Tamil Nadu

Package of Practices for Organic Crop Production

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Suggested cropping systems (based on testing under NPOF)

1. CS₁: Green manure-Cotton-Maize

2. CS₂: Green manure-Chillies-Sunflower

3. CS₃: Green manure-Beetroot-Maize

Details of Cropping Systems

Cropping System 1: Green manure-Cotton-Maize

Particulars Kharif		Rabi	Summer
Crop	Cotton	Maize	Sunnhemp
Fortnight of sowing/planting	August 1 st fortnight	February 1 st fortnight	June 1 st fortnight
Fortnight of harvesting	January 2 nd fortnight	May 2 nd fortnight	July 1 st fortnight
Varieties suitable for organic farming	Suraj	CO(H)M6	Local

Crop (kharif): Cotton

Important features of suitable varieties

Parameters	MCU 12	Suraj
Duration (days)	160	165
Average yield under organic	2000 kg/ha	1799 kg/ha
condition (kg/ha)		
Source (s) of availability	-	CICR,
		Coimbatore
Suitable regions/districts in	Coimbatore, Erode, Madurai, Dindigul,	Coimbatore
the state	Theni, Dharmapuri, Salem, Namakkal,	
	Erode	

Field preparation:

Prepare the field to get a fine tilth. Chiselling for soils with hard pan: Chisel the soils having hard pan formation at shallow depths with chisel plough at 0.5 metre interval, first in one direction and then in the direction perpendicular to the previous one, once in three years. Form ridges and furrows 10 m long with 60 cm spacing by using ridge plough or bund former.

Seed rate (kg/ha)	7.5 kgs of delinted	seeds					
Pre-	Material Recom				Method of		
sowing/planting		rate (kg/ha or		I			
treatment of			1	ha)			
seed/seedlings	Azospirillum		600 g/l	na	Seed treatment		
_	Phosphobacteria		600 g/l	na	Seed treatment		
	Pseudomonas			kg of	Seed treatment		
			seed	Ü			
	Trichoderma		4 g/kg	of seed	Seed treatment		
Spacing (Row x	60 x 30 cm				•		
plant)							
Basal application	Å	Source			Quantity/ha		
of organic manures	FYM			7.05 t/	/ha		
including soil	Vermicompost			4.49 t/	'ha		
application of bio-	Azospirillum			2kg/ha	a .		
fertilizers, bio-	Phosphobacteria			2kg/ha			
control agents etc	Pseudomonas			2.5 kg			
	Trichoderma			2.5 kg			
Top dressing of	Source	Quantity,	/ha		Days after		
organic manures		ب ج			owing/planting or		
					stage of crop		
	Vermicompost	1 t/ha		45	45 DAS		
	Panchagavya	-), 60 and 90 DAS		
Irrigation practices	Number of	Most critical s	tages for	r I	Depth of irrigation		
irrigation practices	irrigations	irrigatio	~ 0		(cm)		
	15-18 irrigations	Germination ph		-15	(CIII)		
	depending on the	days)	iase (1	13			
	weather and soil	Vegetative pha	se (16	-44			
	type	Vegetative phase (16-44 days)					
	ij po	Flowering phase (85-90					
		days)	(00				
Major weeds	Acalypha indica,	• '	lon, Cy	perus	rotundus, Digera		
	arvensis, Chloris b	arbata, Trianthei	ma por	tulacasi	trum, Parthenium		
	hysterophorus						
Weed management	Critical stage	of weeding	Reco	ommend	led practice for		
				organie	c condition		
	Vegetative and flowering phase Manual we				_		
	Stubble			mulchi			
Organic plant	Name of Organic mate				Quantity (kg or		
protection	T v				litres/ha)		
practices	Fruit	11					
		Helicover Polyhedrosis Virus (NPV)					
	pa armigera	·					
	and 12th week after sowing						
		• Beauveria	bassi	ana			

T	Г	4 4 504 1110 400 //
	• Pologge of one managitaid	1.15% WP 400 g/ha
	• Release of egg parasitoid, Trichogramma spp.,	6.25 cc/ha at 15 days interval 3
	•Egg-larval parasitoid, <i>Chelonus blackburnii</i> and Predator <i>Chrysoperla</i>	times from 45 DAS 1,00,000/ha at 6 th ,
	carnea • ULV spray of NPV, for effective control of Helicoverpa	13 th and 14 th week after sowing. 3 x 10 ¹² POB /ha with 10% cotton seed kernel extract, with sticking agent
Pink bollworm: Pectin ophora gossypiella	 Use pheromone trap to monitor the adult moth activity Three weekly releases of 	
0 71	egg parasitoid Trichogramma sp	@1,00,000/ha per release
Cotton Stem Weevil: Pemphere s (Pempherulus) affinis and Shoot weevil: Alcidodes affaber	Basal application of neem cake	250 kg/ha
Tobacco Cutworm: Spodoptera litura	 Use of light trap Growing castor along border and irrigation bunds Removal and destruction of egg masses Removal and destruction of early stage larvae Hand picking and destruction of grown up caterpillars 	
Sucking pests	 Neem oil Neem seed kernel extract Fish oil rosin soap Notchi leaf extract Catharanthus rosea extract 	3% 5% 2.5 % 5% 5%
Foliar diseases - Alternaria leaf spot: Alternaria macrospora	Neem oil Bacillus subtilis	3% 0.04% on 60, 90 and 120 days after sowing

	Wilt : Fusarium oxysporum f. sp. vasinfectum	 Seed treatment with <i>Trichoderma viride</i> formulation Destroy the infected - plant debris. Soil application of <i>Trichoderma viride</i> 	4g/kg seed 2.5kg/ha
	Root Rot: Rhizoctonia bataticola	 Seed treatment with <i>T.</i> viride Seed treatment with Bacillus Soil application 	@ 4 g/kg seed@ 10g/kg seed@ 2.5 kg/ ha at the time of sowing
		 Seed treatment with Pseudomonas Soil application of Pseudomonas 	@ 10g/kg@ 2.5 kg/ha at the time of sowing
Optimum stage of harvesting	Boll bursting stage		

Parameters	1 st	2 nd	3 rd	4 th year	5 th	6 th	7 th year
	year*	year	year		year	year	
Economic yield	1323	1460	1175	1493	1515	1053	1165
(kg/ha)							
Price (Rs/kg)	Actual	Actual price: 45					
	25 % p	25 % premium price: 46.25					
Cost of	40,110						
cultivation*(Rs/ha)							
Net returns* (Rs/ha)	13,771						

Crop (Rabi) : Maize

Parameters	CO1	COH(M)6
Duration (days)	10-110	110
Average yield under	5200	7400 kg/ha
organic condition		
(kg/ha)		
Source (s) of	TNAU	TNAU
availability		
Suitable	Coimbatore, Erode,	All maize growing areas
regions/districts in	Tirunelveli, Tanjore	
the state	and Pudukottai	

Specific resistance /	Resistant to	downy	Multiple	disease	resistance	to	Sorghum
tolerance to disease	mildewOrange	flint	downy	mi	ldew, Maya	lis	leaf
	grains	blight, Turcicum leaf blight, Post flowering				flowering	
			stock rot	and Band	ed leaf and	sheat	th blight

Field preparation:

Plough the field with disc plough once followed by cultivator ploughing twice, after spreading FYM or compost till a fine tilth is obtained. Form ridges and furrows providing sufficient irrigation channels. The ridges should be 6 m long and 60 cm apart using a bund former or ridge plough.

Seed rate	20 kg/ha				
Pre-sowing/planting	Material	Recommend	led rate (kg/ha	Method of	
treatment of		or	lit/ha)	application	
seed/seedlings	Azospirillum 600 g/ha			Seed treatment	
	Phosphobacteria	600 g/ha		Seed treatment	
Spacing (Row x plant) in	60 x 25 cm	·			
cm					
Basal application of	Source		Quantity/ha		
organic manures including	FYM		11.88 t/ha		
soil application of bio-	Vermicompost		7.57t/ha		
fertilizers, bio-control	Azospirillum		2kg/ha		
agents etc	Phosphobacteria		2kg/ha		
Top dressing of organic	Source Quantity/ha			Days after	
manures			·	sowing/planting	
			or stage of crop		
	Vermicompost 1 t/ha			30 DAS	
Irrigation practices	Number of Most critical stages for			Depth of	
	irrigations irrigation			irrigation (cm)	
	9 to 11	Germination	&	-	
	irrigations	establishment	phase-1		
	based on the	to 14	4 days		
	weather and	Vegetative ph	ase - 15 to 39		
	soil type	days			
		Flowering pha	ase - 40 to 65		
		days			
		Maturity phas	se - 66 to 95		
		days			
Major weeds		•	• • •	rotundus, Digera	
	arvensis, Chloris	barbata,	Trianthema	portulacastrum,	
	Parthenium hyste				
Weed management	Critical stage of weeding Recommended prac			v	
	cond				
			111111111111111111111111111111111111111		
	Flowering ph		Stubble mulchi		
Organic plant protection	Name of	Organi	c material	Quantity (kg or	

practices	pest/disease	recommended for control	litres/ ha)		
	Stem borer: Chilo	Release egg p[arasitoid	@		
	partellus	Trichogramma chilonis are	2,50,000 /ha		
		desirable. Third release is to	(three releases at		
		be accompanied	weekly interval)		
		with larval parasitoid			
		Cotesia flavipes @ 5000/ha			
	Corn	• Set up of light traps			
	worm/Earworm: <i>H</i>	•Set up sex pheromone	@ 12/ha		
	elicoverpa	traps			
	armigera	•Two applications of	$@ 1.5 \times 10^{12}$		
		NPV along with crude			
		sugar 2.5 kg + cotton	interval along		
		seed kernel powder 250	with crude		
		g on the ear heads	sugar 2.5 kg +		
		g on the car neads	cotton seed		
			<u> </u>		
			250 g on the ear		
			heads		
	Sucking pests	Neem oil	3%		
		Neem seed kernel extract			
		Fish oil rosin soap			
	Foliar diseases	Neem oil	3%		
Optimum stage of	Observe the follow	ving symptoms, taking into c	onsideration the		
harvesting	average duration o				
	i. The sheath covering the cob will turn yellow and dry at				
	maturity.				
	ii. The seeds become fairly hard and dry. At this stage the crop				
	is ready for harves		is stage the crop		
	is ready for flatves				

Paramet	ters	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
		year*						
Economic	yield	3753	4123	4078	3757	4064	4144	5481
(kg/ha)								
Price	(Rs/kg)	Actual	price: Rs.1	2.5				
(consider 2	25 %	25 % p	remium on	prevailin	ig market p	price:Rs.1:	5.62	
premium	on							
prevailing	market							
price)								
Cost	of	Rs.48,678						
cultivation*(l	Rs/ha)							
Net returns*	(Rs/ha)	Rs.36,963						

*based on prices of 2013-14 **Crop** (Summer): Sunnhemp

Parameters	Sunnhemp
Duration (days)	150 days
Average yield under organic condition (kg/ha)	Green biomass: 13-15 t/ha
Source (s) of availability	TNAU
Suitable regions/districts in the state	All districts of Tamil Nadu

Field preparation: Plough the soil to fine tilth, broadcast the seeds and form ridges and furrows 60 cm.

Cultural practices

Seed rate (kg/ha)	25-35 kg/ha for green manure				
Pre-sowing/planting treatment of	Material	Recommended	Method of		
seed/seedlings		rate (kg/ha or	application		
		lit/ha)			
	Rhizobium	1 kg/ha	Seed treatment		
Spacing (Row X plant) in cm	mixing with 25 kg sa	and			
Irrigation practices	Once in 30 days				
Major weeds	Trianthema po	rtulacastrum, Parthe	nium hysterophorus		
Weed management	Hand hoeing and removal				
Organic plant protection	Neem oil: 3% sp	oraying			
practices					
Optimum stage of harvesting	Incorporation during flowering stage or 45 DAS				

Yield and Economics: Incorporated as green biomass at 45 DAS

Cropping System 2: Green manure-Chillies-Sunflower

Particulars	Kharif	Rabi	Summer
Crop	Chillies	Sunflower	Sunnhemp
Fortnight of	August 1 ^{rst} fortnight	February 2 nd fortnight	June 2 nd fortnight
sowing/planting			
Fortnight of	February 1 ^{rst} fortnight	June 1 ^{rst} fortnight	July 2 nd fortnight
harvesting			
Varieties suitable for	PKM1	COSFV5	Local
organic farming			

Crop (kharif): Chillies

Parameters	PKM1	K1	
Duration (days)	180	210	
Average yield under organic condition (kg/ha)	3.08 tonnes/ha –dry pod	1.8 tonnes/ha- dry pod	

Source (s) of availability	TNAU	TNAU
Suitable regions/districts in the	Rainfed and irrigated	Southern Districts of Tamil
state	conditions	Nadu, Coimbatore

Nursery raising practices:

Seed rate

Varieties: 1.0 kg / ha.

Nursery area: 100 sq.m / ha.

Nursery raising: Protray nursery

- Mix sterilized cocopeat @ 300 kg with 5 kg neem cake along with *Azospirillum* and phosphobacteria each @ 1 kg. Approximately 1.2 kg of cocopeat is required for filling one protay. 300 protrays (98 cells) are required for the production of 29,000 seedlings, which are required for one hectare adopting a spacing of 90 x 60 x 45 cm in a paired row system.
- Sow the seeds in protrays @ 1 seed per cell.
- Cover the seed with cocopeat and keep the trays one above the other and cover with a polythene sheet till germination starts.
- After 6 days place the protrays with germinated seedlings individually on the raised beds inside the shade net.
- Water with rosecan everyday upto seed germination.

Field preparation:

Thoroughly prepare the field and form ridges and furrows at a spacing of 60 cm. Irrigate the furrows and transplant 40-45 days old seedlings, with the ball of earth on the ridges.

Pre-sowing/planting treatment of seed/seedlings	Material	Recommended rate (kg/ha or		Method of application	
or seed/seedings		·	ha)	иррисаноп	
	Azospirillum	400 g/ha	l	Seedling root dip	
	Phosphobacteria	400 g/ha	l	Seedling root dip	
Spacing (Row x plant) in cm	60 x 45 cm				
Number of seedlings/hill	2				
Basal application of organic	Source		Quantity/ha		
manures including soil	FYM	7.50 t/ha			
application of bio-fertilizers,	Vermicompost		3.09 t/ha		
bio-control agents etc	Azospirillum		2kg/ha		
	Phosphobacteria 21		2kg/ha		
	Pseudomonas	domonas 2.5 kg/ha		ì	
	Trichoderma		2.5 kg/ha		
Top dressing of organic	Source Quantity/ha		ty/ha	Days after	
manures				sowing/planting or	
				stage of crop	
	Vermicompost	1 t/ha		45 DAS	

	Panchagavya	3% spray	30, 60, 90 and 120 DAS
Irrigation practices	Number of irrigations	Most critical stages for irrigation	Depth of irrigation (cm)
	18-24 irrigations depending on the weather and soil type	Irrigation is done at weekly	-
Major weeds	Acalypha indica, Digera arvens	Cyanodon dactylon is, Chloris barb arthenium hysteroph	*
Weed management	Critical stage of weeding Vegetative and flowering phase	con	practice for organic adition ace in 30 days after
Organic plant protection practices	Name of pest/disease Fruit borer	Organic material recommended for control • Set up pheromone traps for Helicoverpa armigera or Spodoptera litura • Collection and destruction of damaged fruits and grown up caterpillars. • Spray Bacillus	Quantity (kg or litres/ ha) @ 12 Nos./ha.
	Sucking pests	Neem oil Neem seed kernel extract	@ 2 g/lit 3% 5%

	Damping off and	• Seed treatment	
	anthracnose	with	
		Trichoderma	@ 4 g/kg
		viride	
		or	
		Pseudomonas	@ 10 g/kg
		fluorescens	
		 Soil application 	@ 2.5 kg/ha
		of	
		Pseudomonas	
		fluorescens	
		• Neem oil	@ 3%
Optimum stage of harvesting	Fruit maturation s	tage	

Parame	eters	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
		year*						
Economic	yield	3168	5345	3153	5526	5812	4483	6215
(kg/ha)								
Price	(Rs/kg)	Actual	price: 18					
(consider	25 %	25 % p	remium pr	ice: 22.50)			
premium	on							
prevailing	market							
price)								
Cost	of	92,560						
cultivation*(cultivation*(Rs/ha)							
Net returns*	(Rs/ha)	47,278						

^{*}based on prices of 2013-14

Crop (Rabi): Sunflower

Parameters	TNAU Sunflower Hybrid CO 2	COSFV 5
Duration (days)	90-95	85-90
Average yield under organic condition (kg/ha)	2250	1700
Source (s) of availability	TNAU	TNAU
Suitable	Coimbatore, Erode, Salem,	Coimbatore, Erode, Salem,
regions/districts in	Namakkal, Tirunelveli, Dindigul,	Namakkal, Tirunelveli, Dindigul,
the state	Dharmapuri, Tiruchirapalli,	Dharmapuri, Tiruchirapalli,
	Perambalur, Karur, Cuddalore,	Perambalur, Karur, Cuddalore,
	Villupuram, Virudhunagar,	Villupuram, Virudhunagar,
	Sivagangai, Ramanathapuram,	Sivagangai, Ramanathapuram,
	Madurai, Theni, Thoothukudi,	Madurai, Theni, Thoothukudi

Field preparation:

Plough once with tractor or twice with iron-plough or three to four times with country-plough till all the clods are broken and a fine tilth is obtained. Spread 12.5 t/ha of FYM or compost or composted coir pith evenly on the field before the last ploughing and incorporate in the soil by working with a country plough. Form ridges and furrows 6 m long. Use bund-former or ridge plough to economise and form irrigation channels across and ridges according to the topography of the field.

Seed rate	6 kg/ha			
Pre-	Material	Recommended rate	(kg/ha or lit/ha)	Method of
sowing/plan				application
ting	Azospirillum	600 g/ha	Seed	
treatment of				treatment
seed/seedlin	Phosphobacteria	600 g/ha		Seed
gs				treatment
	Trichoderma	4g/kg		Seed
				treatment
Spacing	45 cm x 30cm			
(Row x				
plant) in cm				
Basal		Source	Quantity/h	а
application	FYM		5.30 t/ha	
of organic	Vermicompost	3	3.37t/ha	
manures	Azospirillum	2	2kg/ha	
including	Phosphobacteria	2	2kg/ha	
soil				
application				
of bio-				
fertilizers,				
bio-control				
agents etc	G		Л	D C
Top	Source	Quantity	v/ha	Days after
dressing of				sowing/plan
organic				ting or
manures				stage of
		500 1 /l		crop
	Vermicompost	500 kg/ha		30 DAS
	Panchagavya	3%		30, 45 and
.	.	3.5		60 DAS
Irrigation	Number of	Most critical stages for irri	1gat10n	Depth of
practices	irrigations			irrigation
	10.10	O 1' O '	1 1 1	(cm)
	10-12	Seeding, flowering and	seed development	-
	irrigation	stage		
	depending on			

	the weather				
	and soil type				
Major	Acalypha indica				
weeds	arvensis, Chloris	barbata, Trianthema portulacastrum,	Parthenium		
	hysterophorus				
Weed	Critical stage of Recommended practice for organic condition				
managemen	weeding				
t	Vegetative phase				
	Flowering phase	Stubble mulching			
Organic	Name of	Organic material recommended for control	Quantity		
plant	pest/disease		(kg or		
protection			litres/ ha)		
practices	Capitulum borer	•Sow trap crops like marigold at 50			
	(Head	plants/acre			
	borer): <i>Helicover</i>	•Use of pheromone traps for pest intensity			
	pa armigera	identification as well as to trap the male			
		moths	4 traps/acre		
		• Setting of light traps to know the range of			
		pest incidence as well as to kill moth			
		population			
		• Release predators like	1 light		
		coccinellids, Chrysoperla carnea	trap/5 acre		
		• Release parasitoides			
		like Trichogramma spp, (Bracon spp., Ca	@1larva/		
		mpoletis spp)	head		
		•Spraying of 5% Neem oil or 5% Neem			
		Seed Kernal extract before egg laying			
			@		
			20,000/acre		
	Dihon 1:	Doon oummon aloughing			
	Bihar hairy	• Deep summer ploughing			
	caterpillar: Spilos	• Use of well rotten manures			
	oma oblique	Collection and destruction of larvae			
	Tobacco	•Hand pick the <i>Helicoverpa</i> larvae and			
	caterpillar: Spodo	destroy			
	ptera litura	•Install bird perches per hectare for			
	T 0	predatory birds	201		
	Leaf hopper	•Neem oil	3%		
	(jassids): Amrasc	•Neem seed kernel extract	5%		
	a biguttula				
	biguttula				
	Foliar diseases	Neem oil	3%		
	Charcoal Rot:	Soil application of <i>P. fluorescens</i> or <i>T.</i>	2.5 kg / ha		
	Macrophomina	viride	+ 50 Kg of		

	phaseolina		well
			decompose
			d FYM or
			sand at 30
			days after
			sowing
Optimum	Observe the bracts	on the backside of the capitula. When they turn	n lemon
stage of	yellow, the heads ha	arden and the crop is ready for harvest.	
harvesting	•	•	

Parame	eters	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
		year*						
Economic	yield	1252	1227	1023	1349	1602	1304	1373
(kg/ha)								
Price	Actual	price: 25						
(consider	25 %	25 % p	remium or	n prevailir	ng market j	price: 31.2	25	
premium	on							
prevailing	market							
price)								
Cost	of	21,918						
cultivation*(Rs/ha)								
Net	returns*	20,988						
(Rs/ha)								

^{*}based on prices of 2013-14 Crop (summer): Sunhemp

Important features of suitable varieties

Parameters	Sunnhemp
Duration (days)	150 days
Average yield under organic condition (kg/ha)	Green biomass – 13-15 t/ha
Source (s) of availability	TNAU
Suitable regions/districts in the state	All districts of Tamil Nadu

Field preparation: Plough the soil to fine tilth, broadcast the seeds and form ridges and furrows 60 cm.

Seed rate (kg/ha) (Not applicable	25-35 kg/ha for green manure			
for nursery crops)				
Pre-sowing/planting treatment of	Material	Recommended	Method of	
seed/seedlings		rate (kg/ha or	application	
		lit/ha)		
	Rhizobium	1 kg/ha	Seed treatment	
Spacing (Row x plant) in cm	Broadcasted	1	1	

Irrigation practices	Once in 30 days
Organic plant protection practices	Neem oil: 3% spraying
Optimum stage of harvesting	Incorporation during flowering stage or 45 DAS

Yield and Economics: Incorporated as green biomass at 45 DAS

Cropping System 3: Green manure-Beetroot-Maize

Particulars	Kharif	Rabi	Summer
Crop	Beetroot	Maize	Sunnhemp
Fortnight of	July 1 st fortnight	Novemebr 1 st	March 1 ^{rst} fortnight
sowing/planting		fortnight	
Fortnight of	September	February 2 nd fortnight	April 2 nd fortnight
harvesting	2 nd fortnight		
Varieties suitable for	Ruby queen	CO(H)M6	Local
organic farming			

Crop (kharif): Beetroot

Important features of suitable varieties

Parameters	Ruby queen
Duration (days)	60-75 days
Average yield under organic condition (kg/ha)	
Source (s) of availability	Private industry
Suitable regions/districts in the state	Widely adaptable (Preferably cool weather)

Field preparation:

Land is ploughed to a fine tilth by thorough ploughing making it loose and friable. Clods are to be removed completely. Apply well decomposed farmyard manure at the time of final ploughing.

Seed rate (kg/ha)	6 kg/ha		
Pre-sowing/planting treatment of seed/seedlings	Material	Recommended rate (kg/ha or lit/ha)	Method of application
Spacing (Row x plant) in cm	30 x 10 cm		
Basal application of organic	Source Quantity/ha		Quantity/ha
manures including soil	FYM	3.75 t/ha	
application of bio-fertilizers,	Vermicompost	1.55 t/ha	
bio-control agents etc			
Top dressing of organic	Source	Quantity/ha	Days after

manures			sowing/planting or	
			stage of crop	
	Vermicompost	500 kg/ha	45 DAS	
	Panchagavya	3% spray	30, 45 and 60 DAS	
Irrigation practices	Number of	Most critical	Depth of irrigation	
	irrigations	stages for	(cm)	
		irrigation		
	8 - 10 irrigations	Irrigation is		
	depending on the	done at weekly		
	weather and soil	intervals		
	type			
Major weeds	Acalypha indica, Cyanodon dactylon, Cyperus rotundus,			
	Digera arvensis, Chloris barbata, Trianthema			
	portulacastrum, Parthenium hysterophorus			
Weed management	Critical stage of	Recommended p	ractice for organic	
	weeding	con	ndition	
	Early stage of	Hand weeding once in 30 days af		
	crop growth	sowing		
Organic plant protection	Name of	Organic	Quantity (kg or	
practices	pest/disease	material	litres/ ha)	
		recommended		
		for control		
	Leaf miners, web	Neem oil	3%	
	worms, semi			
	loopers			
	Cercospora leaf	Neem oil	3%	
	spot			
		l		

Parameters	1 st year*		
Economic yield (kg/ha)	24.8 t/ha		
Price (Rs/kg)	Actual price: Rs.10		
	25 % premium price: rs.12.5		
Cost of cultivation*(Rs/ha)	Rs.86,015		
Net returns* (Rs/ha)	Rs.2,23,985		

^{*}based on prices of 2013-14

Crop (Rabi) : Maize

Parameters	COH(M)6
Duration (days)	110
Average yield under	7400 kg/ha
organic condition (kg/ha)	
Source (s) of availability	TNAU
Suitable regions/districts	All maize growing areas

in the state	
Specific resistance /	Moderately resistant to stem borer
tolerance to pest	
Specific resistance /	Multiple disease resistance to Sorghum downy mildew, Maydis
tolerance to disease	leaf blight, Turcicum leaf blight, Post flowering stock rot and
	Banded leaf and sheath blight

Field preparation:

Plough the field with disc plough once followed by cultivator ploughing twice, after spreading FYM or compost till a fine tilth is obtained. Form ridges and furrows providing sufficient irrigation channels. The ridges should be 6 m long and 60 cm apart using a bund former or ridge plough.

Seed rate	20 kg/ha			
Pre-sowing/planting	Material	Recommend	ed rate (kg/ha	Method of
treatment of		or lit/ha)		application
seed/seedlings	Azospirillum	600 g/ha		Seed treatment
	Phosphobacteria	600 g/ha		Seed treatment
Spacing (Row x plant) in cm	60 x 25 cm			
Basal application of	Source		Quantity/ha	
organic manures including	FYM		11.88 t/ha	
soil application of bio-	Vermicompost		7.57t/ha	
fertilizers, bio-control	Azospirillum		2kg/ha	
agents etc	Phosphobacteria		2kg/ha	
Top dressing of organic manures	Source	Quant	ity/ha	Days after sowing/planting or stage of crop
	Vermicompost	1 t/ha		30 DAS
Irrigation practices	Number of irrigations	Most critical irrigation	t stages for	Depth of irrigation (cm)
	9 to 11 irrigations based on the weather and soil type	Germination establishment to 14 Vegetative ph days Flowering phadays Maturity phase	ase - 15 to 39 ase - 40 to 65	
		days		
Major weeds	Acalypha indica, Cyanodon dactylon, Cyperus arvensis, Chloris barbata, Trianthema Parthenium hysterophorus			rotundus, <i>Digera</i> portulacastrum,
Weed management Critical stage of			commended pra	ectice for organic

			condi	ition
	 Vegetative 	phase	 Manual weeding 	g
	Flowering phase • Stubble mulchi		ng	
Organic plant protection	Name of	Or	ganic material	Quantity (kg or
practices	pest/disease		mended for control	litres/ ha)
	Stem borer: Chilo partellus	desirable be with	egg parasitoid ramma chilonis are le. Third release is to accompanied larval parasitoid flavipes @ 5000/ha	@ 2,50,000 /ha (three releases at weekly interval)
	Corn worm/Earworm: <i>H</i> elicoverpa		o of light traps up sex pheromone	@ 12/ha
	armigera Sucking pests	•Two NPV sugar seed I g on t		@ 1.5 x 10 ¹² POB at 10 days interval along with crude sugar 2.5 kg + cotton seed kernel powder 250 g on the ear heads
			seed kernel extract l rosin soap	
	Foliar diseases	Neem o	-	3%
Optimum stage of harvesting	Observe the following symptoms, taking into consideration the average duration of the crop. i. The sheath covering the cob will turn yellow and dry at maturity. ii. The seeds become fairly hard and dry. At this stage the crop is ready for harvest.			

Param	eters	1 st year*	
Economic	yield	4015	
(kg/ha)			
Price	(Rs/kg)	Actual price:Rs. 12.5	
(consider	25 %	25 % premium on prevailing market price: Rs.15.625	
premium	on		
prevailing	market		
price)			
Cost	of	Rs.49,209	
cultivation*	(Rs/ha)		
Net returns	* (Rs/ha)	Rs.11,625	

*based on prices of 2013-14 **Crop** (*summer*): **Sunnhemp**

Important features of suitable varieties

Parameters	Sunnhemp	
Duration (days)	150 days	
Average yield under organic condition (kg/ha)	Green biomass – 13-15 t/ha	
Source (s) of availability	TNAU	
Suitable regions/districts in the state	All districts of Tamil Nadu	

Field preparation: Plough the soil to fine tilth, broadcast the seeds and form ridges and furrows 60 cm.

Cultural practices

Seed rate (kg/ha)	30 kg/ha for green manure			
Pre-sowing/planting treatment of seed/seedlings	Material	Recommended rate (kg/ha or lit/ha)	Method of application	
	Rhizobium	1 kg/ha	Seed treatment	
Spacing (Row X plant) in cm	Broadcasted			
Irrigation practices	Once in 30 days			
Organic plant protection practices	Neem oil: 3% spraying			
Optimum stage of harvesting	Incorporation during flowering stage or 45 DAS			

Yield and Economics: Incorporated as green biomass on 45 DAS