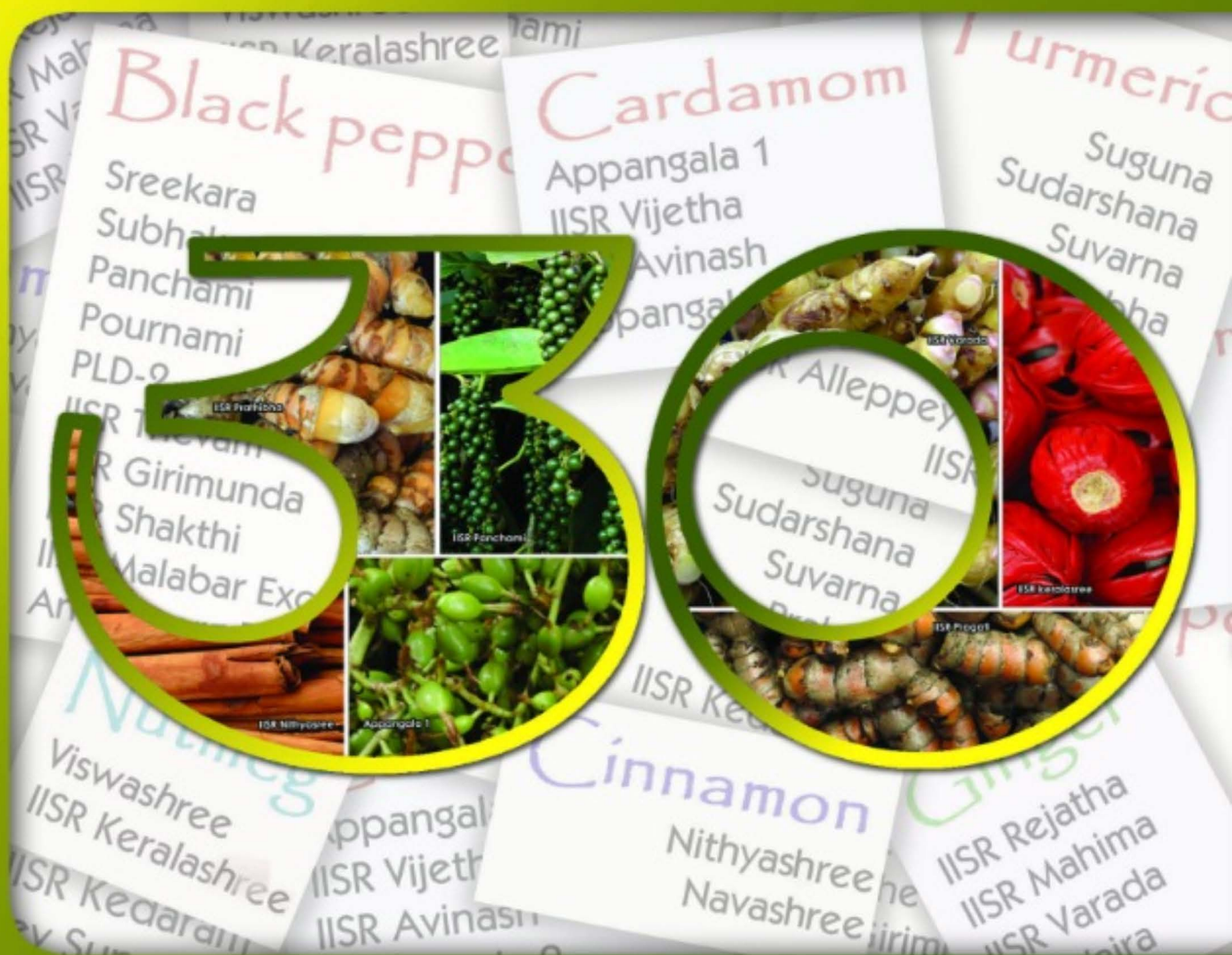


# Spices varieties of ICAR-IISR





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# Spices Varieties of ICAR-IISR



**ICAR-Indian Institute of Spices Research**  
Marikunnu P. O., Kozhikode- 673 012, Kerala, India





# PREFACE

## Over 30 spice varieties and counting...

Spices are low volume and high value commodities of commerce in the world market and have immense potential in increasing the farmer's income. India, known as the 'Land of Spices', grows as many as seventy spices. Major spices include black pepper, cardamom, ginger, turmeric, and tree spices (nutmeg, cinnamon, clove, allspice).

ICAR-IISR has been developing spices varieties since the 1970s, with the first commercial release in 1987. These varieties have underpinned the success of India's spice industry. The spices-breeding research begins with its genebank, a remarkable living catalogue of genetic diversity comprising over 5000 unique collections of black pepper, ginger, turmeric and tree spices. We've developed thirty varieties better suited to Indian growing conditions, with good productivity and desired quality characteristics.

Industry demands high quality spice varieties for extraction of oils, oleoresins, curcumin *etc* and by growing such varieties, the farmers fetch premium price. Piperine is an important constituent of black pepper and the variety Sreekara is found to contain high percentage of piperine (5.1%) and high essential oil (7%). Cardamom essential oil contains 1,8 cineole and  $\alpha$  terpinyl acetate which are used in confectionary and pharmaceuticals. The cardamom variety, Appangala 1 has high essential oil content (7.9%) whereas Appangala 2 contains high  $\alpha$ -terpinyl acetate (40.32 %). The essential oil rich varieties of ginger are IISR Rejatha (2.36%) and IISR Vajra (2.15%). Curcumin is the yellow poly phenol pigment present in turmeric and the varieties IISR Prathibha and IISR Prabha contain more than 6.5% curcumin. These varieties are also the first ever seed derived varieties of turmeric. IISR Keralashree is the first nutmeg variety developed through farmers participatory breeding with bold nut, thick and entire mace.

Development of pest and disease resistant varieties minimizes the pesticide residues, reduces the operational expenses, and ensures food safe spice production. *Phytophthora* foot rot is a major concern in black pepper and the varieties like IISR Thevam and IISR Shakthi offer tolerance against *Phytophthora*. Similarly, the black pepper variety, Pournami is shown to have excellent field tolerance towards root-knot nematode. In cardamom, the varieties *viz.*, IISR Vijetha and Appangala 2 (hybrid) offer tolerance against cardamom mosaic virus (*Katte*). IISR Mahima (ginger) and IISR Pragati (turmeric) are tolerant to nematode infestation.

There is an ever-increasing demand for spices owing to their diverse use in pharmaceutical and cosmetic industries other than traditional uses. Appropriate use of these varieties coupled with package of practices and post harvest technology would result in higher production and export. The contribution made by various researchers involved in developing these varieties is gratefully acknowledged. The characteristic features of the varieties developed by ICAR-IISR are given in the following pages.





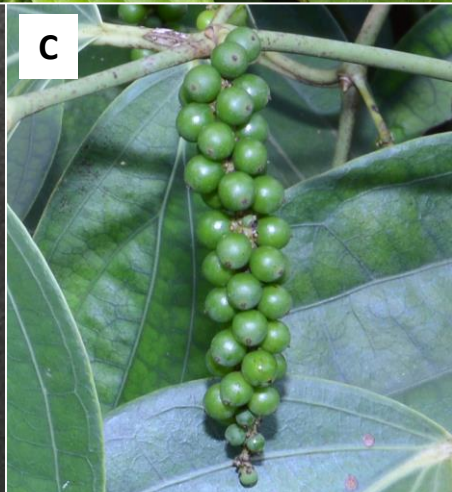
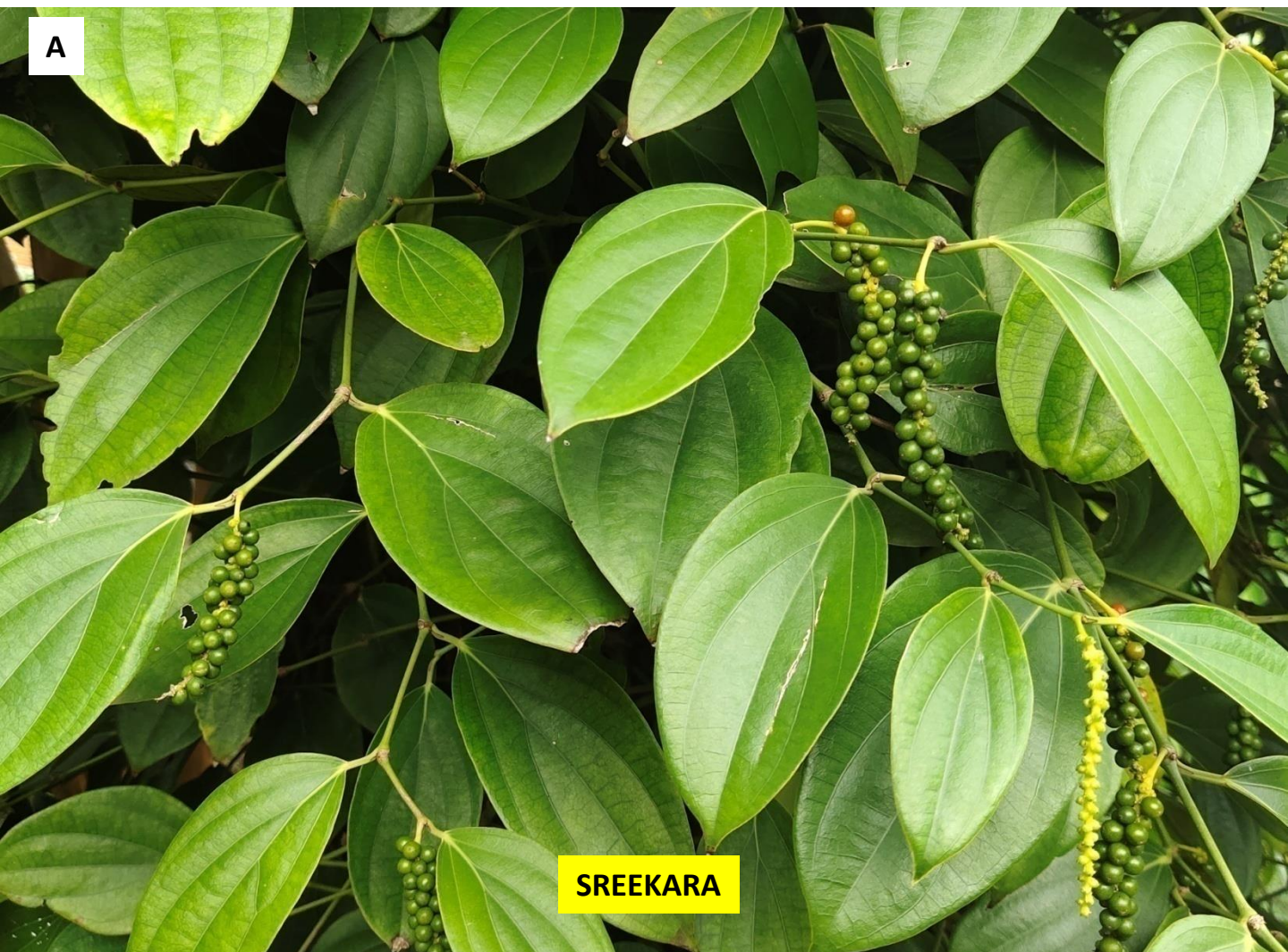
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# BLACK PEPPER



A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries



## SREEKARA

Year of release	1990
Pedigree	Selection from Karimunda accessions (KS 14)
Areas of adoption	All pepper growing tracts of Kerala and southern Karnataka
Maturity group	Medium
Yield (per hectare)	2677 kg dry pepper
<b>Quality attributes</b>	
Piperine (%)	5.1
Oleoresin (%)	13.0
Essential oil (%)	7.0
<b>Morphological characters</b>	
Leaf length/breadth (cm)	11.6/6.2
Leaf shape	Ovate-lanceolate
Spike length (cm)	8.6
<b>Spike composition</b>	
Bisexual (%)	98.0
Female (%)	1.0
Male (%)	1.0
Fruit set (%)	63.4
No. of fruits per spike	61
1000 fruit volume (cc)	106
1000 fruit weight (g)	108
Yield per vine	4.8 kg green pepper
Dry recovery (%)	35
<b>Special characteristics</b>	
Adaptable to various climatic conditions in all the pepper growing tracts. Gives high quality pepper.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries



## SUBHAKARA

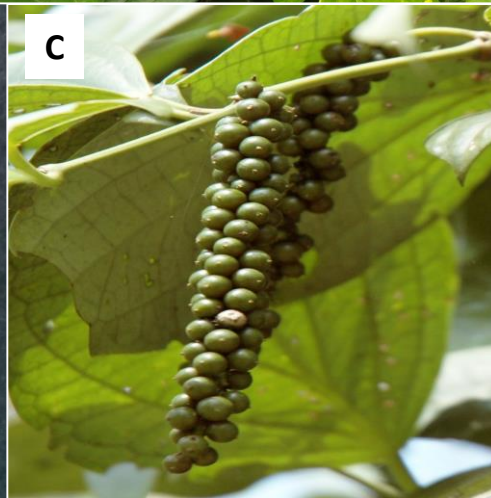
Year of release	1990
Pedigree	Selection from Karimunda accessions (KS 27)
Areas of adoption	All pepper growing tracts of Kerala and Southern Karnataka
Maturity group	Medium
Yield (per hectare)	2352 kg dry pepper
<b>Quality attributes</b>	
Piperine (%)	3.4
Oleoresin (%)	12.4
Essential oil (%)	6.0
<b>Morphological characters</b>	
Leaf length/breadth (cm)	12.3/6.5
Leaf shape	Ovate-lanceolate
Spike length (cm)	7.7
<b>Spike composition</b>	
Bisexual (%)	99.0
Female (%)	0.5
Male (%)	0.5
Fruit set (%)	68
No. of fruits per spike	63
1000 fruit volume (cc)	100
1000 fruit weight (g)	103
Yield per vine	4.2 kg green pepper
Dry recovery (%)	35.5
<b>Special characteristics</b>	
A selection with high quality pepper and wider adaptability.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



A : Whole plant



B : Shoot tip colour



C : Spike



D : Dry berries

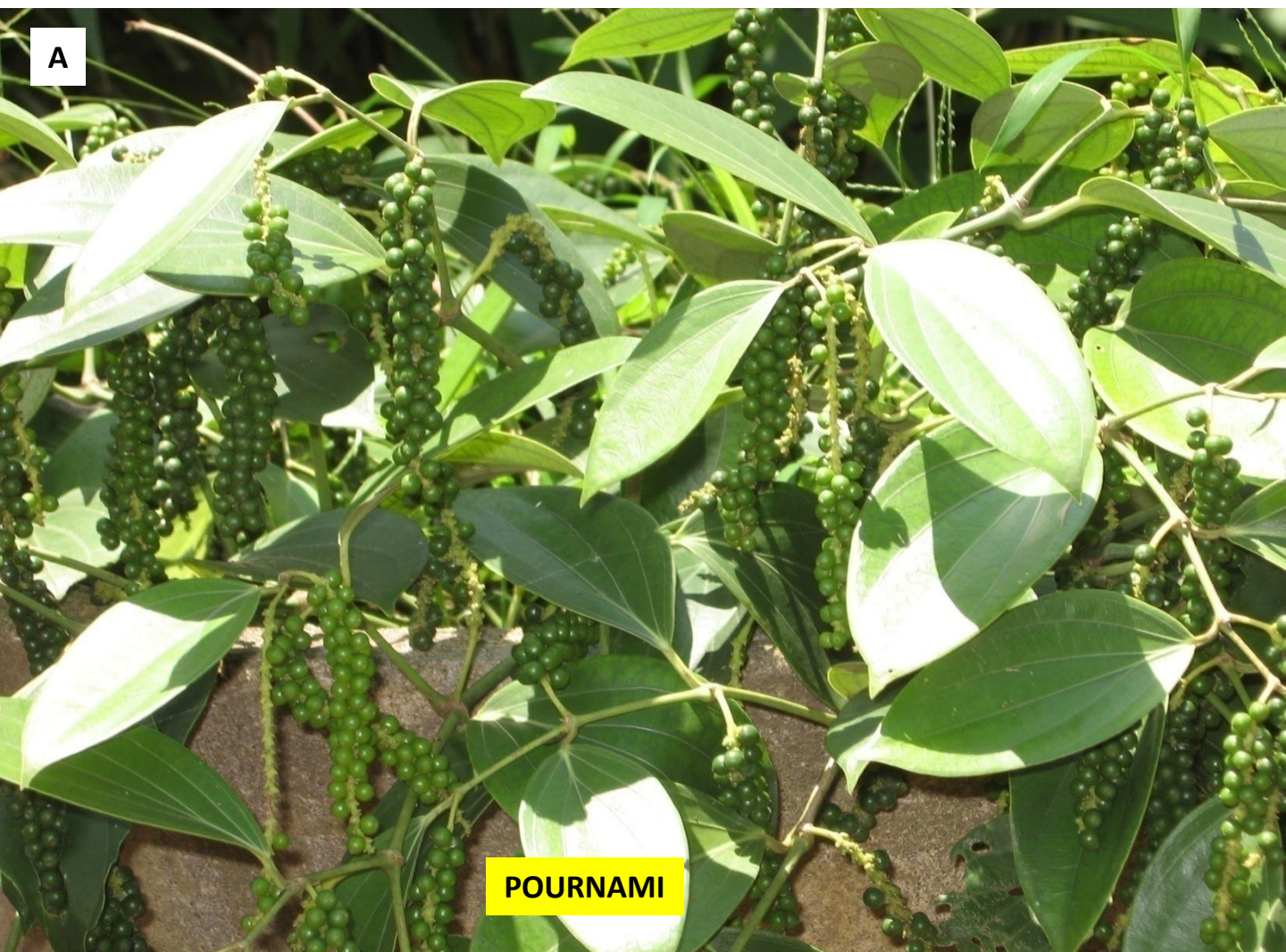


## PANCHAMI

Year of release	1991
Pedigree	Selection from Aimpiriyam (Coll.856)
Areas of adoption	All pepper growing tracts of Kerala and Karnataka
Maturity group	Late
Yield (per hectare)	2828 kg dry pepper
<b>Quality attributes</b>	
Piperine (%)	4.7
Oleoresin (%)	12.5
Essential oil (%)	3.4
<b>Morphological characters</b>	
Leaf length/breadth (cm)	14.5/8.5
Leaf shape	Ovate
Spike length (cm)	11.2
<b>Spike composition</b>	
Bisexual (%)	95.5
Female (%)	4.0
Male (%)	0.5
Fruit set (%)	82
No. of fruits per spike	84
1000 fruit volume (cc)	108
1000 fruit weight (g)	107
Yield per vine	5.2 kg green pepper
Dry recovery (%)	34
<b>Special characteristics</b>	
A high yielding variety with excellent fruit set. Spike twisted in appearance due to high fruit set. Oleoresin content is high.	
<b>Specific recommendations</b>	
May not be suitable for drought prone areas. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



POURNAMI



A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries

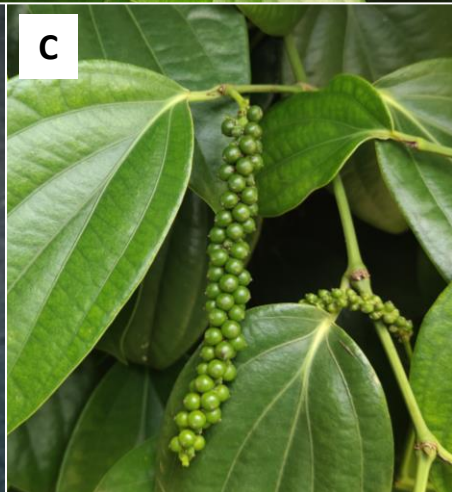


# POURNAMI

Year of release	1991
Pedigree	Selection from the germplasm (Coll.812)
Areas of adoption	All pepper growing tracts of Kerala and Karnataka
Maturity group	Medium
Yield (per hectare)	2333 kg dry pepper
<b>Quality attributes</b>	
Piperine (%)	4.1
Oleoresin (%)	13.8
Essential oil (%)	3.4
<b>Morphological characters</b>	
Leaf length/breadth (cm)	15.6/8.5
Leaf shape	Ovate-lanceolate
Spike length (cm)	12
<b>Spike composition</b>	
Bisexual (%)	84.0
Female (%)	15.0
Male (%)	1.0
Fruit set (%)	68
No. of fruits per spike	79
1000 fruit volume (cc)	130
1000 fruit weight (g)	128
Yield per vine	4.7 kg green pepper
Dry recovery (%)	31
<b>Special characteristics</b>	
Tolerant to root-knot nematode. A moderately high yielding variety with high oleoresin content.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries



## PLD-2

Year of release	1996
Pedigree	Selection from Kottanadan (Coll.5055)
Areas of adoption	Southern districts of Kerala
Maturity group	Late
Yield (per hectare)	2475 kg dry pepper
<b>Quality attributes</b>	
Piperine (%)	3.0
Oleoresin (%)	15.45
Essential oil (%)	4.8
<b>Morphological characters</b>	
Leaf length/breadth (cm)	15.5/8.4
Leaf shape	Ovate
Spike length (cm)	8.33
<b>Spike composition</b>	
Bisexual (%)	94.1
Female (%)	4.3
Male (%)	0.6
Fruit set (%)	87.7
No. of fruits per spike	75
1000 fruit volume (cc)	122.7
1000 fruit weight (g)	122.3
Yield per vine	4.97 kg green pepper
Dry recovery (%)	31.13
<b>Special characteristics</b>	
A variety with high quality and suitable to all pepper growing areas. Oleoresin content is high. Very good performance in southern districts of Kerala.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER

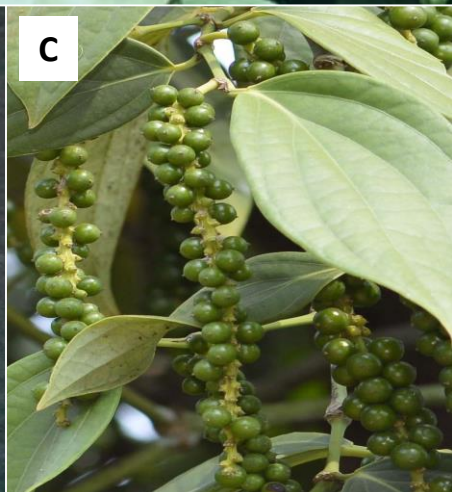


A

IISR THEVAM



B



C



D

A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries



## IISR THEVAM

Year of release	2004
Pedigree	Clonal selection from Thevanmundi
Areas of adoption	Suited to high altitude areas and plains
Maturity group	Medium
Yield per vine	5.17 kg green pepper
<b>Quality attributes</b>	
Piperine (%)	1.6
Oleoresin (%)	8.5
Essential oil (%)	3.1
<b>Morphological characters</b>	
Leaf length/breadth (cm)	14.2/ 7.0
Leaf shape	Ovate-elliptic
Spike length (cm)	8.2
<b>Spike composition</b>	
Bisexual (%)	96.9
Female (%)	2.06
Male (%)	1.03
Fruit set (%)	80
No. of fruits per spike	40
1000 fruit volume (cc)	120.0
1000 fruit weight (g)	155.0
Dry recovery (%)	35
<b>Special characteristics</b>	
Tolerant to <i>Phytophthora</i> foot rot disease. Suited to high altitude areas and plains.	
<b>Specific recommendations</b>	
Use only clonal planting material. Strict plant protection measures recommended. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



A

IISR GIRIMUNDA



B



C



D

A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries

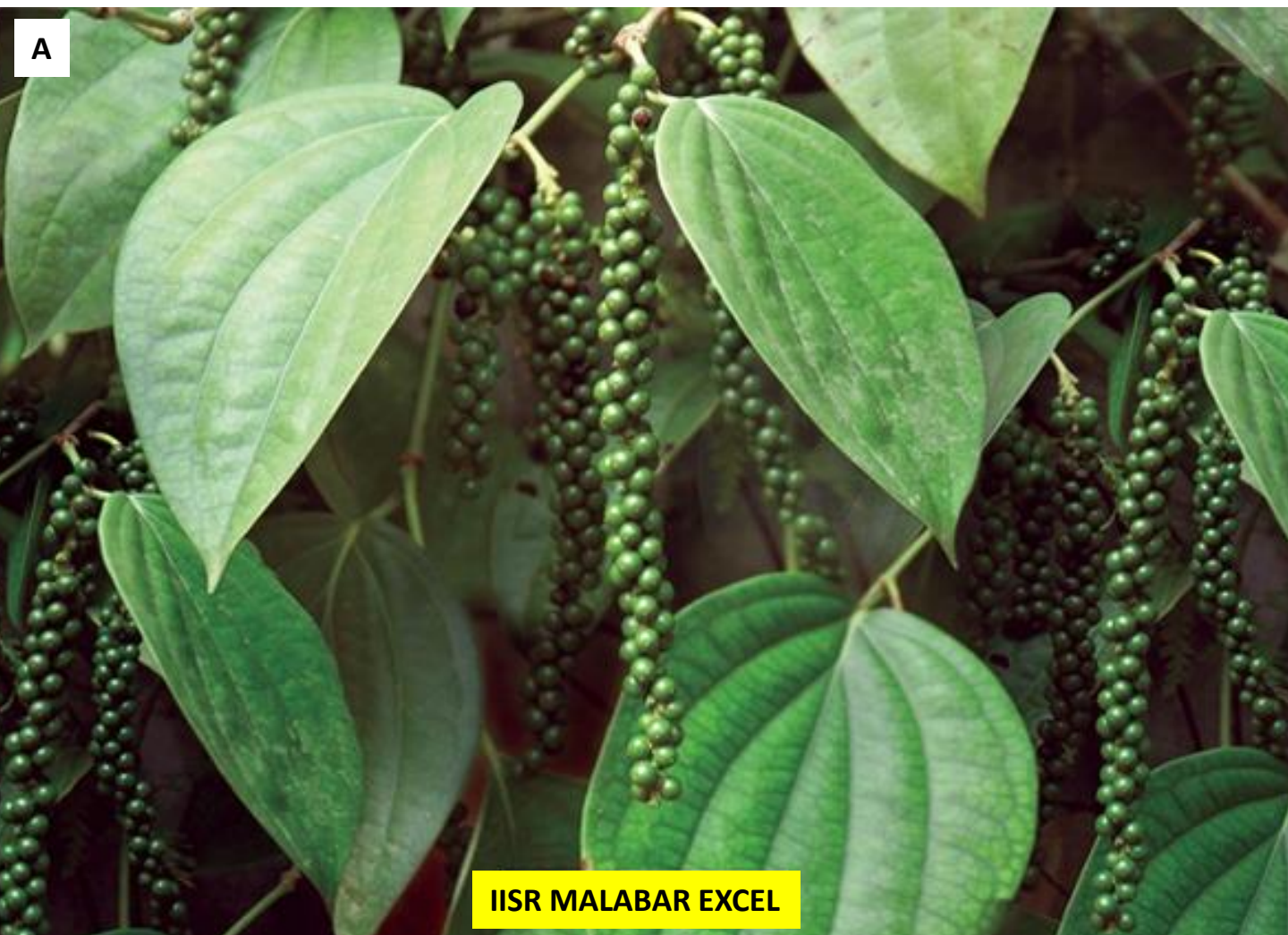


## IISR GIRIMUNDA

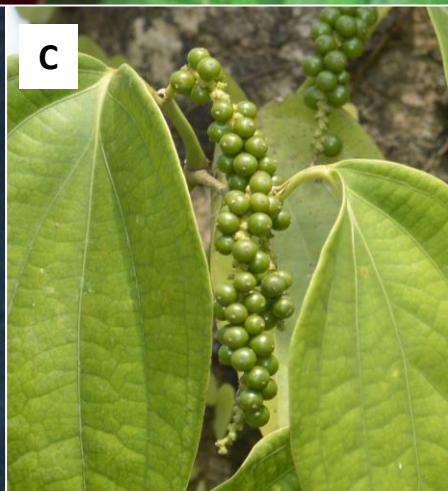
Year of release	2004
Pedigree	Hybrid of <i>Narayakodi</i> x <i>Neelamundi</i>
Areas of adoption	Suited to high altitudes
Maturity group	Medium
Yield per vine	6.14 kg green pepper
<b>Quality attributes</b>	
Piperine (%)	2.2
Oleoresin (%)	9.65
Essential oil (%)	3.4
<b>Morphological characters</b>	
Leaf length/breadth (cm)	12.9/ 8.6
Leaf shape	Ovate elliptic
Spike length (cm)	9.2
<b>Spike composition</b>	
Bisexual (%)	94.3
Female (%)	3.27
Male (%)	3.38
Fruit set (%)	90
No. of fruits per spike	47
1000 fruit volume (cc)	115
1000 fruit weight (g)	112
Dry recovery (%)	32
<b>Special characteristics</b>	
Suited to high altitude areas, coffee and tea estates.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



A : Whole plant



B : Shoot tip colour



C : Spike

D : Dry berries

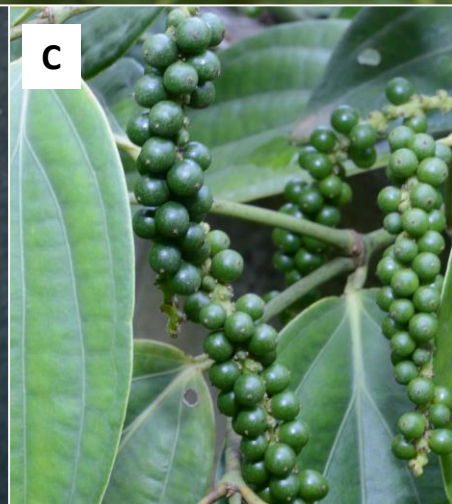


## IISR MALABAR EXCEL

Year of release	2004
Pedigree	Hybrid of <i>Cholamundi</i> x <i>Panniyur 1</i>
Areas of adoption	Suited to high altitude areas
Maturity group	Medium
Yield per vine	2.78 kg green pepper
<b>Quality attributes</b>	
Piperine (%)	2.96
Oleoresin (%)	13.5
Essential oil (%)	3.2
<b>Morphological characters</b>	
Leaf length/breadth (cm)	17.0/ 8.0
Leaf shape	Elliptic-lanceolate
Spike length (cm)	8.8
<b>Spike composition</b>	
Bisexual (%)	96.8
Female (%)	2.48
Male (%)	0.62
Fruit set (%)	70
No. of fruits per spike	70
1000 fruit volume (cc)	100
1000 fruit weight (g)	103
Dry recovery (%)	34
<b>Special characteristics</b>	
Suited to high altitude areas, coffee and tea estates.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER



A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries



## IISR SHAKTHI

Year of release	2004
Pedigree	Open pollinated progeny of <i>Perambramundi</i>
Areas of adoption	Both plains and high ranges under rain-fed conditions.
Maturity group	Medium
Yield (per hectare)	2253 kg dry pepper
<b>Quality attributes</b>	
Piperine (%)	3.3
Oleoresin (%)	10.2
Essential oil (%)	3.7
<b>Morphological characters</b>	
Leaf length/breadth (cm)	13.37
Leaf shape	Ovate lanceolate
Spike length (cm)	13.0
<b>Spike composition</b>	
Bisexual (%)	19.46
Female (%)	79.66
Male (%)	0.36
Fruit set (%)	60
No. of fruits per spike	49
1000 fruit volume (cc)	114
1000 fruit weight (g)	150
Yield per vine	5.216 kg
Dry recovery (%)	43
<b>Special characteristics</b>	
Tolerant to <i>Phytophthora</i> foot rot disease. Suited to high altitude areas and plains.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	



# BLACK PEPPER

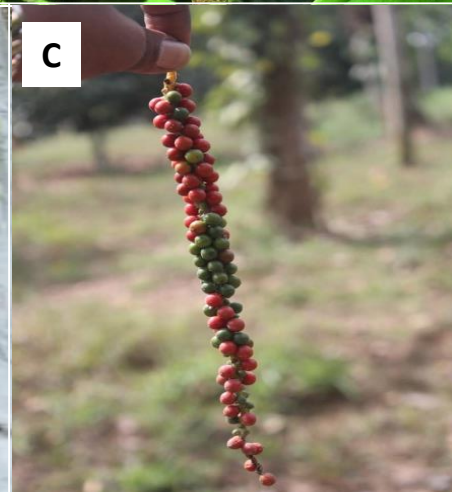


A

ARKA COORG EXCEL



B



C



D

A : Whole plant

B : Shoot tip colour

C : Spike

D : Dry berries



## ARKA COORG EXCEL

Year of release	2012*
Pedigree	Seedling selection
Areas of adoption	Suited to Kodagu district and similar areas
Maturity group	Medium
Yield (per vine)	7.15 kg green pepper
<b>Quality attributes</b>	
Piperine (%)	4.64
Oleoresin (%)	7.15
Essential oil (%)	2.3
<b>Morphological characters</b>	
Leaf length/breadth (cm)	16.8/8.1
Leaf shape	Ovate
Spike length (cm)	14.22
<b>Spike composition</b>	
Bisexual (%)	95.7
Female (%)	3.4
Male (%)	0.9
Fruit set (%)	81
No. of fruits per spike	98.6
1000 fruit volume (cc)	108
1000 fruit weight (g)	126.3
Dry recovery (%)	40
<b>Special characteristics</b>	
Suited to Kodagu district and similar areas.	
<b>Specific recommendations</b>	
Use only clonal planting material. The package of practices recommended by ICAR-IISR are to be followed.	

\* Developed in collaboration with ICAR-IIHR, Bengaluru, Karnataka



# SMALL CARDAMOM



A : Panicles

B : Whole plant

C : Fresh capsules

D : Dry capsules



## APPANGALA 1

Year of release	1997
Gazette notification number	S.O.1052 (E) dated 26 October 1999
Pedigree	Selection from open pollinated progeny, CL-37
Plant type	Malabar
Areas of adoption	All cardamom growing tracts of Karnataka
Maturity group	112 days from flowering to fruit maturity
Yield (per hectare)	745 kg dry capsules
Potential yield (per hectare)	1322 kg dry capsules
<b>Quality attributes</b>	
Essential oil (%)	8.7
Dry recovery (%)	22
$\alpha$ -terpenyl acetate (%)	37
1,8-cineole (%)	42
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	205
Leaf length/breadth (cm)	63/11
No. of tillers per clump	41
No. of panicles per clump	37
No. of flowers per panicle	129
No. of capsules per panicle	60
<b>Special characteristics</b>	
Thrips	Tolerant
Shoot/panicle/capsule borer	Tolerant
<b>Special characteristics</b>	
Highly adaptable and produces 89% bold (7.2 mm and above) capsules. Suitable for high production technology. Responds well for nutritional inputs	
<b>Specific recommendations</b>	
Use of clonal planting material recommended. High production technology recommended by ICAR-IISR are to be followed.	



# SMALL CARDAMOM



A : Panicles

B : Whole plant

C : Fresh capsules

D : Dry capsules



Year of release	1999
Gazette notification number	S.O. 692 (E) dated 05 February 2019
Plant type	Malabar
Pedigree	A selection from open pollinated progeny of CCS-1
Areas of adoption	Karnataka and Wayanad
Maturity group	115 days from flowering
Yield (per hectare)	847 kg dry capsules
Potential yield (per hectare)	1483 kg dry capsules
<b>Quality attributes</b>	
Essential oil (%)	6.7
Dry recovery (%)	20.8
$\alpha$ -terpenyl acetate (%)	34.6
1,8-cineole (%)	30.4
<b>Morphological characters</b>	
Colour of aerial shoot	Dark green
Plant height (cm)	228.6
Leaf length/breadth (cm)	69/13
No. of tillers per clump	46
No. of panicles per clump	43
No. of flowers per panicle	163
<b>Special characteristics</b>	
Shoot/panicle/capsule borer ( <i>Conogethes punctiferalis</i> )	Tolerant
Rhizome rot ( <i>Pythium vexans</i> & <i>Rhizoctonia solani</i> )	Resistant
<b>Special characteristics</b>	
High yielder, suitable for planting in valleys. Has extended flowering period. Produces dark green capsules and retains its colour even after processing. Yields well at 2.5 x 2 m spacing.	
<b>Specific recommendations</b>	
Recommended for rhizome rot infected areas.	



# SMALL CARDAMOM



A : Panicles

B : Whole plant

C : Fresh capsules

D : Dry capsules



## IISR VIJETHA

Year of release	2001
Pedigree	A selection from field resistant plants for Cardamom Mosaic Virus ( <i>Katte</i> )
Plant type	Malabar
Areas of adoption	Cardamom growing areas of Karnataka and Wayanad
Maturity group	105 days from flowering
Yield (per hectare)	643 kg dry capsules
Potential yield (per hectare)	979 kg dry capsules
<b>Quality attributes</b>	
Essential oil (%)	7.9
Dry recovery (%)	22
$\alpha$ terpenyl acetate (%)	23.4
1,8-cineole (%)	44.9
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	172
Leaf length/breadth (cm)	61/11
No. of tillers per clump	36
No. of panicles per clump	34
No. of flowers per panicle	99
<b>Special characteristics</b>	
Thrips ( <i>Sciothrips cardamomi</i> )	Field tolerant
Shoot/panicle/capsule borer ( <i>Conogethes punctiferalis</i> )	Field tolerant
<i>Katte</i> disease (Cardamom mosaic virus)	Resistant
<b>Special characteristics</b>	
Virus resistant selection with 77 % bold (7.2 mm) capsules and good appearance	
<b>Specific recommendations</b>	
Recommended for moderate to high shaded mosaic infected areas where Malabar types are grown.	



# SMALL CARDAMOM



A : Panicles

B : Whole plant

C : Fresh capsules

D : Dry capsules



## APPANGALA 2

Year of release	2014
Gazette notification number	S.O. 261 (E) dated 16 January 2018
Pedigree	Hybrid of Appangala-1 (Moderate yielder) X NKE -19 (Mosaic resistant)
Plant type	Malabar
Areas of adoption	Karnataka and Wayanad
Maturity group	120 days from flowering
Yield (per hectare)	927 kg dry capsules
Potential yield (per hectare)	1393 kg dry capsules
<b>Quality Attributes</b>	
Essential oil (%)	6.3
Dry recovery (%)	21.10
$\alpha$ -terpenyl acetate (%)	40.32
1,8-cineole (%)	29.53
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	215.94
Leaf length/breadth (cm)	42/8
No. of tillers per clump	31
No. of panicles per clump	28
No. of flowers per panicle	142
<b>Special characteristics</b>	
Thrips ( <i>Sciothrips cardamomi</i> )	Tolerant
Shoot/panicle/capsule borer ( <i>Conogethes punctiferalis</i> )	Tolerant
<b>Special characteristics</b>	
High yielding cardamom hybrid with average yield of 927.29 kg dry capsules ha <sup>-1</sup> . Resistant to cardamom mosaic virus under field conditions and moderately resistant under artificial conditions. Green, medium bold capsules with essential oil (6.3 %) and high $\alpha$ -terpinyl acetate (40.32%)	
<b>Specific recommendations</b>	
Recommended for <i>Katte</i> virus infected areas.	



# GINGER

A



IISR VARADA

B



IISR VARADA

C



A : Field view

B : Rhizome

C : Rhizome core



## IISR VARADA

Year of release	1996
Pedigree	A selection from germplasm
Areas of adoption	All ginger growing areas
Crop duration	200 days
Average yield (per hectare)	22.6 t fresh rhizomes
<b>Quality attributes</b>	
Essential oil (%)	1.75
Dry recovery (%)	20.7
Fibre content (%)	3.29-4.5
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	72.32
Leaf length/breadth (cm)	28.3/2.5
No. of tillers per clump	9.4
No. of leaves per tiller	20
Colour of rhizome core	Bluish yellow
Shape of rhizome	Plumpy with flattened fingers
Colour of scale	Reddish brown
<b>Special characteristics</b>	
A high yielding variety with plumpy rhizomes having flattened fingers and medium sized reddish brown scales.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# GINGER



A : Field view

B : Rhizome

C : Rhizome core



## IISR REJATHA

Year of release	2001
Pedigree	A selection from germplasm
Areas of adoption	Kerala
Crop duration	200 days
Average yield (per hectare)	22.4 t fresh rhizomes
<b>Quality attributes</b>	
Essential oil (%)	2.36
Dry recovery (%)	23.0
Fibre content (%)	4
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	67.7
Leaf length/breadth (cm)	23.6/3.0
No. of tillers per clump	8.26
No. of leaves per tiller	13.65
Colour of rhizome core	Bluish yellow
Shape of rhizome	Plumpy, round and bold
Colour of scale	Brown
<b>Special characteristics</b>	
Plumpy, round and bold rhizomes with three layered compact clumps. Low fibre content. Rich in oil and oleoresin.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



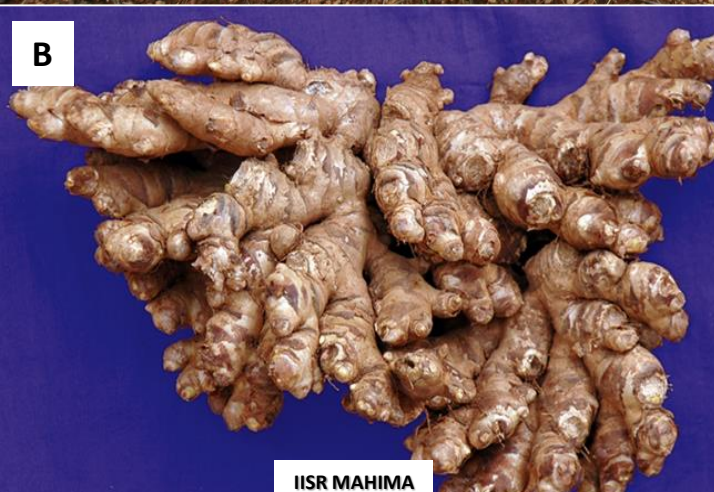
# GINGER

A



IISR MAHIMA

B



IISR MAHIMA

C



A : Field view

B : Rhizome

C : Rhizome core



## IISR MAHIMA

Year of release	2001
Pedigree	A selection from germplasm
Areas of adoption	Kerala, Karnataka, Odisha and West Bengal
Crop duration	200 days
Average yield (per hectare)	23.2 t fresh rhizomes
<b>Quality attributes</b>	
Essential oil (%)	1.72
Dry recovery (%)	19
Fibre content (%)	3.26
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	65.3
Leaf length/breadth (cm)	23.9/2.9
No. of tillers per clump	12.8
No. of leaves per tiller	12.5
Colour of rhizome core	Bluish yellow
Shape of rhizome	Plumpy, round and bold
Colour of scale	Brown
<b>Reaction to major pests and diseases</b>	
Nematodes ( <i>M.incognita</i> and <i>M. javanica</i> )	Resistant
<b>Special characteristics</b>	
Plumpy and bold rhizomes with less fibre content. Resistant to root-knot nematode.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# GINGER



A : Field view

B : Rhizome



C : Rhizome core



## IISR VAJRA

Year of release	2020
Pedigree	Clonal selection from genotype Acc. 247
Areas of adoption	Kerala, Karnataka, Odisha, Himachal Pradesh and West Bengal
Crop duration	220-240 days
Average yield (per hectare)	26.38 t fresh rhizomes
<b>Quality attributes</b>	
Essential oil (%)	2.15
Dry recovery (%)	20.7
Fibre content (%)	5.67
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	68
Leaf length/breadth (cm)	20.67/2.69
No. of tillers per clump	14.00
No. of leaves per tiller	16.00
Colour of rhizome core	Yellow
Shape of rhizome	Straight
Colour of scale	Brown
<b>Special characteristics</b>	
Bold and plumpy rhizomes having desirable flavour owing to its high zingiberene content (29.83%). Rhizome bold with yellow core.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# TURMERIC

A



B



A : Field view

C



C : Rhizome core



## SUVARNA

Year of release	1987
Pedigree	A selection from germplasm (PCT-8) collected from Assam
Areas of adoption	Kerala, Karnataka and Andhra Pradesh
Crop duration	200 days
Average yield (per hectare)	17.4 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	4.0-5.0
Oleoresin (%)	13.5
Essential oil (%)	7.0
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	69.4
Leaf length/breadth (cm)	66.4/17.4
No. of tillers per clump	2.6
No. of leaves per clump	16.4
Yield of rhizomes/clump (g)	460
No. of mother rhizomes	3.0
Wt. of mother rhizomes (g)	34
No. of primaries	21
Wt. of primaries (g)	232
No. of secondaries	28.2
Wt. of secondaries (g)	201
Rhizomes colour	Deep orange
Dry recovery (%)	21
<b>Reaction to major pests and diseases</b>	
Rhizome rot ( <i>Pythium graminicolum</i> )	Field tolerant
Leaf blotch ( <i>Taphrina maculans</i> )	Field tolerant
Leaf spot ( <i>Colletotrichum capsici</i> )	Field tolerant
<b>Special characteristics</b>	
A high yielding, short duration turmeric variety with deep orange coloured rhizomes.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# TURMERIC

A



SUGUNA

B



C



A : Field view

B : Rhizome

C : Rhizome core



## SUGUNA

Year of release	1991
Pedigree	A selection from germplasm (PCT-13) collected from Andhra Pradesh
Areas of adoption	Kerala and Andhra Pradesh
Crop duration	190 days
Average yield (per hectare)	29.3 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	4.9-5.5
Oleoresin (%)	13.5
Essential oil (%)	6.0
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	107
Leaf length/breadth (cm)	46/12.3
No. of tillers per clump	1.9
No. of leaves per clump	12.8
Yield of rhizomes/clump (g)	529
No. of mother rhizomes	1.8
Wt. of mother rhizomes (g)	15
No. of primaries	9.3
Wt. of primaries (g)	210
No. of secondaries	26.4
Wt. of secondaries (g)	337
Rhizomes colour	Orange
Dry recovery (%)	17
<b>Reaction to major pests and diseases</b>	
Rhizome rot ( <i>Pythium graminicolum</i> )	Moderately tolerant
Leaf blotch ( <i>Taphrina maculans</i> )	Moderately tolerant
<b>Special characteristics</b>	
A high yielding variety with reddish yellow coloured rhizomes. Free from disease incidence in farmers field.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# TURMERIC

A



SUDHARSANA

B



C



A : Field view

B : Rhizome

C : Rhizome core



## SUDHARSANA

Year of release	1991
Pedigree	A selection from germplasm (PCT-14) collected from Singhat, Manipur
Areas of adoption	Kerala and Andhra Pradesh
Crop duration	190 days
Average yield (per hectare)	28.8 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	5.1-5.5
Oleoresin (%)	15.0
Essential oil (%)	7.0
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	136
Leaf length/breadth (cm)	37.4/12.1
No. of tillers per clump	1.9
No. of leaves per clump	14.3
Yield of rhizomes/clump (g)	565
No. of mother rhizomes	1.8
Wt. of mother rhizomes (g)	17
No. of primaries	10.1
Wt. of primaries (g)	236
No. of secondaries	20.1
Wt. of secondaries (g)	310
Rhizomes colour	Orange
Dry recovery (%)	17
<b>Reaction to major pests and diseases</b>	
Rhizome rot ( <i>Pythium graminicolum</i> )	Moderately tolerant
Leaf blotch ( <i>Taphrina maculans</i> )	Moderately tolerant
<b>Special characteristics</b>	
A high yielding high quality short duration turmeric variety with thick plumpy rhizomes. Field tolerant to rhizome rot.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# TURMERIC

A



IISR PRATHIBHA

B



A : Field view

B : Rhizome

C



C : Rhizome core



## IISR PRATHIBHA

Year of release	1996
Gazette notification number	S.O. 1480 (E) dated 1 April 2021
Pedigree	Open pollinated progeny selection
Areas of adoption	Kerala and Tamil Nadu, other turmeric growing regions
Crop duration	225 days
Average yield (per hectare)	39.12 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	5.5-6.5
Oleoresin (%)	16.2
Essential oil (%)	6.2
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	42.9
Leaf length/breadth (cm)	53.3/16.7
No. of tillers per clump	1.6
No. of leaves per tiller	12.5
No. of mother rhizomes	1.3
No. of primaries	8.67
Rhizomes colour	Reddish yellow
Dry recovery (%)	18.5
Colour of scale	Reddish brown
<b>Special characteristics</b>	
Plumpy and bold rhizomes with curcumin content. Resistant to root knot nematode.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# TURMERIC

A



IISR PRABHA

B



Prabha

C



A : Field view

B : Rhizome

C : Rhizome core



## IISR PRABHA

Year of release	1996
Pedigree	Open pollinated progeny selection
Areas of adoption	Kerala and Tamil Nadu
Crop duration	205 days
Average yield (per hectare)	37 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	5.5-6.5
Oleoresin (%)	15.0
Essential oil (%)	6.5
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	44.14
Leaf length/breadth (cm)	59.6/17.33
No. of tillers per clump	2.07
No. of leaves per clump	11.5
No. of primaries	8.5
Rhizomes colour	Reddish yellow
Dry recovery (%)	19.5
<b>Special characteristics</b>	
A high yielding and good quality with reddish yellow coloured rhizomes. Free from disease incidence in farmers field.	
<b>Specific recommendations</b>	
Recommended package of practices of ICAR-IISR/SAUs are to be followed.	



# TURMERIC



A : Field view

B : Rhizome

C : Rhizome core



## IISR KEDARAM

Year of release	2004
Pedigree	AFT selection
Areas of adoption	Kerala, Karnataka, Maharashtra and North Bengal
Crop duration	210 days
Average yield (per hectare)	34.5 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	5.70
Oleoresin (%)	14.0
Essential oil (%)	3.0
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	50.80 cm
Leaf length/breadth (cm)	63.7/16.2
No. of tillers per clump	2.5
No. of leaves per clump	12.5
Yield of rhizomes/clump (g)	425
No. of mother rhizomes	1.85
Wt. of primaries (g)	116.40
No. of secondaries	14.01
Wt. of secondaries (g)	113.49
Colour of rhizomes	Reddish yellow
Dry recovery (%)	19.5
<b>Reaction to major pests and diseases</b>	
Leaf blotch ( <i>Taphrina maculans</i> )	Field tolerant
<b>Special characteristics</b>	
A high yielding and good quality with reddish yellow coloured rhizomes. Free from disease incidence in farmers field.	
<b>Specific recommendations</b>	
Consistency in curcumin content and tolerant to foliar disease (leaf blotch)	



# TURMERIC

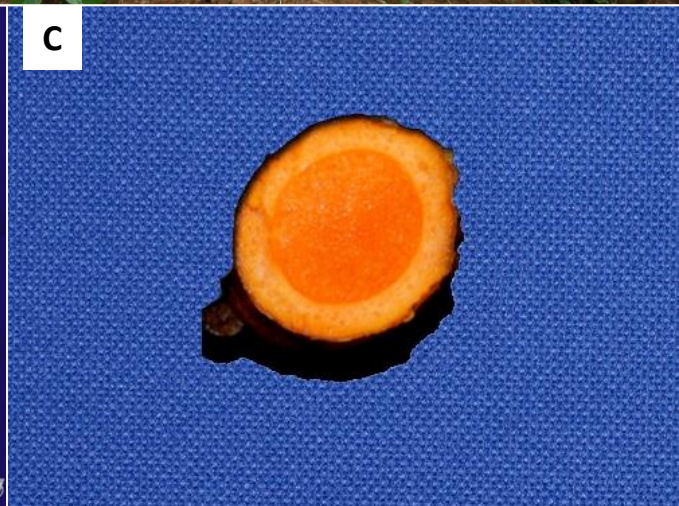
A



B



C



A : Field view

B : Rhizome

C : Rhizome core



## IISR ALLEPPEY SUPREME

Year of release	2004
Pedigree	AFT selection
Areas of adoption	Kerala (rainfed), Maharashtra, Karnataka and North Bengal (irrigated)
Crop duration	210 days
Average yield (per hectare)	34.5 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	5.5
Oleoresin (%)	16
Essential oil (%)	--
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	57
Leaf length/breadth (cm)	72.6/17.3
No. of tillers per clump	3
No. of leaves per clump	14.5
Yield of rhizomes/clump (g)	442
No. of mother rhizomes	2
Wt. of primaries (g)	125.53
No. of secondaries	11.50
Wt. of secondaries (g)	100.56
Colour of rhizomes	Reddish orange
Dry recovery (%)	19
<b>Reaction to major pests and diseases</b>	
Leaf blotch ( <i>Taphrina maculans</i> )	Field tolerant
<b>Special characteristics</b>	
Tolerance to leaf blotch disease	
<b>Specific recommendations</b>	
Consistency in curcumin content and tolerant to foliar disease (leaf blotch)	



# TURMERIC



A : Field view

B : Rhizome

C : Rhizome core



## IISR PRAGATI

Year of release	2017
Pedigree	Germplasm selection (Acc. 48)
Gazette notification number	S.O. 261 (E) dated 16 January 2018
Areas of adoption	Kerala, Tamil Nadu, Andhra Pradesh, Telangana, Karnataka and Chhattisgarh
Crop duration	180-190 days
Average yield (per hectare)	38.0 t fresh rhizomes
<b>Quality attributes</b>	
Curcumin (%)	5.0-5.5
Oleoresin (%)	15.29
Essential oil (%)	6.3
<b>Morphological characters</b>	
Colour of aerial shoot	Green
Plant height (cm)	104
Leaf length/breadth (cm)	49/13.3
No. of tillers per clump	3.5
No. of leaves per clump	15.87
Yield of rhizomes/clump (g)	577.93
No. of mother rhizomes	3
Wt. of mother rhizomes (g)	84.2
No. of primaries	10.53
Wt. of primaries (g)	292.5
No. of secondaries	16.53
Wt. of secondaries (g)	200
Colour of rhizomes	Orange
Dry recovery (%)	15.95
<b>Reaction to major pests and diseases</b>	
Root-knot nematode	Moderately resistant
<b>Special characteristics</b>	
Short duration variety, stable curcumin content across regions, moderately resistant to root-knot nematode.	
<b>Specific recommendations</b>	
Consistency in curcumin content and moderately resistant to root-knot nematode	



# CINNAMON

A



B



IISR NITHYASHREE

A : Field view

B : Bark

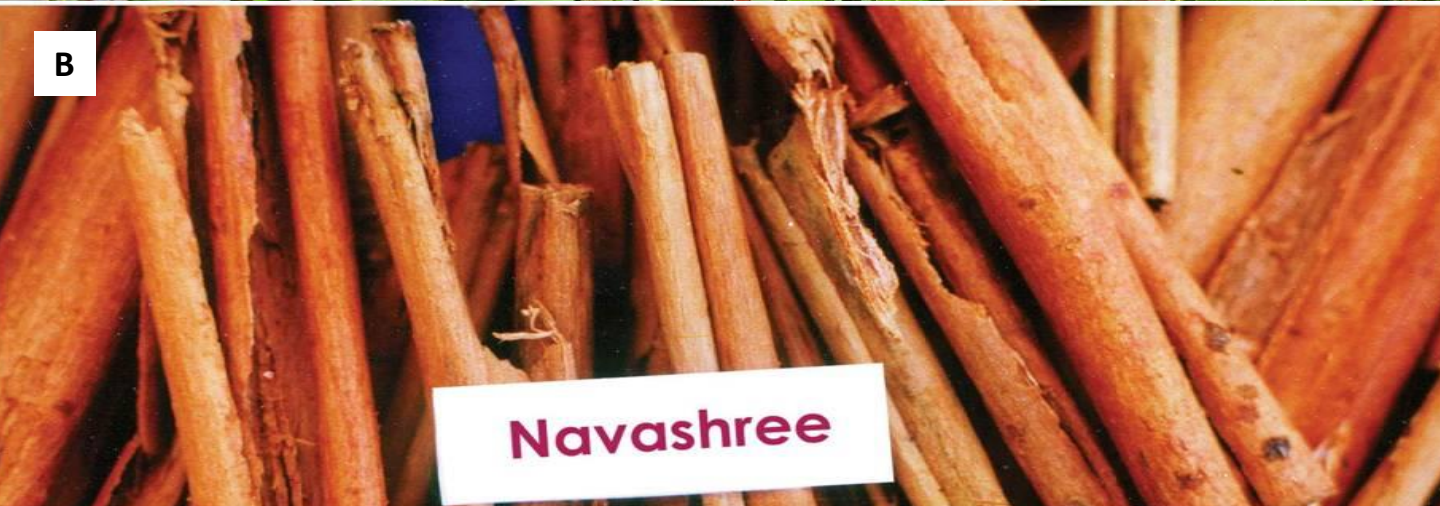


## IISR NITHYASHREE

Year of release	1996
Pedigree	Seedling selection from Indian collection
Areas of adoption	All cinnamon growing areas of India
Crop duration	3 years for first harvest
Yield (per hectare)	200 kg dry quills
Potential yield (per hectare)	250 kg
<b>Quality attributes</b>	
Bark oil (%)	2.7
Leaf oil (%)	3.0
Bark oleoresin (%)	10.0
Bark recovery (%)	30.7
Cinnamaldehyde in bark oil (%)	58
Cinnamaldehyde in leaf oil (%)	14
Eugenol in bark oil (%)	5.0
Eugenol in leaf oil (%)	78
<b>Morphological characters</b>	
Height of tree at 5 years (m)	5-7
Trunk girth at 5 years (cm)	45
Colour of young flushes	Light purple turning green in 2-4 days
Leaf length/breadth (cm)	15.40/5.70
Nature of flowering	Terminal and axillary.
Time taken for flowering	4 years
Shoot regeneration capacity	18.90/4 plants
Yield of dry bark per plant (g)	194.6
Colour of dark bark	Light brown
<b>Reaction to major pests and diseases</b>	
No major pest or disease attack was noticed.	
<b>Special characteristics</b>	
A selection with high shoot regeneration capacity. Gives quality quills. Bark oil, leaf oil and oleoresin contents are high giving good aroma and taste.	



# CINNAMON



A : Whole plant

B : Bark

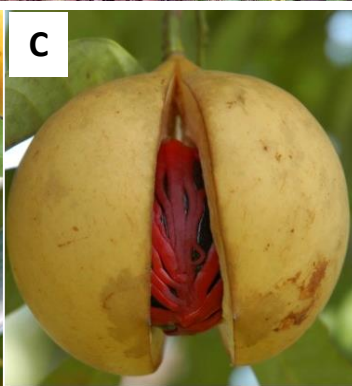


## IISR NAVASHREE

Year of release	1996
Pedigree	Seedling selection from Indian collection
Areas of adoption	All cinnamon growing areas of India
Crop duration	3 years for first harvest
Yield (per hectare)	200 kg dry quills
Potential yield (per hectare)	250 kg
<b>Quality attributes</b>	
Bark oil (%)	2.7
Leaf oil (%)	2.8
Bark oleoresin (%)	8.0
Bark recovery (%)	40.6
Cinnamaldehyde in bark oil (%)	73
Cinnamaldehyde in leaf oil (%)	15
Eugenol in bark oil (%)	6.0
Eugenol in leaf oil (%)	62
<b>Morphological characters</b>	
Height of tree at 5 years (m)	5-7
Trunk girth at 5 years (cm)	30
Colour of young flushes	Light purple turning green in 8-10 days
Leaf length/breadth (cm)	13.4/4.69
Nature of flowering	Terminal and axillary.
Time taken for flowering	4 years
Shoot regeneration capacity	25.45/4 plants
Yield of dry bark per plant (g)	201.1
Colour of dark bark	Light brown
<b>Reaction to major pests and diseases</b>	
No major pest or disease attack was noticed.	
<b>Special characteristics</b>	
A selection with high shoot regeneration capacity. Higher cinnamaldehyde and oleoresin in bark.	



# NUTMEG



A : Whole plant

B : Fruits

C : Opened fruit

D: Mace

E: Nuts

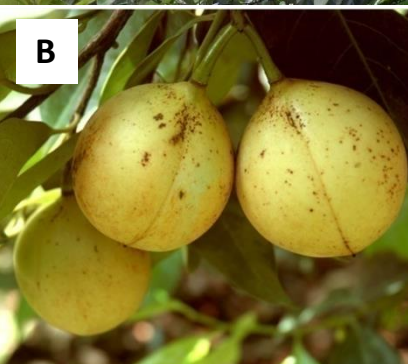


## IISR VISWASHREE

Year of release	2001
Pedigree	Clonal selection from elite trees
Areas of adoption	All nutmeg growing areas of Kerala
Crop duration	6 years for first harvest
Yield (At the rate of 360 plagiotropic grafts per ha on 8 <sup>th</sup> year of planting)	480 kg dry mace 3122 kg dry nuts
<b>Quality attributes</b>	
Nut oil (%)	7.14
Mace oil (%)	7.13
Nut recovery (%)	70
Mace recovery (%)	35
Oleoresin in nut (%)	2.48
Oleoresin in mace (%)	13.8
Butter in nut (%)	30.9
Myristicin in nut oil (%)	12.48
Myristicin in mace oil (%)	22.0
Elemicin in nut oil (%)	13.65
Elemicin in mace oil (%)	20.8
<b>Morphological characters</b>	
Height of tree at 8 years (m)	3-5
Width of the canopy (m)	3-3.5
Trunk girth at 8 years (cm)	45
Leaf length/breadth (cm)	18/5
Flowering nature	2-3 flowers in every axil
Time taken for flowering	4 years
Yield per tree (8 <sup>th</sup> year)	1000 fruits, 1.33 kg mace, 9 kg dry nut
Colour of mace	Dark red
Colour of seed	Shining black
Size of seed	Bold
<b>Reaction to major pests and diseases</b>	
Low incidence of fruit rot caused by <i>Diplodia</i> sp.	
<b>Special characteristics</b>	
A high yielding, high quality variety with bushy and compact plant type	



# NUTMEG



A : Whole plant

B : Fruits

C : Opened fruit

D: Mace

E: Nuts



## IISR KERALASHREE

Year of release	2013
Gazette notification number	S.O. 4272 (E) dated 26 November 2019
Pedigree	Selection from the seedlings raised from an elite mother tree from Burliar, Nilgiris, Tamil Nadu
Areas of adoption	All nutmeg growing areas of India
Crop duration	6 years for first harvest
Yield (At the rate of 360 plagiotropic grafts per ha on 8 <sup>th</sup> year of planting)	1512 kg dry mace 7560 kg dry nuts
<b>Quality attributes</b>	
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
Myristicin in nut oil (%)	1.6
Myristicin in mace oil (%)	9.4
Elemicin in nut oil (%)	1.4
Elemicin in mace oil (%)	0.07
<b>Morphological characters</b>	
Flowering nature	Profuse
Time taken for first 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
<b>Reaction to major pests and diseases</b>	
Low incidence of fruit rot caused by <i>Diplodia</i> sp.	
<b>Special characteristics</b>	
First nutmeg variety developed by farmers participatory breeding. The mace and nut oils are rich in sabinene and myrcene with low myristicin and elemicin.	



## Spices varieties registered with PPV&FRA

### PPV&FRA registered ICAR-IISR Varieties

Crop	Variety	Registration Number
<b>Black pepper</b>	IISR Malabar Excel	REG/2011/67
	IISR Thevam	REG/2011/68
	IISR Girimunda	REG/2011/69
	IISR Shakthi	REG/2011/73
<b>Small cardamom</b>	Appangala 1	REG/2010/343
	IISR Vijetha	REG/2011/74
	IISR Avinash	REG/2011/75
<b>Ginger</b>	IISR Varada	REG/2011/72
	IISR Rejatha	REG/2011/71
	IISR Mahima	REG/2011/70
<b>Turmeric</b>	IISR Prathibha	REG/2011/64
	IISR Prabha	REG/2011/63
	IISR Alleppey Supreme	REG/2011/66
	IISR Kedaram	REG/2011/65
	IISR Pragati	REG/2017/166

### PPV&FRA registered Farmers' Varieties\*

Crop	Variety	Registration Number
<b>Black pepper</b>	Pepper <i>Thekken</i>	REG/2013/301
	<i>Kumbuckal</i> selection	REG/2013/979
	<i>Agali</i> pepper	REG/2013/980
	<i>Sigandini</i>	REG/2019/11
<b>Small cardamom</b>	Wonder cardamom	REG/2013/978
	<i>Ela (Elarajan)</i>	REG/2013/1010
	<i>Ela</i> (White flower cardamom)	REG/2013/1011
	<i>Thiruthali</i>	REG/2013/1188
	<i>Panikulangara</i> green bold 1	REG/2014/3
	<i>Panikulangara</i> green bold 2	REG/2014/4

\*Registration facilitated by ICAR-IISR, Kozhikode



## PPV&FRA Registered Farmers' Varieties

### BLACK PEPPER



Pepper *Thekken*



*Kumbuckal* selection



*Agali* pepper



*Sigandini*

### SMALL CARDAMOM



Wonder Cardamom



*Ela* (Elarajan)



*Ela* (White flower cardamom)



*Thiruthali*



*Panikulangara* green bold 1



*Panikulangara* green bold 2





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