ZONE WISE CONTINGENT CROP PLAN FOR TAMIL NADU

I. North Eastern Zone: Kancheepuram, Thiruvallur, Villupuram, Thiruvannamalai, Vellore and Cuddalore Districts

Normal rainfall	Deficit rainfall	Excess rainfall
Groundnut / Pearl Millet / Dry Rice / Water Melon / Gourds / Sugarcane	Pulses / Minor Millet / Finger Millets / Sesame	Rice (Direct seeded) (Anna (R) 4, ADT 49, PKM 3, ADT 37, ADT 54, ASD 21) / Hybrid Maize / Sunflower / Groundnut / Vegetables

II. North Western Zone: Dharmapuri, Krishnagiri, Salem and Namakkal Districts

Normal rainfall	Deficit rainfall	Excess rainfall
Tapioca / Groundnut + Pulses / Castor + Groundnut / Sorghum / Maize / Finger Millet / Pearl Millet / Tomato / Bhendi / Onion / Sugarcane	Tapioca / Finger Millet / Groundnut / Castor / Sorghum/ Red Gram / Minor Millets (Kudiraivali , Samai) / Nerium / Horse Gram / Castor + Groundnut	Tapioca / Groundnut + Pulses / Hybrid Maize/ Finger Millet / Vegetables / Flowers (Jasmine, Chrysanthemum)

III. Western Zone: Erode, Coimbatore and Tiruppur Districts

Normal rainfall	Deficit rainfall	Excess rainfall
Maize /Turmeric/ Sorghum / Groundnut / Castor / Redgram / Sugarcane	Maize / Sorghum / Pulses	Rice / Hybrid Maize / Sorghum / Groundnut / Turmeric

IV. Cauvery Delta Zone: Thanjavur, Thiruvarur, Nagapattinam, Trichirapalli, Perambalur, Ariyalur, Pudukottai and Karur Districts

Normal rainfall	Deficit rainfall	Excess rainfall
Rice / Sesame / Pearl Millet / Sorghum / Maize / Chrysanthemum / Tube Rose / Marigold/ Sugarcane / Cotton/ Groundnut	Groundnut + Pigeon Pea / Pulses / Sesame / Nerium / Ixora	Rice / Hybrid Maize / Sunflower / Vegetables / Scented Rose

V. Southern Zone: Madurai, Ramanathapuram, Virudhunagar, Sivagangai, Tirunelveli and Thoothukudi Districts

Normal rainfall	Deficit rainfall	Excess rainfall
Maize/ Groundnut / Pulses / Vegetables / Cotton / Millets / Flower (Jasmine, Chrysanthemum) / Sugarcane / Semidry Rice/ Chillies + Onion/ Cotton + Onion/ Pulses)	Sorghum/Pearl Millet Maize / Sunflower / Vegetables / Pulses / Groundnut / Fodder sorghum (COFS 29) / Flowers (Nerium)/ Coriander/Gingelly/Minor Millets/ Semidry Rice (PMK (R) 3, ANNA (R) 4, RMD (R) 1)	Rice / Banana / Groundnut/ Vegetables/ Maize/ Cotton + Intercrop Pulses/Onion/Cluster Bean/ Radish)/ Chillies (Onion/ Marigold)

VI. Kanyakumari District (High Rainfall Zone)

Normal rainfall	Deficit rainfall	Excess rainfall
Rice / Groundnut / Pulses/ Tapioca	Tapioca + Pulses / Green Manure (Danicha)	Rice (Direct Seeding) + Tapioca + Pulses / Groundnut

Other Management strategies suggested to mitigate water stress if rainfall is inadequate

1. Summer ploughing against the slope and safe drainage of excess rainfall into farm ponds for soil moisture conservation and supplemental irrigation.
2. Inter cultivation, conservation furrow, broad bed furrow and residue mulching to in-situ conservation of soil moisture.
3. Seed hardening (Soak the seeds in 2% Potassium dihydrogen phosphate for 10 hours and shade dry) for sorghum, ragi.
4. Seed hardening (Soak the seeds in 2% KCl for 6 hours and shade dry) for pearl millet
5. Seed treatment with 0.2 % Calcium chloride (for 6 hours and shade dry) for groundnut and seed treatment with 0.1% Manganese sulphate (or) 0.1% Zinc sulphate for green gram at the time of sowing.
6. Mechanical sowing with tractor drawn seed drills for groundnut and millets
7. Lifesaving irrigation can be given at critical crop growth stages from farm ponds/ recommended for all crops.
8. Foliar spray of TNAU Crop boosters viz., Pulse Wonder (2 kg/ acre), Groundnut Rich (2 kg/acre/spray), Cotton Plus (5 kg/acre), Maize Maxim (3 kg/acre/spray), Sugarcane Booster (1 kg, 1.5 kg and 2 kg at 45, 60 and 75 days after sett planting) for Pulses, Groundnut, Maize and sugarcane respectively for improving drought tolerance.
9. Foliar application of 1%PPFM at 10 days interval for enhancing drought tolerance.
10. Foliar application of 0.5 % KCl spray at vegetative stage for cereals, pulses and oilseeds
11. Mepiquat chloride at 250 ppm on 45 and 60 DAS for cotton to arrest excess vegetative growth.
12. Foliar spray of Kaolin 3% or 1% KCl to overcome moisture stress at different critical crop stages of dry seeded rainfed and irrigated un-puddled lowland rice.
13. To induce tolerance under short and prolonged drought situation in Kuruvai season, apart from seed treatment, foliar spray with 1% KCl + CCC at 500 ppm during vegetative stage is effective in mitigating the drought in dry seeded irrigated un-puddled lowland rice.

14. Foliar application of TNAU Crop shine to mitigate crop plants from drought and high temperature stress**:**

    Rice

    - Dosage
      Seed treatment: 5 ml /litre of water
      Foliar spray: 1 litre /acre
    - Spray volume: 200 lit/acre
    - Stages of spray: At Panicle initiation and anthesis stage

    Finger millet, Green gram and Tomato

    - Dosage
      Seed treatment: 2.5 ml /litre of water
      Foliar spray: 0.5 litre /acre
    - Spray volume: 200 lit/acre
    - Stages of spray: At flowering stage

    Cassava

    - Dosage
      Seed treatment: 2.5 ml /litre of water
      Foliar spray: 0.5 litre /acre
    - Spray volume: 200 lit/acre
    - Stages of spray: At 30 and 60 days after planting
    - Increases fertility coefficient and grain filling percentage
    - Increases grain yield up to 20 to 30 per cent under abiotic stress conditions

15. Adopt crop residual mulching and dust mulching in soil
16. Renovation of percolation pond and water storage structures
17. Erecting community bore well in dry river bed
18. Organizing cattle camp and providing fodder and water
19. Designer seed (integrated seed management technique for enhanced field emergence) for all crops
20. Placement of fertilizers for reducing the quantity of fertilizers
21. Antitranspirants spray at critical stage of moisture stress
22. In cotton, nipping terminal portion of main stem beyond 15^{th} (at 70 – 80 DAS) and at 20^{th} (at 90 DAS) in case of hybrid and varieties, respectively for arresting transpiratory loss of water.

MANAGEMENT PRACTICES TO OVERCOME WATER LOGGING STRESS

General

1. Providing adequate drainage facilities.
2. Spray growth retardant Cycocel @ 500 ppm for arresting apical dominance and thereby promoting growth of laterals
3. Sowing of lodging resistant maize variety CO HM 8 in ridges and furrows in order to avoid lodging during excess rainfall with heavy wind speed
4. Sowing of cotton in broad bed furrows to avoid wilt and damping off disease
5. Drain the excess water and the foliar spray of 1% KCl +1% Urea
6. Spray of NAA (Planofix) @ 40 ppm for controlling excessive pre-mature fall of flowering/buds/young developing fruits and pods
7. Foliar spray of 0.3 % Boric acid + 0.5 % $ZnSO_4$ + 0.5 % $FeSO_4$ + 1.0 % Urea during critical stages of the stress
8. Harvesting of rice crop at physiological maturity
9. Apply 25% additional Nitrogen after draining the water.

To prevent in-situ germination of seeds during unusual rainfall

In the anticipation of unusual heavy rainfall, foliar spray of Sodium Chloride @ 10% at 14 days before harvest is recommended for inducing temporary dormancy and to arrest the pre-harvest sprouting in rice under field conditions.

(or)

Foliar spray of ABA @ 250 ppm or Sodium Molybdate @ 100 ppm at the time of flowering or Sodium Chloride @ 1% at 10 days before harvest is recommended for inducing temporary dormancy and to arrest the pre-harvest sprouting in rice.

For rejuvenation of crops

Maize	:	Foliar spray of Maize Maxim @ 6 kg/acre using spray volume of 200 litres/ acre at tassel initiation and grain filling stages (3.0 kg for each stage) improves grain filling, grain yield and drought tolerance
Sugarcane	:	Foliar spray of Sugarcane Booster @ 1.0, 1.5 and 2.0 kg/acre at 45^{th}, 60^{th} and 75^{th} day after planting enhances cane growth and weight, internodal length, cane yield, sugar content and offers drought tolerance
Cotton	:	Foliar spray of Cotton Plus @ 5 kg/acre at flowering and boll formation stages (2.5 kg each stage) reduces flower and square shedding, improves boll bursting, increases seed cotton yield and imparts drought tolerance in cotton
Groundnut	:	Foliar spray of Groundnut Rich @ 4 kg/acre at peak flowering and pod

		development stages (2.0 kg each) increases flower retention, pod filling and improves moisture stress tolerance and pod yield in groundnut.
Pulses	:	Foliar spray of Pulse Wonder @ 2 kg/acre at peak flowering stage decreases flower shedding, increases yield and offers moisture stress tolerance.
Rice	:	Foliar spray of Rice Bloom @ 8 kg / acre using spray volume of 200 litres/ acre at heading and grain filling stages (4.0 kg each) Foliar spray of TNAU Rice Reap @ 4kg/acre in 200 litres of water at booting stage and 10 days after first spray improves spikelet fertility, grain filling rate, increase grain yield and tolerance to drought and high temperature stress