Organic Package of Practices for Maharashtra State

Organic is defined and regulated by the National Organic Production Program (NPOP) or PGS-India Organic program, to get organic certification/ An organic grower must maintain an Organic System Plan and be certified by an Accredited Certifying Bodies that has been approved and audited by the NAB or PGS-India Regional Council.Organic farming explicitly prohibits the use of synthetic or chemical fertilizers, herbicides and pesticides, genetically-modified organisms, sewage sludge, and irradiation.

Organic Farming starts with the Soil: organic agricultural practices to maintain, replenish and balance soil fertility to produce healthy and better tasting crops. Organic farmers use an array of cultural and biological practices to build soil health, manage weeds and pests, and increase biodiversity. Some examples of organic farming practices include:

I. Crop rotations to suppress disease and support beneficial insect communities
II. Cover cropping to fix nitrogen and checking soil erosion
III. Use of biofertilisers; green manuring; vermi compost, EM etc. to enhance soil microbes and deliver plant nutrients
IV. Use of FYM; Compost and vermicompost to build organic matter and manage weeds manually.
V. Use of Bio-pesticides and mechanical controls to manage pests and disease.

In Maharashtra the agricultural area is 18 million ha.,which is about 59% of the total area of the state, and 13% of the national agricultural area. About 15% of the area is irrigated and even if all the irrigation projects planned are completed, the irrigated area cannot exceed 25%. Average annual rainfall varies from 250 mm in the semi-desert zone of central Maharashtra to 5,000 mm in the Western Ghats hill ranges along the western coastal border. About 50% of the area is drought- prone. Only 22% of the state income is derived from agriculture, but it supports 67% of the population, mainly in the rural areas. The total number of farmers is nine million, with mean land holdings about twohectares. Small farmers – with land holdings less than this – comprise 64% of the rural population. The livestock population is 36million, which includes 17 million (46%) cattle, and 10 million (28%) goats. The state produces about 15 million tonnes of food grains and accounts for 8% of national production.

Amongst the popular organic cropping systems tested under NPOF in Maharashtra areRice-Groundnut based system; Rice-*Dolichos*beanbased system; Rice-Cucumberbased system and Rice-Redpumpkinbased system fetching good remuneration to growers. The following package of practices recommended for these systems:

1 : Rice – Groundnut System :

Particulars	Kharif	Rabi
Crop	**Rice**	**Groundnut**
Fortnight of sowing/ planting	**Nursery Sowing** -Second fortnight of June **Transplanting**- Secondfortnight of July	**Sowing** - Second fortnight of December
Fortnight of harvesting	Second fortnight of October	Second fortnight of April
Varieties suitable for organic farming	Karjat-3, Karjat-4, Karjat-7 and Palghar-1	SB-XI, Konkan Guarav and Konkan Trombay Tapora

A. Crop (*Kharif*) : Rice

Important features of suitable varieties

Parameters	**Karjat-3**	**Karjat-4**	**Karjat-7**	**Palghar-1**
Duration (days)	115-120	110-115	115-120	125-130
Average yield under organic condition (kg/ha)	3500 to 3700	3300 to 3500	3400 to 3600	3900 to 4100
Source (s) of availability	RARS, Karjat	RARS, Karjat	RARS, Karjat	RARS, Karjat
Suitable regions/districts in the state	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in Maharashtra.	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in *Konkan*region of Maharashtra.	Suitable for rainfed uplands and irrigated transplanted conditions in Maharashtra State.	*Konkan* region and Maharashtra state
Specificresistance/tolerance to pest	Tolerant to stemborer	Moderately resistant to leaf folder	Resistant to leaf folder, BPH,WBPH and moderately resistant to stem borer	Moderately resistant to stem borer
Specific resistance/tolerance to disease	Resistant to blast and moderately resistant to BLB &brown spots.		Moderately resistant to blast and BLB	Moderately resistant to blast
Specific tolerance to drought/water logging	Suitable for high rainfall zone	Suitable for high rainfall +zone	Suitable for high rainfallzone	Suitable for high rainfall zone

Nursery raising practices

Area of nursery required for 1 ha	0.10 ha (1000m^2)		
Nursery raising method	**Wet nursery /Mat nursery/Raised bed method** etc.		
Bed size (length x breadth in m)	Length as per slope of the land (sloppy land less length, plain land more length) - Breadth- 1 m		
Seed sowing rate/m^2	45 to 50 g/m^2		
Pre-sowing seed/soil treatment	**Materials**	**Quantity/kg of seed or per m^2 area**	**Method of application**
	Trichoderma	5g/kg of seed	Seed treatment
Source and optimum quantity of organic manures/other nutrient source/m^2 of nursery	**Materials**	**Quantity/m^{2}area**	**Method of application**
	FYM	3 kg/m^2 area	Soil incorporation before nursery sowing
Irrigation practices	Rainfed		

Weed management	Mulching of *Glyricidia* green leaves and manual hand weeding		
Organic plant protection practices	**Name of pest/disease**	**Recommended organic material used for control**	**Quantity/m² area**
	Different insect pests	Application of neem formulation	1500 ppm@5 ml/lit of water for two times
Optimum age of nursery(days)	22 to 26 days		

Field preparation:

Field is ploughed for solar heating in the month of May. Second ploughing and clod crushing is done before monsoon with wooden plough or tractor or power tiller drawn cultivator.Puddling is done by wooden plough or tractor or power tiller drawn puddler.

The field should be manured with FYM and Neem cake @ 5 and 0.5 tonnes/ha, respectively before puddling. Similarly, 4.5 tonnes/ ha of *Glyricidia* green leaf and 4.2 tonnes/ha of rice straw be incorporated into puddled field prior to transplanting.

Cultural practices

Pre-sowing/planting treatment of seed/seedlings	**Material**	**Recommended rate (kg/ha or lit./ha)**	**Method of application**
	Phosphate solubilizing bacteria (PSB) and *Azospirillum*	PSB 2.5 kg + *Azospirillum* 2.5 kg + 100 lit of water/ha	Seedling root dip for 20 to 30 minutes in the slurry
Spacing (Row x Plant) in cm	20x15cm		
Number of seedlings/hill	3-4 seedlings/hill		
Basal application of organic manures including soil application of bio-fertilizers, bio-control agents etc.	**Source**	**Quantity/ha**	
	FYM	5000 kg /ha before puddling	
	Neem cake	500 kg /ha before puddling	
	Glyricidia Green leaves	4500 kg /ha soil incorporation before transplanting	
	Rice straw	4200 kg /ha soil incorporation before transplanting	
Top dressing of organic manures	**Source**	**Quantity/ha**	**Days after sowing/planting or stage of crop**
	Cow urine	50 lit/ha	Spraying at 30 and 60 days after transplanting
	Vermi-wash	50 lit/ha	
Irrigation practices	Rain-fed during *Kharif* and canal irrigation during *Rabi*		
Major weeds	*Echinochloa crusgalli* (Phakhad), *Echinochloa colonum* (Phakhad), *Cyperus iria* (Lavala), *Cyperus rotundus* (Lavala) and *Ischane globossa* (Dhur)		

Weed management	**Critical stage of weeding**	**Recommended practice for organic condition**
	20 Days after transplanting	Cono- weeder hoeing
	30 Days after transplanting (Tillering)	Cono- weeder hoeing and manual hand weeding
	60 Days after transplanting (Panicle initiation)	Manual hand weeding

Organic plant protection practices	**Name of the pest/disease**	**Organic material recommended for control**
Insect pests	Stem borer	• Ploughing and collection of stubbles and their composting after harvesting ofrice. • Use of tolerant and resistantvarieties. Crop rotation with ground nut, *Dolichos*bean, cucumber and red pumpkin. • Harvesting of rice close to the ground with *Vibhav* sickle developed by DBSKKV; Dapoli to kill the hibernatinglarvae. • Use of pheromone traps @20Nos./ha • Release of *Trichogramma* @ 50000/ha for 4 times. • Collection of egg masses and their destruction. • Conservation and preservation of frogs in the field

	Case worm	• Timelytransplanting • Intermittent draining out water from thefield • Flooding the field followed by dragging a rope across the field and draining out the water from thefield
	Brown Plant Hoppers (BPH), White Backed Plant Hoppers (WBPH) and Blue beetle	• Use of tolerant and resistantvarieties. • Intermittent draining out water from thefield • Adoption of proper spacing(20x15cm) • Formation of alley ways for every three meters for penetration of sunlight and proper aeration
	Army worm	• Deep ploughing after harvesting of crop to expose the hibernating stages ofpest. • Everyday inspection of the field during dry spell and atmaturity. • Keeping the bunds clean and free of weed in the beginning of theseason. • Digging the trench and flooding it with water for preventing migration of larvae from one field to anotherfield. • Erection of birdperches. • Harvesting the crop immediately after it attains thematurity. • Conservation and preservation of frogs in the field.
	Leaf eating caterpillars	• Erection of birdperches.
Diseases	Blast and sheath rot	• Use of tolerant and resistantvarieties. • Spraying of *Pseudomonas fluroscence* @ 10 g / lit of water [for 2-3 times]starting from maximum tillering to flowering stage.
	Bacterial leaf blight	• Use of tolerant and resistantvarieties. • Intermittent draining out water from the field. • Adoption of proper spacing(20x15cm)

14 Crop (*Rabi*):

Groundnut

Important features of suitable varieties: **SB XI, Konkan Guarav and Konkan Trombay Tapora**

Parameters	**SB-XI**	**Konkan Guarav**	**Konkan Trombay Tapora**
Duration (days)	110-115	120-125	120-125
Average yield under organic condition (kg/ha)	1200 to 1500	1800 to 2000	1900 to 2100
Source (s) of availability	RARS, Karjat	RARS, Karjat	RARS, Karjat
Suitable regions/districts in the state	Maharashtra state	Konkan region of Maharashtra	Konkan region of Maharashtra
Specific resistance/tolerance to disease	Tolerantto *tikka* (leaf spot) and rust	Tolerant to *tikka* (leaf spot) and rust	Tolerant to *tikka* (leaf spot) and rust

Field preparation :

Plough the field after harvest of *Kharif* rice. Criss-cross cultivation and clod crushing with peg tooth cultivator to bring the soil into good tilth.

Cultural practices

Seed rate (kg/ha)	**SB XI-** 95 kg kernels/ha, **Konkan Guarav-** 110 kg kernels /ha, **Konkan Trombay Tapora-** 125 kg kernels/ha		
Pre-sowing/planting treatment of seed/seedlings	**Material**	**Recommended rate (kg/ha or lit./ha)**	**Method of application**
	Trichoderma	5g/kg of seed	Seed treatment
	Rhizobium Biofertiliser	20g/ kg of seed	Seed treatment
	PSB	20g/ kg of seed	Seed treatment
Spacing (Row x Plant)	30x15cm		
Basal application of organic manures including soil application of bio-fertilizers, bio-control agents etc.	**Source**	**Quantity/ha**	
	FYM	1500 kg/ha	
	Neem cake	160 kg/ha	
	Vermicompost	560 kg/ha	
Top dressing of organic manures	**Source**	**Quantity/ha**	**Stage of application**
	Cow urine	50 lit/ha	Spraying at 30

	Vermiwash	50 lit/ha	and 60 days after sowing
Irrigation practices	**Number of irrigation**	**Most critical stage of irrigation**	**Depth of irrigation (cm)**
	10 irrigations at an interval of 10-12 days	Branching, Flowering, Pegging, Pod formation and Pod filling	6 cm/ irrigation)
Major weeds	*Physalis minima* (*Ranpopati*), *Portulaca oleracea* (*Motha ghol*), *Alternanthera sessilis* (*Reshimkata*), *Blumea lacera* (*Bhamrud*) and *Amaranthus viridis*(*Ranti math*)		
Weed management	**Critical Stage**	**Recommended Organic Weed management practices**	
	20 Days after sowing	Dry land weeder	
	Flowering	Manual weeding at thetime of earthing up.	

Organic plant protection practices	Name of the pest/disease	Organic material recommended for control	Doses (kg or liters/ha)
Insect pests	Aphids	• Application of neem oil	3ml/lit
	Tikka (leaf spot)	• Use of tolerant and resistant varieties.	
	Rust	• Use of tolerant and resistant varieties. • Judicious use of irrigation. • Timelyharvesting.	
Optimum stage of harvesting	• General yellowing of crop. • Blackening of inside portion ofshell. • Development of ridges onpod Colour development of kernel as per varietal character.		

Cropping System 2: Rice-*Dolichus* bean Details of Cropping Systems

Particulars	***Kharif***	***Rabi***
Crop	**Rice**	***Dolichos* bean**
Fortnight of sowing/planting	**Nursery Sowing** -Second fortnight of June **Transplanting**- Second fortnight of July	**Sowing** - Second fortnight of December
Fortnight of harvesting	Second fortnight of October	First fortnight of February to second fortnight of March
Varieties suitable for organic farming	Karjat-3, Karjat-4, Karjat-7 and Palghar-1	Konkan Bhushan

Crop (*Kharif*): Rice

Important features of suitable varieties

Parameters	**Karjat-3**	**Karjat-4**	**Karjat-7**	**Palghar1**
Duration (days)	115-120	110-115	115-120	125-130
Average yield under organic condition (kg/ha)	3500 to 3700	3300 to 3500	3400 to 3600	3900 to 4100
Source (s) of availability	RARS, Karjat	RARS, Karjat	RARS, Karjat	RARS, Karjat
Suitable regions/districts in the state	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in Maharashtra.	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in *Konkan* region of Maharashtra.	Suitable for rainfed uplands and irrigated transplanted conditions in Maharashtra State.	*Konkan* region and Maharashtra state
Specific resistance/tolerance to pest	Tolerant to stem borer	Moderately resistant to leaf folder	Resistant to leaf folder, BPH,WBPH and moderately resistant to stem borer	Moderately resistant to stem borer
Specific resistance/tolerance to disease	Resistant to blast and moderately resistant to BLB and brown spots.		Moderately resistant to blast and BLB	Moderately resistant to blast
Specific tolerance to drought/water logging	Suitable for high rainfall zone	Suitable for high rainfall zone	Suitable for high rainfall zone	Suitable for high rainfall zone

Nursery raising practices

Area of nursery required for 1 ha	0.10 ha (1000m^2)		
Nursery raising method	**Wet nursery /Mat nursery/Raised bed method** etc.		
Bed size (length x breadthin m)	Length as per slope of the land (sloppy land less length, plane land more length) - Breadth- 1 m		
Seed sowing rate/m^2	45 to 50 g/m^2		
Pre-sowing seed/soil treatment	**Materials**	**Quantity/kg of seed or per m^2 area**	**Method of application**
	Trichoderma	8g/kg of seed	Seed treatment
Source and optimum quantity of organic manures/other nutrient source/m^2 of nursery	**Materials**	**Quantity/m^2 area**	**Method of application**
	FYM	3 kg/m^2 area	Soil incorporation before nursery sowing
Irrigation practices	Rainfed		
Weed management	Mulching of *Glyricidia* green leaves and mannual hand weeding		
Plant protection practices	**Name of pest/disease**	**Recommended organic material used for control**	**Quantity/m^2 area**
	Different insect pests	Application of neem based formulation	1500 ppm@5 ml/lit of water for two times
Optimum age of nursery (days)	22 to 26 days		

Field preparation:

Field is ploughed for solar heating in the month of May. Second ploughing and clod crushing is done before monsoon with wooden plough or tractor or power tiller drawn cultivator.Puddling is done by wooden plough or tractor or power tiller drawn puddler. Bullock drawn *Pankaj* puddler developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli should be used for better puddling.

The field should be mannured with FYM and Neem cake @ 5 and 0.5 tonnes/ha, respectively before puddling. Similarly, 4.5 tonnes/ ha of *Glyricidia* green leaf and 4.2 tonnes/ha of rice straw be incorporated into puddled field prior to transplanting.

Cultural practices

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<tr><td>Practices</td><td>Material</td><td>Recommended rate (kg/ha or lit./ha)</td><td>Method of application</td></tr>
<tr><td>Pre-sowing/planting treatment of seed/seedlings</td><td>Phosphate solubilizing bacteria (PSB) andAzospirillum</td><td>PSB 2.5 kg + Azospirillum 2.5 kg + 100 lit of water/ha</td><td>Seedling root dip for 20 to 30 minutes in the slurry</td></tr>
<tr><td>Spacing (Row x Plant)</td><td colspan="3">20x15cm</td></tr>
<tr><td>Number of seedlings/hill (in transplanted crop only)</td><td colspan="3">3-4 seedlings/hill</td></tr>
<tr><td rowspan="5">Basal application of organic manures including soil application of bio-fertilizers, bio- control agents etc.</td><td colspan="2">Source</td><td>Quantity/ha</td></tr>
<tr><td colspan="2">FYM</td><td>5000 kg /ha before puddling</td></tr>
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<tr><td colspan="2">Glyricidia Green leaves</td><td>4500 kg /ha soil incorporation before transplanting</td></tr>
<tr><td colspan="2">Rice straw</td><td>4200 kg /ha soil incorporation before transplanting</td></tr>
<tr><td rowspan="3">Top dressing of organic manures</td><td>Source</td><td>Quantity/ ha</td><td>Days after sowing/planting orstage of crop</td></tr>
<tr><td>Cow urine</td><td>50 lit/ha</td><td rowspan="2">Spraying at 30 and 60 days after transplanting</td></tr>
<tr><td>Vermiwash</td><td>50 lit/ha</td></tr>
<tr><td>Irrigation practices</td><td colspan="3">Rainfed during Kharif and canal irrigation during Rabi</td></tr>
<tr><td>Major weeds</td><td colspan="3">Echinochloa crusgalli (Phakhad), Echinochloa colonum (Phakhad), Cyperus iria (Lavala), Cyperus rotundus (Lavala) and Ischane globossa (Dhur)</td></tr>
<tr><td rowspan="4">Weed management</td><td colspan="2">Critical stage of weeding</td><td>Recommended practice for organic condition</td></tr>
<tr><td colspan="2">20 Days after transplanting</td><td>Cono- weeder hoeing</td></tr>
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<tr><td colspan="2">60 Days after transplanting (Panicle initiation)</td><td>Manual hand weeding</td></tr>
</table>

Organic plant protection practices	Name of the pest/disease	Organic material recommended for control
Insect pests	Stem borer	• Ploughing and collection of stubbles and their composting after harvesting ofrice. • Use of tolerant and resistantvarieties. • Crop rotation with ground nut, *Dolichos* bean, cucumber and redpumpkin. • Harvesting of rice close to the ground with *Vibhav* sickle developed by DBSKKV; Dapoli to kill the hibernatinglarvae. • Use of pheromone traps @20Nos./ha • Release of *Trichogramma* @ 50000/ha for 4times. • Collection of egg masses and theirdestruction. • Conservation and preservation of frogs in thefield
	Case worm	• Timelytransplanting • Intermittent draining out water from thefield • Flooding the field followed by dragging a rope across the field and draining out the waterfrom the field
	Brown Plant Hoppers (BPH), White Backed Plant Hoppers (WBPH) and Blue beetle	• Use of tolerant and resistantvarieties. • Intermittent draining out water from thefield • Adoption of proper spacing(20x15cm) • Formation of alley ways for every three metersfor penetration of sunlight and properaeration
	Army worm	• Deep ploughing after harvesting of crop to expose the hibernating stages ofpest.

		• Everyday inspection of the field during dry spell and atmaturity. • Keeping the bunds clean and free of weed in the beginning of theseason. • Digging the trench and flooding it with water for preventing migration of larvae from one field to another field. • Erection of birdperches. • Harvesting the crop immediately after it attains thematurity. • Conservation and preservation of frogs in thefield.
	Leaf eating caterpillars	• Erection of birdperches.
Diseases	Blast and sheath rot	• Use of tolerant and resistantvarieties. • Spraying of *Pseudomonas fluroscence* @ 8- 10 g / lit of water [for 2-3 times]starting from maximum tillering to flowering stage.
	Bacterial leaf blight	• Use of tolerant and resistantvarieties. • Intermittent draining out water from the field. • Properirrigation. • Adoption of proper spacing(20x15cm)

Crop (*Rabi*): *Dolichos* bean

Important features of suitable varieties: **Konkan Bhushan**

Parameters	Variety : *Konkan Bhushan*
Duration (days)	100 days
Average yield under organic condition (kg/ha)	5000-5200 green pods kg/ha
Source (s) of availability	RARS, Karjat
Suitable regions/districts in the state	Maharashtra state
Specific resistance/tolerance to disease	Resistant to yellow mosaic virus
Special character	Dwarf, Does not require support

Field preparation:

Plough the field after harvest of *Kharif* rice. Criss-cross cultivation and clod crushing with peg tooth cultivator to bring the soil into good tilth.

Cultural practices

Seed rate (kg/ha)	25kg/ha		
Pre-sowing/planting treatment of seed/seedlings	**Material**	**Recommended rate (kg/ha or lit./ha)**	**Method of application**
	Trichoderma	8g/kg of seed	Seed treatment
	Rhizobium strain	25g/ kg of seed	Seed treatment
	PSB	25g/ kg of seed	Seed treatment
Spacing (Row x Plant) in cm	45 x 15 cm		
Basal application of organic manures including soil application of bio-fertilizers, bio-control agents etc.	**Source**	**Quantity/ha**	
	FYM	4000 kg/ha	
	Neem cake	390 kg/ha	
	Vermicompost	1330 kg/ha	
Top dressing of organic manures	**Source**	**Quantity/ha**	**Days after sowing/planting or stage of crop**
1.	Cow urine	50 lit/ha	Spraying at 30 and 60 days after sowing
2.	Vermiwash	50 lit/ha	
Irrigation practices	**Number of irrigation**	**Most critical stage of irrigation**	**Depth of irrigation (cm)**
	9 irrigations	Branching, Flowering and Podformation	54 cm (6 cm/irrigation)
Major weeds	*Physalis minima* (*Ranpopati*), *Portulaca oleracea* (*Motha ghol*), *Alternanthera sessilis* (*Reshimkata*), *Blumea lacera* (*Bhamrud*) and *Amaranthus viridis*(*Ranti math*)		
Weed management	**Critical stage of weeding**	**Recommended practice for organic condition**	
	25-40 DAS	Dry land weeder, One hand weeding	

Organic plant protection practices	**Name of the pest/disease**	**Organic material recommended for control**	**Quantity (kg or liters/ha)**
Insect pest	Aphids	Applicationof neem based pesticide	5ml/lit
	Pod borer	Neem based pesticide; Bt pesticide	5ml/lit; as per recommended dose
Diseases	Powdery mildew	Use of resistant varieties	
Optimum stage of harvesting	Picking for green pods from 60 to100 days aftersowing		

Cropping Systems: 3: Rice – Cucumber

Particulars	***Kharif***	***Rabi***
Crop	**Rice**	**Cucumber**
Fortnight of sowing/planting	**Nursery Sowing** - Second fortnight of June **Transplanting**- Second fortnight of July	**Sowing –** First fortnight of January
Fortnight of harvesting	Second fortnight of October	First fortnight of March to first fortnight of April
Varieties suitable for organic farming	Karjat-3, Karjat-4, Karjat-7 and Palghar-1	Hemangi and Sheetal

Crop (*Kharif*): Rice

Important features of suitable varieties

Parameters	**Karjat-3**	**Karjat-4**	**Karjat-7**	**Palghar-1**
Duration (days)	115-120	110-115	115-120	125-130
Average yield under organic condition(kg/ha)	3500 to 3700	3300 to 3500	3400 to 3600	3900 to 4100
Source (s) of availability	RARS, Karjat	RARS, Karjat	RARS, Karjat	RARS, Karjat
Suitable regions/districts in the state	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in Maharashtra.	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in *Konkan* region of Maharashtra.	Suitable for rainfed uplands and irrigated transplanted conditions in Maharashtra State.	*Konkan* region and Maharashtra state
Specific resistance/tolerance to pest	Tolerant to stem borer	Moderately resistant to leaf folder	Resistant to leaf folder, BPH,WBPH and moderately resistant to stem borer	Moderately resistant to stem borer

Specific resistance/tolerance to disease	Resistant to blast and moderately resistant to BLB and brown spots.		Moderately resistant to blast and BLB	Moderately resistant to blast
Specific tolerance to drought/water logging	Suitable for high rainfall zone	Suitable for high rainfall zone	Suitable for high rainfall zone	Suitable for high rainfall zone

Nursery raising practices

Area of nursery required for 1 ha	0.10 ha (1000m^2)		
Nursery raising method	**Wet nursery /Mat nursery/Raised bed method** etc.		
Bed size (length x breadth in m)	Length as per slope of the land (sloppy land less length, plane land more length) - Breadth- 1 m		
Seed sowing rate/m^2	45 to 50 g/m^2		
Pre-sowing seed/soil treatment	**Materials**	**Quantity/kg of seed or per m^2 area**	**Method of application**
	Trichoderma	5g/kg of seed	Seed treatment
Source and optimum quantity of organic manures/other nutrient source/m^2 of nursery	**Materials**	**Quantity/m^2 area**	**Method of application**
	FYM	3 kg/m^2 area	Soil incorporation before nursery sowing
Irrigation practices	Rainfed		

Weed management	Mulching of *Glyricidia* green leaves and manual handweeding		
Organic plant protection practices	**Name of pest/disease**	**Recommended organic material used for control**	**Quantity/m^2 area**
	Different insect pests	Application of neem formulation	1500 ppm@5 ml/lit of water for two times
Optimum age of nursery (days)	22 to 26 days		

Field preparation:

Field is ploughed for solar heating in the month of May. Second ploughing and clod crushing is done before monsoon with wooden plough or tractor or power tiller drawn cultivator.Puddling is done by wooden plough or tractor or power tiller drawn puddler. Bullock drawn *Pankaj* puddler developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli should be used for better puddling. The field should be mannured with FYM and Neem cake @ 5 and 0.5 tonnes/ha, respectively before puddling. Similarly, 4.5 tonnes/ ha of *Glyricidia* green leaf and 4.2 tonnes/ha of rice straw be incorporated into puddled field prior to transplanting.

Cultural practices

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<tr><td>Spacing (Row x Plant) in cm</td><td colspan="3">20x15cm</td></tr>
<tr><td>Number of seedlings/hill</td><td colspan="3">3-4 seedlings/hill</td></tr>
<tr><td rowspan="4">Basal application of organic manures including soil application of bio-fertilizers, bio- control agents etc.</td><td colspan="2">Source</td><td>Quantity/ha</td></tr>
<tr><td colspan="2">FYM</td><td>6670 kg /ha before puddling</td></tr>
<tr><td colspan="2">Glyricidia Green leaves</td><td>1220 kg /ha before puddling</td></tr>
<tr><td colspan="2">Rice straw</td><td>5470 kg /ha soil incorporation before transplanting</td></tr>
<tr><td>Irrigation practices</td><td colspan="3">Rainfed during Kharif and canal irrigation during Rabi</td></tr>
<tr><td>Major weeds</td><td colspan="3">Echinochloa crusgalli (Phakhad), Echinochloa colonum (Phakhad), Cyperus iria (Lavala), Cyperus rotundus (Lavala) and Ischane globossa (Dhur)</td></tr>
<tr><td rowspan="3">Weed management</td><td colspan="2">Critical stage of weeding</td><td>Recommended practice for organic condition</td></tr>
<tr><td colspan="2">20 Days after transplanting</td><td>Cono- weeder hoeing</td></tr>
<tr><td colspan="2">30 Days after transplanting (Tillering)</td><td>Cono- weeder hoeing and manual hand weeding</td></tr>
<tr><td></td><td colspan="2">60 Days after transplanting (Panicle initiation)</td><td>Manual hand weeding</td></tr>
</table>

Organic plant protection practices	**Name of the pest/disease**	**Organic material recommended for control**

Insect pests	Stem borer	• Ploughing and collection of stubbles and their composting after harvesting ofrice. • Use of tolerant and resistantvarieties. • Crop rotation with ground nut,*Dolichos* bean, cucumber and red pumpkin. • Harvesting of rice close to the ground with *Vibhav* sickle developed by DBSKKV; Dapoli to kill the hibernatinglarvae. • Use of pheromone traps @20Nos./ha • Release of *Trichogramma* @ 50000/ha for 4 times. • Collection of egg masses and their destruction. • Conservation and preservation of frogs in thefield
	Case worm	• Timelytransplanting • Intermittent draining out water from the field • Flooding the field followed by dragging a rope across the field and draining outthe water from the field
	Brown Plant Hoppers (BPH), White Backed Plant Hoppers (WBPH) and Blue beetle	• Use of tolerant and resistantvarieties. • Intermittent draining out water from the field • Adoption of proper spacing(20x15cm) • Formation of alley ways for everythree meters for penetration of sunlightand proper aeration

Army worm	• Deep ploughing after harvesting of crop to expose the hibernating stages ofpest. • Everyday inspection of the field during dry spell and atmaturity. • Keeping the bunds clean and free of weed in the beginning of theseason. • Digging the trench and flooding it with water for preventing migration oflarvae from one field to another field.

		• Erection of birdperches. • Harvesting the crop immediately after it attains thematurity. • Conservation and preservation of frogs in thefield.

	Leaf eating caterpillars	• Erection of birdperches.
Diseases	Blast and sheath rot	• Use of tolerant and resistantvarieties. • Spraying of *Pseudomonas fluroscence* @ 8-10 g / lit of water [for 2-3 times] starting from maximum tillering to floweringstage.
	Bacterial leaf blight	• Use of tolerant and resistantvarieties. • Intermittent draining out water from the field. • Adoption of proper spacing(20x15cm)

CROP (Rabi)- Cucumber:

Important features of suitable varieties: **Hemangi and Sheetal**

	Variety	
Parameters	**Hemangi**	**Sheetal**
Duration (days)	100-110	95-105
Average yield under organic condition (kg/ha)	11500-12000	12000-12500
Source (s) of availability	Government/private agencies	DBSKKV, Dapoli
Suitable regions/districts in the state	Maharashtra state	Maharashtra state
Specific resistance/tolerance to disease	Tolerant to powdery mildew and downy mildew	

Field preparation:

Ploughing the field after harvest of *Kharif* rice. Criss-cross cultivation and clod crushing with peg tooth cultivator to bring the soil into good tilth.

Cultural practices

Seed rate (kg/ha)	2.75 kg/ha		
Pre-sowing/planting treatment of seed/seedlings	**Input**	**Recommended rate (kg/ha or lit./ha)**	**Method of application**
	Trichoderma	5g/kg of seed	Seed treatment
	PSB	25g/ kg of seed	Seed treatment
Spacing (Row x Plant) in cm	1.5 x 0.9 m		
Basal application of organic manures including soil application of bio-fertilizers, bio-control agents etc.	**Source**		**Quantity/ha**
	FYM		9000 kg/ha
	Neem cake		870 kg/ha
	Vermicompost		3000 kg/ha
Irrigation practices	**Number of irrigation**	**Most critical stage of irrigation**	**Depth of irrigation (cm)**

	12 irrigations	12 irrigations at an interval of 7-8 days	72 cm (6 cm/irrigation)
Major weeds	*Physalis minima* (*Ranpopati*), *Portulaca oleracea* (*Motha ghol*), *Alternanthera sessilis* (*Reshimkata*), *Blumea lacera* (*Bhamrud*) and *Amaranthus viridis*(*Ranti math*)		
Weed management	**Critical stage of weeding**	**Recommended practice for organic condition**	
	30-60 days after sowing	Hand weeding	

Organic plant protection practices	**Name of the pest/disease**	**Organic material recommended for control**	**Quantity (kg or liters/ha)**
Insect pests	Red pumpkin beetle	Application of neem based pesticide.	5ml/lit
	Fruit fly	Erection of *Rakshak pheromone* trap designed byDr. BSKKV,Dapoli	4 Nos. /ha
Diseases	Powdery and Downey mildew	1.Growing tolerant and resistant varieties. 2.Croprotation.	
Optimum stage of harvesting (in case of vegetables and green cob)	• 60-100days after sowing		

Cropping Systems 4: Rice-Red pumpkin

Particulars	***Kharif***	***Rabi***
Crop	**Rice**	**Red pumpkin**

Fortnight of sowing/planting	**Nursery Sowing** - Second fortnight of June **Transplanting**- Secondfortnight of July	**Sowing –** First fortnight of January
Fortnight of harvesting	Second fortnight of October	First fortnight of April
Varieties suitable for organic farming	Karjat-3, Karjat-4, Karjat-7 and Palghar-1	MPH-1

Crop (*Kharif*): Rice

Important features of suitable varieties

Parameters	**Karjat-3**	**Karjat-4**	**Karjat-7**	**Palghar-1**
Duration (days)	115-120	110-115	115-120	125-130
Average yield under organic condition (kg/ha)	3500 to 3700	3300 to 3500	3400 to 3600	3900 to 4100
Source (s) of availability	RARS, Karjat	RARS, Karjat	RARS, Karjat	RARS, Karjat
Suitable regions/districts in the state	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in Maharashtra.	Suitable for rainfed uplands as well as irrigated areas for *Kharif* and *Rabi* seasons in *Konkan* region of Maharashtra.	Suitable for rainfed uplands and irrigated transplanted conditions in Maharashtra State.	*Konkan*region and Maharashtra state

Specific resistance/tolerance to pest	Tolerant to stem borer	Moderately resistant to leaf folder	Resistant to leaf folder, BPH,WBPH and moderately resistant to stem borer	Moderately resistant to stem borer
Specific resistance/tolerance to disease	Resistant to blast and moderately resistant to BLB & brown spots.		Moderately resistant to blast and BLB	Moderately resistant to blast
Specific tolerance to drought/water logging	Suitable for high rainfall zone	Suitable for high rainfall zone	Suitable for high rainfall zone	Suitable for high rainfall zone

Nursery raising practices

Area of nursery required for1 ha	0.10 ha (1000m^2)		
Nursery raising method	**Wet nursery /Mat nursery/Raised bed method** etc.		
Bed size (length x breadth in m)	Length as per slope of the land (sloppy land less length, plane land more length) - Breadth- 1 m		
Seed sowing rate/m^2	45 to 50 g/m^2		
Pre-sowing seed/soil treatment	**Materials**	**Quantity/kg of seed or per m^2 area**	**Method of application**
	Trichoderma	8g/kg of seed	Seed treatment
Source and optimum quantity of organic manures/other nutrient	**Materials**	**Quantity/m^{2}area**	**Method of application**
	FYM	3 kg/m^2 area	Soil incorporation

source/$m^2$of nursery			before nursery sowing
Irrigation practices	Rain-fed		
Weed management	Mulching of *Glyricidia* green leaves and mannual hand weeding		
Organic plant protection practices	**Name of pest/disease**	**Recommended organic input usedfor control**	**Quantity/m^2 area**
	Different insect pests	Application of neemformulation	1500 ppm@5 ml/lit of water for two times
Optimum age of nursery (days)	22 to 26 days after sowing		

Field preparation:

Field is ploughed for solar heating in the month of May. Second ploughing and clod crushing is done before monsoon with wooden plough or tractor or power tiller drawn cultivator.Puddling is done by wooden plough or tractor or power tiller drawn puddler. Bullock drawn *Pankaj* puddler developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli should be used for better puddling.

The field should be mannured with FYM and Neem cake @ 5 and 0.5 tonnes/ha, respectively before puddling. Similarly, 4.5 tonnes/ ha of *Glyricidia* green leaf and 4.2 tonnes/ha of rice straw be incorporated into puddled field prior to transplanting.

Cultural practices

	Input	**Recommended rate (kg/ha or lit./ha)**	**Method of application**
Pre-sowing/planting treatment of seed/seedlings	Phosphate solubilizing bacteria (PSB) And*Azospirillum*	PSB 2.5 kg + *Azospirillum* 2.5 kg + 100 lit of water/ha	Seedling root dip for 15 to 20 minutes in the slurry

Spacing (Row x Plant) incm	20 x15cm	
Number of seedlings/hill	3-4 seedlings/hill	
Basal application of organic manures including soil application of bio-fertilizers, bio-control agents etc.	**Source**	**Quantity/ha**
	FYM	6670 kg /ha before puddling
	Glyricidia Green leaves	1220 kg /ha before puddling
	Rice straw	5470 kg /ha soil incorporation before transplanting
Irrigation practices	Rainfed during *Kharif* and canal irrigation during *Rabi*	
Major weeds	*Echinochloa crusgalli* (Phakhad), *Echinochloa colonum* (Phakhad), *Cyperus iria* (Lavala), *Cyperus rotundus* (Lavala) and *Ischane globossa* (Dhur)	
Weed management	**Critical stage of weeding**	**Recommended practice for organic condition**
	20 Days after transplanting	Cono- weeder hoeing
	30 Days after transplanting (Tillering)	Cono- weeder hoeing and manual hand weeding
	60 Days after transplanting (Panicle initiation)	Manual hand weeding

Organic plant protection practices	**Name ofthe pest/disease**	**Organic Input recommended for control**

Insect pests	Stem borer	• Ploughing and collection of stubbles and their composting after harvesting ofrice. • Use of tolerant and resistantvarieties. • Crop rotation with ground nut, *Dolichos* bean, cucumber and redpumpkin. • Harvesting of rice close to the ground with *Vibhav* sickle developed by DBSKKV; Dapoli to kill the hibernatinglarvae. • Use of pheromone traps @20Nos./ha • Release of *Trichogramma* @ 50000/ha for 4times. • Collection of egg masses and theirdestruction. • Conservation and preservation of frogs in thefield
	Case worm	• Timelytransplanting • Intermittent draining out water from thefield • Flooding the field followed by dragging a rope across the field and draining out the water fromthe field
	Brown Plant Hoppers (BPH), White Backed Plant Hoppers (WBPH) and Blue beetle	• Use of tolerant and resistantvarieties. • Intermittent draining out water from thefield • Adoption of proper spacing(20x15cm) • Formation of alley ways for every three metersfor penetration of sunlight and properaeration

	Army worm	• Deep ploughing after harvesting of crop to expose the hibernating stages of pest. • Everyday inspection of the field during dry spell and atmaturity. • Keeping the bunds clean and free of weed in the beginning of theseason. • Digging the trench and flooding it with water for preventing migration of larvae from one field to anotherfield. • Erection of birdperches. • Harvesting the crop immediately after it attains the maturity. • Conservation and preservation of frogs in thefield.
	Leaf eating caterpillars	• Erection of birdperches.
Diseases	Blast and sheath rot	• Use of tolerant and resistantvarieties. • Spraying of *Pseudomonas fluroscence* @ 8-10 g / lit of water [for 2-3 times] starting from maximum tillering to floweringstage.
	Bacterial leaf blight	• Use of tolerant and resistantvarieties. • Intermittent draining out water from thefield. • Adoption of proper spacing(20x15cm)

Crop (Rabi): Red pumpkin

Important features of suitable varieties: **MPH-1**

Parameters	**Variety :MPH-1**
Duration (days)	95-100

Average yield under organic condition (kg/ha)	12500-13000 kg/ha
Source (s) of availability	RARS,Karjat
Suitable regions/districts in the state	Maharashtra state
Specific resistance/tolerance to disease	Tolerant to powdery and downymildew

Field preparation:

Ploughing the field after harvest of *Kharif* rice. Criss-cross cultivation and clod crushing with peg tooth cultivator to bring the soil into good tilth.

Cultural practices

<table>
<tr><td>Seed rate (kg/ha)</td><td colspan="4">6.5 kg/ha</td></tr>
<tr><td rowspan="3">Pre-sowing/planting treatment of seed/seedlings</td><td>Input</td><td colspan="2">Recommended rate (kg/ha orlit./ha)</td><td>Method of application</td></tr>
<tr><td>Trichoderma</td><td colspan="2">8g/kg of seed</td><td>Seed treatment</td></tr>
<tr><td>PSB</td><td colspan="2">25g/ kg of seed</td><td>Seed treatment</td></tr>
<tr><td>Spacing (Row x Plant) in cm</td><td colspan="4">1.5 x 0.9 m</td></tr>
<tr><td rowspan="4">Basal application of organic manures including soil application of bio-fertilizers, bio-control agents etc.</td><td colspan="3">Source</td><td>Quantity/ha</td></tr>
<tr><td colspan="3">FYM</td><td>6670 kg/ha</td></tr>
<tr><td colspan="3">Neem cake</td><td>650 kg/ha</td></tr>
<tr><td colspan="3">Vermicompost</td><td>2230 kg/ha</td></tr>
<tr><td rowspan="2">Irrigation practices</td><td>Number of irrigation</td><td>Most critical stage of irrigation</td><td colspan="2">Depth of irrigation (cm)</td></tr>
<tr><td>10 irrigations</td><td>10 irrigations ataninterval of 10days</td><td colspan="2">60 cm (6 cm/irrigation)</td></tr>
<tr><td>Major weeds</td><td colspan="4">Physalis minima (Ranpopati), Portulaca oleracea</td></tr>
<tr><td></td><td colspan="4">(Motha ghol), Alternanthera sessilis (Reshimkata), Blumea lacera (Bhamrud) and Amaranthus viridis (Ranti math)</td></tr>
</table>

Weed management	**Critical stage of weeding**	**Recommended practice for organic condition**
	30-60 DAS	Hand weeding

Organic plant protection practices	**Name of the pest/disease**	**Organic material recommended for control**	**Quantity (kg or liters/ha)**
Insect pests	Red pumpkin beetle	• Spraying of neemicide	3ml/lit
	Fruit fly	• Erection of *Rakshak pheromone* trap designed by DR. B.S.K.K.V. Dapoli.	4 Nos. / ha
Diseases	owdery mildew nd downy ildew	• Follow croprotation. • Maintain fieldsanitation.	
Optimum stage of harvesting	90 – 100Days after sowing		

Cotton with Legumes :

Suitable Varieties :- Varieties like G. hirsutum – LRA-5166, LRK-516 (Anjali), Rajat (PKV- 84635), PKV-081, DHY-286, Dhaval (JLH-168); G. arboreum – AKH-4, AKA-8401, Y-1, PA-183, Namdeo PA- 141, Savta PA-181; PKV Hy2, 3,4 hybrids developed by Dr. P. D. Krishi Vidyapeeth Akola, H6, 8 and 10, Ankur 651, MECH-1,4 and NHH-44 have also been found suitable for organic management in Maharashtra State.

Field preparation:

Deep ploughing once in three years, and two shallow ploughings every year, are essential during the summer. One to two deep ploughings once in three years are necessary to control deep-rooted weeds and to destroy pest larvae or cocoons. Some farmers graze animals in the cotton fields in summer.

After one or two showers, the soil should be worked with a harrow 2–3 times before the seeds are sown. Crop residues are one of the major sources of nutrients. The entire crop residue from the previous cotton-legume intercrop should be incorporated into the soil at the time of ploughing. Hard, woody twigs of cotton can be used as fuel or should be recycled after composting.

Each organic farm should have sufficient infrastructure to produce compost and vermicompost. About 20–30 quintals of well-decomposed FYM/compost or 15-20 quintals of on-farm produced vermicompost with 2 kg PSB, 100 kg rock phosphate and 200 kg neem leaf/seed manure can provide sufficient nutrition.

About 500 kg bone meal can also be used along with the compostto improve the phosphorus content of the soil. Treatment of the crop residue with *Trichoderma* hasten in situ decomposition. Legumes need to be intercropped with cotton with a minimum coverage of 30%. Mixing their entire vegetative biomass as mulch maintains high soil fertility.

Cultural practices

<table>
<tr><td>Seed Selection</td><td colspan="4">Seeds from the prominent balls of vigorous plants must be selected. Choosing early maturing varieties helps in escaping late bollworm attacks.</td></tr>
<tr><td rowspan="5">Seed rate (kg/ha)</td><td>Variety</td><td>Seed rate (kg/ ha.)</td><td>Spacing (Cm)</td><td>Plant population /ha.</td></tr>
<tr><td>G. hirsutum</td><td>18–20</td><td>60 x 30</td><td>55,600</td></tr>
<tr><td>G. arboretum</td><td>10–12</td><td>60 x 30</td><td>55,600</td></tr>
<tr><td>G. herbaceum</td><td>12–15</td><td>45 x 30</td><td>74,074</td></tr>
<tr><td>Hybrids</td><td>3.0 –3.5</td><td>120 x60
120 x 40</td><td>13,888
20,833</td></tr>
<tr><td rowspan="4">Pre-sowing/planting treatment of seed/seedlings</td><td>Input</td><td colspan="2">Recommended rate (kg/ha or lit,/ha)</td><td>Method of application</td></tr>
<tr><td>Trichoderma</td><td colspan="2">8g/kg of seed</td><td>Seed treatment</td></tr>
<tr><td>Azotobacter</td><td colspan="2">20g/ kg of seed</td><td>Seed treatment</td></tr>
<tr><td>PSB</td><td colspan="2">20g/ kg of seed</td><td>Seed treatment</td></tr>
<tr><td>Spacing (Row x Plant) in m</td><td colspan="4">1.0 x 1.0 m or 1.0x0.5 m</td></tr>
<tr><td>Intercropping</td><td colspan="4">Red gram or black gram or green gram or Soybean.
One row of maize/sorghum, 2 rows of red gram, 4 rows of cottonor 2 rows of cowpea/soybean, 4 rows of cotton or 2 rows of red gram and one row of maize/sorghum.
Four rows of cotton, 2 rows of cowpea/soybean or4 rows of cotton and one row of mixed plants of red gram, maize and sorghum can be planted.</td></tr>
<tr><td>Cultural Operations</td><td colspan="4">Pruning of main and secondary shoot tips encourages growth of branches, resulting in development of many tertiary branches with more flowers and bolls. Proper pruning can increase productivity by 25–30%.</td></tr>
<tr><td>Irrigation practices</td><td colspan="4">Although cotton is commonly flood-irrigated, irrigation by furrow or by alternate furrow method is more effective and conserves water.
Irrigation requirements are low during the first 60–70 days, and highest during flowering and boll formation stage.
The crop needs to be irrigated when there is 50–70% depletion of available soil moisture.</td></tr>
</table>

	In the sandy loam soils (of north India), the crop is irrigated 3–5 times. Inred sandy loam soils, with low water retention capacity, 4–10 light irrigations may be needed. In black cotton soils 'protective irrigation' is provided every 20 days, if rains fail, especially during the boll development stage. Mulching of the soil surface with intercropbiomass 60 days after sowing reduces irrigation requirements by40–60%. Mulching is very effective under purely rain-fedconditions.	
Weed management	**Critical stage of weeding**	**Recommended practice for organic condition**
	20-25 DAS	first weeding
	55-60 DAS	Second weeding
	Mulching of the field with a thick layer of crop residue immediately after sowing reduces weed growth.	

Crop Protection	**Pest/disease**	**Organic methods recommended for control**
Insect pests	Aphids (Aphis sp.)	a. Two to three releases of egg parasitoid Trichogramma chilonis @1.5 lakh / ha during peak egg laying of Helicoverpa and other bollworms will help to reduce the bollworms infestation significantly. b. Spraying of H-NPV @ 500 LE /ha c. Pheromone traps @ 5 / ha d. NSKE 5% and neem oil 0.5% can be used to prevent the egg laying of Helicoverpa e. Bt biopesticide formulations@ 1.51 / ha f. In case of a severe attack of bollworm, use alternate sprays of dashaparni. g. Flour spray (2 cups of fine white flour and half a cup of soap in water) and soft soap spray (15 g soft soap powder in 15 litres of water) have been found to beeffective in control of aphids, jassids, spider mites, thrips and white fly. h. Release of Chrysoperla sp.@ 500-1000 / ha according to the intensity of jassid damage between 20 – 25 days of crop growth. i.Fermented buttermilk spray: ferment buttermilk in a bottle/can for 3–4 weeks; 300 ml fermented buttermilk is diluted in 15 lit. of water) and is effective in control ofbollworms, caterpillars and spider mites.
	Pink bollworm (Pectiniphora gossypiella)	
	American bollworm (Helicoverpa armigera)	
	Spotted bollworm (Earias vittella) and spiny bollworm, (E. insulana)	
	Cut worm (Agrotis sp.)	
	White fly (Bemisia sp.)	
	Jassids (Amrasca devastans, A. biguttula)	
	Jassids (Amrasca devastans, A. biguttula)	
	Thrips (Thripidae sp.)	
Diseases	Root rot, wilt and browning of leaves	a) Deep ploughing during summer prevents the occurrence of soil borne pathogens causing root rot and wilt. b) Use of Trichoderma as seed treatment can

		effectively control the incidence of root rot and Fusarium wilt. c) Use of neem leaf/seed manure (10 q/ha) has also been found to be effective in the control of soil borne pathogens. d) For the control of rust and root rot, fermented (sour) buttermilk (5 lit.) in lime water (100 litres) per ha may besprayed. e) Foliar spray of Trichoderma viride powder (25 g), milk (50 ml) and water (10 litres) can reduce the incidence of brown leaf patches. f. Crush 5 kg lantana leaves in 5 lit. of water and 10 lit. of cow urine and ferment for 4 days. Dilute thereafter with 60 lit. of water and spray on 1 ha tocontrol fungal and viral diseases. The solution also repels white flies.
Harvesting & Yield	In organic farming, the yield of cotton varies from 8–10 q/ha in rain-fed areas to 20–25 q/ha under irrigated conditions. Besides,the farmer obtains about 50 to 250 kg of intercrop legume crop.	

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Reference :-

1. Scientific Package of Practices (PoPs) for organic production of crops in cropping systems.2015. ICAR-Network Project Organic Farming ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut - 250 110 (UP). 227pp

2. Package of Organic Practices from Maharashtra for Cotton, Rice, Red gram, Sugarcane and Wheat.2006. Maharashtra Organic Farming Federation (MOFF).www.fao.org.in. 32 Pp.