NEW CROP VARIETIES

1. RICE – ADT (R) 47

Special features

- High yielder
- More number of tillers with long compact panicles
- Medium slender white rice
- Moderately susceptible to stem-borer, leaf hopper, WBPH and sheath blight

Parentage : ADT 43 / Jeeragasamba

Duration (days) : 118

Season : Sornavari (April-May), Kar (May-June), Kuruvai (June-July)

Grain yield

Kg / ha	6200
% increase over	
ADT 36	31.0
ADT 43	21.0
ADT (R) 45	13.0
CO 47	15.5

Highest yield obtained : 10610 kg/ha

Area of adoption : Throughout Tamil Nadu, suitable for all types of soils under wet submerged conditions

Scientists responsible for release

- R.Vaithilingam, A.P.M. Kirubakaran Soundararaj, R.Marimuthu, R.Saraswathi, K.Vijayapriya, B.Chandrasekaran, S.Ramanathan, A.Karthikeyan, G.Ravi, K.Natarajan, N.Chelliah, M.Subramanian, A.Dhakshinamurthi, G.Manimegalai and S.Mohandoss

2. RICE - ADT (R) 48

Special features

- Very early
- Long slender white rice, better than MDU 5 in quality (head rice out-turn, amylose content, gel consistency and organo-leptic test).
- Resistant to stem-borer, green leaf hopper and gall midge

Parentage : IET 11412 / IR 64

Duration (days) : 94 (direct seeding)
99 (Transplanting)

Season : Late kuruvai (June-July)

Grain yield

Kg / ha	4800
% increase over	
MDU 5	13.9
ASD 17	21.0

Highest yield obtained : 8750 kg/ha

Area of adoption : Suitable for direct seeding under water scarce contingent situations as well as for transplanting for late *Kuruvai* season in Nagapattinam and Thiruvarur districts

Scientists responsible for release

- J.Ramalingam, R.Saraswathi, R.Marimuthu, K.Amudha, P.Parthasarathy, R.Vaithilingam, S.Ganesh Ram, K.Vijayapriya, A.P.M.Kirubakaran Soundararaj, B.Chandrasekaran, S.Sridharan, A.Karthikeyan, K.Natarajan, N.Chelliah, S.Ramanathan and M.Subramanian

3. WHEAT - COW (W) 1

Special features

- Bread wheat type
- High yielding
- Rust resistant
- Having better chappathi and bread making quality

Parentage : HD 2646 / HW 2002A / CPAN 3057

Duration (days) : 85-90

Season : Irrigated : 15th October to 15th November

Grain yield

Kg / ha	2364
% increase over	
HW 3070	5.4

Highest yield obtained : 6450 kg/ha

Area of adoption : Plains and adjoining areas near to hills and hills in Theni, Dindigul, Karur, Coimbatore, Erode, Salem, Dharmapuri, Vellore, Thiruvannamalai & Kancheepuram districts.

Scientists responsible for release

- M.Sivasamy, A.J.Prabakaran, K.A.Nayeem (IARI, RS, Wellington), N.Senthil, G.Nallathambi, S.Arumugasamy, B.Meenakumari, B.Selvi, K.Mohanasundaram and T.S.Raveendran (TNAU)

4. TENAI - CO (Te) 7

Special features

- Bold grains
- Resistant to lodging
- Suitable for rainfed condition
- High protein (13.62%) and Calcium (0.5%)
- Tolerant to leaf blast and rust
- Suitable for low rainfall and low fertile soils

Parentage : CO 5 / ISE 248

Duration (days) : 85-90

Season : Kharif (Adipattam) and Rabi (Purattasi pattam)

Grain yield

Kg / ha	1855
% increase over	
CO 6	19.4

Highest yield obtained : 4494kg/ha

Area of adoption : Salem, Villupuram, Namakkal, Thiruvannamalai, Dharamapuri, Dindigul, Tuticorin, Madurai, Virudhunagar, Vellore, Erode and Nilgiri districts

Scientists responsible for release

- A.Nirmalakumari, N.Senthil, A.John Joel, N.Kumaravadivel, B.Selvi, K.Mohanasundaram, N.Subbaraman, T.S.Raveendran, A.Ramanathan, V.Mallikavanangamudi and K.Ramamoorthy

5. REDGRAM - VBN (Rg) 3

Special features

- High yielding
- Plants open type
- Early maturity
- Resistant to Sterility Mosaic Disease (SMD)
- Tolerant to pod borer
- High protein content (21.1%)

Parentage : Vamban1 / Gulburga

Duration (days) : 100-105

Season : All seasons

Yield

Kg / ha	884
% increase over	
Vamban 1	22.0
APK 1	14.0

Highest yield obtained : 1530 kg/ha

Area of adoption : Entire Tamil Nadu. Suitable to all types of soil

Scientists responsible for release

- E.Murugan, S.Jebaraj, M.Pandiyan, P.Shanthi, K.Mohanasundaram, G.Gajendran and K.Sethuraman

6. SOYABEAN - CO (Soy) 3

Special features

- Photoinsensitive
- Medium duration
- Creamy yellow seeds with high oil and protein content
- Resistant to Yellow Mosaic Virus at field condition

Parentage : UGM 69 / JS335

Duration (days) : 85-90

Season : June-July,
Sept.-October

Yield

Kg / ha	1366
% increase over	
CO 2	22.9

Highest yield obtained : 2500 kg/ha

Area of adoption : Erode and Coimbatore districts

Scientists responsible for release

- B.Subbalakshmi, D.Sassi kumar, AR.Muthiah, T.Kalaimagal, N.Kumaravadivel, P.Veerabadhiran, S.Rajarathinam and T.S.Raveendran

7. SESAMUM – VRI (Sv) 2

Special features

- High yielding
- Seeds reddish brown colour
- Moderately resistant to shoot webber and diseases like phyllody and root rot
- High oil content (51.9%) with high poly unsaturated fatty acid (80.1%)

Parentage : VS 9003 / TMV 6

Duration (days) : 80-85

Season : Rainfed : Rabi (November – December)
Irrigated : Summer (February – March)

Yield

	Irrigated	Rainfed
Kg / ha	726	706
% increase over		
VRI (Sv) 1	14.0	14.0
CO 1	22.0	12.0
TMV 3	-	14.0
TMV 4	7.0	-
TMV 6	15.0	-

Highest yield obtained : 1740 kg/ha

Area of adoption : Sesame growing districts in Tamil Nadu

Scientists responsible for release

- G.Nallathambi, V.Manoharan, K.Nilakandapillai, P.Vindhiyavarman, P.Ramasamy, A.Mothilal, K.Sachithanantham, V.R.Saminathan and B.Chandrasekaran

8. SUGARCANE - CO Si (SC) 6

Special features

- Very thick and erect canes, non flowering and easily detrashable
- CCS % : 12.3
- Very good ratooner and suitable for early drought and late water logging
- Suitable for sodic soil conditions
- Moderately resistant to red rot
- Moderately susceptible to early shoot borer and inter node borer

Parentage : CO 8213 / CO A 7602

Duration (days) : 360

Season : Early (December-January)

Yield

	Cane	Sugar
t / ha (plant crop)	148.0	18.1
% increase over		
CO Si 95071	10.9	14.5
CO 86032	14.0	13.8
CO 86249	12.5	26.5

Highest yield obtained : 188 t/ha

Area of adoption : Delta zone of Tamil Nadu (Trichy and Tanjore), Salem, Erode and Southern districts

Scientists responsible for release

- S.Geetha, D.Packiaraj, J.Karamathullah, G.Manickam, S.Subramanian, K.Prabakar, H.Vijayaraghavan, T.Kalaimani, K.Kannappan, R.S.Purushothaman, S.Muralikrishnasamy, S.Nasir Ahmed, R.Durai, V.K.Ravichandran, M.Jayachandran, N.Tamilselvan, V.Ganesaraja and I.Mohamed Iqbal

9. SUGARCANE - COG (SC) 5

Special features

- Yellowish green medium thick cane, more number of millable cane
- Erect, non flowering and non lodging
- Moderately resistant to red rot and smut
- Good ratooning ability and suitable for drought condition
- CCS% : 13.0; good for jaggery making
- Suitable for problem soils including tannery effluent affected soils

Parentage : COC 671 / COT 8201

Duration (days) : 330 - 360

Season : Mid-late (February – May)

Yield

	Normal soil		Problem soil	
	Cane	Sugar	Cane	Sugar
t / ha (plant crop)	120.9	15.6	103.9	13.5
% increase				
COG 93076	23.7	27.9	57.0	68.8
COG 95076	33.4	38.1	26.9	33.7
CO 86032	14.9	15.6	-	-

Highest yield obtained : 165 t/ha in problem soil

Area of adoption : Suited for normal and tannery effluent affected soils of Tamil Nadu

Scientists responsible for release

- S.R.Venkatachalam, K.Koodalingam, R.Durai, A.Thirumurugan, T.L.Baskaran, S.Enayathullah Shah, G. Manickam, J.Karamathullah, T.Kalaimani, S.Nasir Ahmed, S.Muralikrishnasamy, N.Tamilselvan, M.Jayachandran, V.K.Ravichandran and V.Ganesaraja

10. NEW ZEALAND SPINACH - OOTY (Sp) 1

Special features

- High yield potential, the leaves are attractive green in colour with excellent cooking quality.
- Leaves contain high Protein (28.79 %), Fat (4%) Calcium (0.34%) and Magnesium (0.084%)
- Highly resistant to drought and frost, can be grown as a cover crop.
- Resistant to *Cercospora* leaf spot, root knot nematode, whiteflies and aphids.
- Good keeping quality upto 6 days in hills and 3 days in plains after harvest, which facilitates to market to the distant places.

Parentage : Pure line selection from germplasm types

Duration (days) : 135

Season : Main (April-June), autumn (Aug.–Oct.) and irrigated (February - April)

Yield

	Greens
t / ha	33.8
% increase over	
Local	38.5

Highest yield obtained : 35 t/ha

Area of adoption : In Nilgiris 900 to 2500 m above MSL and similar areas. Suitable for well drained loamy soil with a pH of 3.5-6.0

Scientists responsible for release

- N.Selvaraj, B.Ramaraj, L.Mohan, B.Anita, K.Shoba, D.Vijayalakshmi, V.Hema, B.Anusha, S.Jeyalakshmi, S.Maheswari and N.Anandha Krishnan

11. GUAVA - TRY (G) 1

Special features

- Off season bearing, shiny greenish yellow fruit with desirable aroma
- High TSS (10^{o} Brix) & ascorbic acid (180.8 mg/100 g. edible part)
- Organoleptic evaluation – better than Lucknow 46 & 49
- Resistant to fruit fly and tolerant to mealy bug, scale, mite and wilt
- Drought and sodicity tolerant

Parentage : Elite mother plant from assembled unknown population at ADAC&RI, Trichy identified

Duration (days) : Perennial (started bearing 6 months after planting but may be allowed after 2^{nd} year onwards. Upto 25 years gives good yield)

Season : Bears throughout the year with two peak seasons : July–Aug. and Dec.–Jan.

Yield (average in kgs) :

	Per tree	Per ha
TRY (G) 1	40.52	16348
Lucknow 46	41.50	16601
Lucknow 49	52.69	21081

Yield of checks Lucknow 46 & 49 not compared since the new variety has been promoted for its good quality traits

Highest yield obtained : 46.26 kg/tree

Area of adoption : Can be grown throughout Tamil Nadu. Particularly under salt affected soil and stress conditions.

Scientists responsible for release

- Mr.Arukutti, S.Nambison, S.Sathiyamoorthy, S.Balasubramanyan, K.Manivannan, T.N.Balamohan and R.Arulmozhiyan

FARM IMPLEMENTS

1. POWER TILLER OPERATED AIR ASSISTED SEED DRILL

Special features

- Suitable for sowing small seeds like sesame, cumbu, horsegram and sorghum.
- Spacing between the rows can be adjusted from 30 to 60 cm.
- Suitable for all makes of 10 to 12 hp power tiller.
- Saves time and cost of sowing

Cost of the unit	: Rs.7,500/-
Area coverage	: 2 to 2.5 ha/day
Cost of operation	: Rs.100/hr
Savings in time	: 80%
Savings in sowing cost	: 50%
Scientists responsible for release	: B.Shridar, T.V.Job, K.Kathirvel and R.Manian

2. PEELER CUM WASHER FOR PRODUCTION OF WHITE PEPPER

Special features

- Suitable for the production of white pepper hygienically (since retting is not required) from ripe pepper berries.
- 1 hp power is required for power operated unit.
- Water fed inside the peeling champer helps easy peeling and removal of skin after peeling
- Water requirement is 50% less because it is recirculated during washing
- The same unit can be operated manually during electricity failure.

Cost of unit	: Rs.15,000 (appxo.)
Capacity	
Power operated unit	: 125 kg/hr
Hand operated unit	: 15 kg/ha
Cost of production	
Power operated unit	: Rs.65/quintal
Hand operated unit	: Rs.460/quintal
Manual method	: Rs.850/quintal
Efficiency of the unit	: 91%
Scientists responsible for release	: V.Thirupathi and R.Viswanathan

3. HAND OPERATED ROTARY TYPE CLEANER CUM GRADER FOR PEPPER AND CARDAMOM

Special features

- Suitable for cleaning and grading into two or three grades
- Manually operated and does not depend on electricity and fuel
- Can be used for other crops also by changing the sieves

	Pepper	Cardamon
Cost of the unit (Rs.)	7500	
Capacity (kg/hr)	150	200
Cost of operation (Rs/q)	30	25
Savings in time (%)	75	75
Savings in cost (%)	80	80

Scientists responsible for release : R.Viswanathan
M.Balakrishnan and
V.V.Sreenarayanan

4. HAND OPERATED ROTARY TYPE GARBLING UNIT FOR CARDAMOM

Special features

- Hand operated unit
- Suitable for garbling dried cardamom
- Capacity is 5 kg of cardamom per batch and time taken is 2- 5 minutes per batch
- Efficiency of garbling is 98%
- Percentage broken is less than 5%
- Reduces drudgery to the labourers

Cost of the unit	:	Rs.4,000/-
Capacity of the unit	:	100 kg/hr
Cost of operation	:	Rs.150/quintal
Savings in time	:	50%
Savings in cost	:	66%
Scientists responsible for release	:	R.Viswanathan M.Balakrishnan and V.V.Sreenarayanan

5. 10 m^3 HIGH RATE REACTOR FOR CASSAVA STARCH FACTORY EFFLUENTS (SAGO EFFLUENTS)

Special features

- Promising technology for energy production
- Pollution reduction and ease of operation
- High rate reactor for treating 7000 litres of sago effluents per day
- Suitable for small and medium scale sago industries

Cost of plant	: 1.5 lakhs
Biogas production	: 10 m^3 / day
Cost of gas production	: Rs.35/- / day
BOD reduction	: Upto 80%
Scientists responsible for release	: N.O.Gopal A.Sampathrajan A.Kamaraj S.Kulanthaisamy P.Venkatachalam P.Duraisamy M.Singaravelu and G.Chinnanchetty

MANAGEMENT TECHNOLOGIES

1. ADOPTABLE SRIVILLIPUTTUR IPM MODULE (ASIPM) FOR SUMMER IRRIGATED AND RICE FALLOW COTTON

Details of Technology

- Basal application of neem cake @ 150 kg/ha and drenching with 1% neem oil at 20 DAS
- Treat the acid delinted seeds with imidacloprid 70WS @ 5g/kg and *Trichoderma viride* @ 4g/kg
- Use of eco-feast crops viz., cowpea as intercrop and maize and castor as border crops for conservation and augmentation of natural enemy population
- Use of yellow sticky traps for whitefly, Pheromone traps for bollworms *viz.,* American bollworm (*Helicoverpa armigera)*and pink bollworm (*Pectinophora gossypiella*),
- Release of *Trichogramma* twice at 15 days interval (coinciding with *H.armigera* incidence)
- ETL based protection with safer chemical pesticides.

Benefits

- Location specific IPM module recommended for Summer irrigated and Rice Fallow Cotton
- ASIPM module registered 80.5, 73.6 and 75.6 % decrease of thrips, aphids and leafhopper population over Farmers Practice (FP)
- Stem weevil incidence was 18.4 % (49.5 % in FP)
- Incidence of bollworms viz., *Earias vitella, , H.armigera, Pectinophora gossypiella* was lowered by 47, 66 and 58 % respectively in IPM module
- Population build up of coccinellids was higher in IPM module due to usage of ecofriendly pesticides and neem compunds
- ASIPM module registered the lowest Environmental Impact Quotient (EIQ) of 23.67 compared to 382.43 in Non IPM module

Economics

Particulars	ASIPM	Non IPM
Cost (Rs.)	13560	11600
Yield (kg/ha)	1805	1354
Gross income (Rs.)	36100	27080
Profit (Rs.)	22540	15480
C:B ratio	1:2.02	1:1.69
Environment Impact Quotient	23.67	382.43
Additional cost (Rs/ha)	1960	
Additional returns (Rs/ha)	7060	
Added impact on Environment by increased use of pesticides in Non- IPM module	--	358.76

Scientists responsible for release

- S.Subramanian, S.V.Krishnamoorthy, R.Nalini, N.Murugesan, P.Chandramani, N.Sivasamy, M.Suriachandraselvan, R.Vimala, P.Amala Balu and R.Balasubramanian

2. POST- EMERGENCE MANAGEMENT OF PARASITIC WEED *STRIGA ASIATICA* IN SUGARCANE

Details of Technology

- Pre-emergence application of atrazine 1.0 kg/ha on third day after planting + hand weeding on 45 DAP with an earthing up on 60 DAP combined with post-emergence spraying of 2,4-D sodium salt 5g / litre (0.5%) + urea 20g / litre (2%) on 90 DAP for complete control

Benefits

- Complete control of parasitic weed *Striga asiatica*
- Seed production by *Striga asiatica* is avoided
- Higher cane & sugar yields and additional returns
- Environmentally safe technology

Economics

Technology	Striga control efficiency (%)	Cane yield (t / ha)	Cost of technology (Rs. / ha)	Net returns (Rs. / ha)	Additional returns (Rs. / ha)
Pre-emergence spraying of atrazine 1.0 kg/ha on 3DAP+HW on 45&90 DAP	42.6	91.6	5,120	36,500	--
Post-emergence spraying of 2,4-D Na salt 5 g / litre on 90 DAP	87.2	106.8	5,800	41,235	4,735
Post-emergence spraying of 2,4-D Na salt 5 g/litre (0.5%) + urea 20 g / litre (2%) on 90 DAP	99.3	138.6	5,880	71,560	35,060

Scientists responsible for release

- C.Chinnusamy and O.S. Kandasamy

3. PRODUCTION PRACTICES FOR CULTIVATION OF CAPSICUM AND TOMATO IN POLYHOUSE

Details of Technology

- The growing medium, irrigation regime, fertilizer application and mulching for capsicum (hybrid Indra) and tomato (hybrid SH 7711) under naturally ventilated polyhouse conditions were standardized.

	Capsicum	**Tomato**
Growing medium	Soil : FYM : composted coir pith (2:1:1).	
Irrigation regime	20 kPa	
Fertilizer application	Basal – NPK each @ 50 kg / ha through straight fertilizers	
	Fertigation - NPK each @ 150 kg / ha through water soluble fertilizer	Fertigation - NPK each @ 250 kg / ha through water soluble fertilizer
Mulching	Black polyethylene sheet (50 micron)	

Benefits

- Ensures high productivity with good quality produce in capsicum and tomato.
- Acts as mechanical barrier to pests and vectors of viral diseases.
- Regulation of microclimate in the polyhouse will minimize the crop loss due to abiotic stresses.
- An eco-friendly production system, which minimizes the use of harmful pesticides significantly.
- Beneficial for off -season production and removing seasonality barrier.

Economics

	Capsicum	**Tomato**
Yield (t/ha)	143	176
B/C ratio	3.40	1.76

Scientists responsible for release

- S.Natarajan, D.Veeraragavathatham, E.Vadivel, L.Pugalendhi, S.Sasikala, G.R.Kumaresan and K.Srinivasan

4. VALUE ADDED CABBAGE

Details of Technology

- Select matured clean cabbage
- Shred it to 5 mm size and mix with 2.5 % salt
- Pack it layer by layer in a container,2/3 height
- Seal hermetically & allow for natural fermentation at room temp.
- Blanch it at 70 ^{0} C for 10 min, after 28 days
- Store under shade in clean place and use it within four months

Benefits

- Fermented cabbage releases isothiocyanate from glucosinolate present in the cabbage, which fights against cancer.
- Consumption of value added cabbage reduces the risk of cancer on breast, lungs & colon
- Reduces post harvest losses during peak season and also has export potential.

Economics

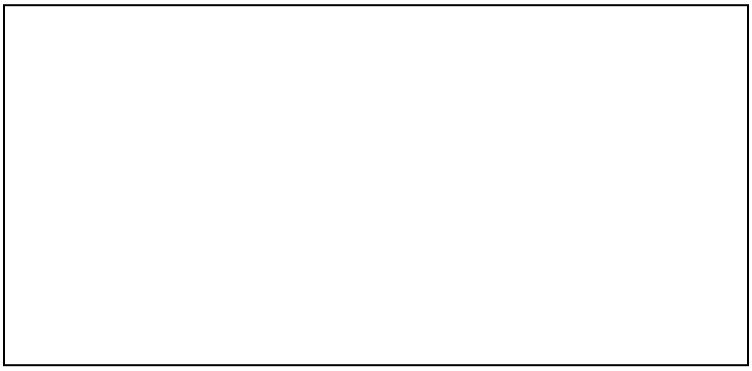
- Cost of production : Rs.50 / kg
- Cost of imported saurkraut : Rs.350 / kg

Scientists responsible for release

- R. Kailappan, Z. John kennedy and Saraswathy Eswaran

NEW CROP VARIETIES, FARM IMPLEMENTS AND MANAGEMENT TECHNOLOGIES

2005



TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE – 641 003

NEW CROP VARIETIES, FARM IMPLEMENTS AND MANAGEMENT TECHNOLOGIES

2005

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TAMIL NADU AGRICULTURAL UNIVERSITY

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FOREWORD

It is a matter of great pride that our Tamil Nadu Agricultural University release every year new high yielding varieties, farm implements and management technologies.

During 2005, in the year of Centenary Celebration of Agricultural College & Research Institute, Coimbatore, TNAU is also releasing 11 varieties (two in Rice and Sugarcane, one each in Wheat, Tenai, Redgram, Soyabean, Sesamum, New Zealand Spinach and Guava), five farm implements and four management technologies for the benefit of the farming community.

I am sure that the newer introduction will bring prosperity to the farming community.

I assure that the scientists of TNAU will continue to strive hard for the benefit of the farming community and other beneficiaries to realise much benefits and more returns in the years to come.

March 7, 2005
Coimbatore – 641 003

(C.Ramasamy)

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