PART-I

1. Monsoon/Weather Situation: **2 Weeks Delay** (Onset: 4th Week of June) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Upland** High rainfall, **shallow light** textured sandy soils	
3. Normal Crop/cropping system	Upland Rice , Finger millet, Pigeonpea + Sorghum, Pigeonpea + Maize

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Rice crop

Sole crop

Pigeonpea, Finger millet, Sorghum, Soybean, Blackgram, green Gram, Sweet potato, lady's Finger

Intercrop :

Pigeonpea + Maize (1:1), Pigeonpea + Lady's finger (1:2)/Green gram (1:2), Maze+ creeper vegetables (Sponge Gourd) (1:2), Pigeonpea + Groundnut (1:2), Pigeonpea + Sorghum (1:1)

Horticulture Crop

Vegetable : Amaranthus leaf/ Coriander leaf/ Early Cabbage/ Cauliflower/ French bean/ Creepers

Variety

Pigeonpea- Birsa Arhar (200-220), Narendra Arhar 1 and 2 (240-250), Asha (200-220), ICPH 2671 (200)
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Sorghum- CSV 20-110-20, MP chari, CSV 1616
Soybean- R 518 (110), JS 9752 (100), Birsa soybean 1 black(120-125), JS 335
Birsa safed soybean 2 (105-110), RKS 18, RAUS 5
Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75), WBU 109 (70-75), Uttara (75-80 small grain)
Green gram- HUM 16, IPM-02-03-60-65, SML 668 (summer)
Sweet potato-Shribhadra (80-90), Kalinga, Birsa sakarkand 1, Gauri
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika

Vegetable crops

Coriander- Pant haritima, Rajendra swati
Cabbage- early- Golden acer, Early drumfead, Pride of India Late- Late drunhead, sabyay cabbage, 7 Ganga, Jamuna, Kaveri, Shri ganesh cabbage 8
Cauliflower-Summer- Early kuwari, early- Kuwari, Pusa katki, Pusadipali, Early synthetic, Mid early- Pusa ketaki, Pusadipali, Pusa him jyoti, Pant subhra, Late- Maghi, Srobowl 16, dania, Pusa srobowl, K Pusa srobowl, Hybrid- Himani, Swati, Endum early Pusa hybrid 1
Frenchbean- Bushy- Pant anupma, Swarna priya, Arka Komal, Stringless, Creeper- Kentuky wonder, Birsa priya, Swarna lata
Cucurbits-
Bitter gourd- Arka hait, Pusa domausami,
Bottle gourd- Arka bahar, Pusa samar, Pusa Naveen, PusaMeghdoot, Coimbtur long green, Ranchi local, Arka harit
Sponge gourd- Pusa chikni, Pusa supriya, Rajendra nema, Long green,Long white
Ridge gourd- Swarn manjari, Swarn uphar, Swarn baha, Pusa nasdar, Satputia,
Red Pumpkin- CO 1, CO 2, Arka chandan, Arka suryamukhi

4 (b) Agronomic measures

- Summer deep ploughing with Mould Board or dics
- Dobha construction for In-situ rain water conservation Line sowing in upland rice areas through suitable seeding devices is required to be made popularized for desired plant population. This will facilitate to control weeds and also to carry out intercultural operations.
- RD Spacing
- Zero tillage practices
- Seed rate – Sole- full quantity and in case of Intercropping reduce seed rate by 30-40 % according to spacing
- RDF and in case of Intercropping reduce 1/3rd dose for intercrop
- Weed control (Maize- Atrazine as pre-emergence, Pulses- pre-emergence Imizathyper or Pendimithilin@ 1 kg a.i./ha, Soybean- Flucloralin or Basalin and also for vegetables
- Bund construction for Unbunded uplands

- Broadcast Well rotten FYM along with 1/4th N + Full basal pplication of P, K of recommended dose for all crops and for vigorous seedling growth of vegetables
- Ridge and furrow method for moisture Conservation in cereals, pulses and vegetables
- Inter-cropping to meet the consequences of occasional Drought.
- Follow RDF for all upland crops and add Sulphor @ 20kg/ha soil application for pulses and oilseed.
- In case of phospho gypsum for soil application apply @ 120 kg/ha
- Lime or dolomite application for pulses and oilseed @ 3-5 q/ha in furrow at the time of sowing.
- In vegetable nursery apply carbofuran @ 3gm/m^2 or phorate 10 G @ 1gm/ m^2 or neem cake @ 50 kg/ha
- Follow recommended seed rate
- Treat the leguminous seed in the sequence of FIR (Bavistin @ 2gm/kg, Imaidacloprid@ 3 ml or Chlorpyriphos @ 5ml/kg, Rhizobium 500 gm/ha , PSB @ 500 gm/ha and for non leguminous treat seed with Fungicide + Insecticide + soil application Azotobacter @ 2kg /ha
- Foliar application of Urea 2% solution + lime in lady's finger
- Application of required fungicide and insecticide in case of population count more than the ETL or as prophylactic measure

4 (c) Remarks on Implementation

- Linkage with RKVY , ATMA, and NFSM
- Vermicomposting through KVKs ATMA and NHM
- Goatery and poultry rearing through KVKs, ATMA and Vetrinary Dept of. Govt. and BAU for livelihood support.
- Awareness about balanced use of fertilizers to increase their fertility, productivity and sustainability
- A special programme is needed to be launched in such areas to motivate the farmers to adopt improved technology.
- Awarness for more and more use of organic manures, biopesticides for organic cultivation with IFS (eight components linkages)
- Upland- 15-20 % upland area should be covered with orchard

1. Mango based orchard-

Variety- Amrapali (30 June-5 July), Mallika (15020 JuneRegular bearer), Sunder langra(15-20 May)

Spacing- 5 m X 5m

i). Recommended package of Practices- Intercrops

a).Mango + Papaya (Filler crop for two years) + Blackgram (rainy)/ Chickpea

b).Mango + Custard apple (for 10 years and renovate or remove after 10 years) + Black gram/Chickpea

Variety- Langra (15 June)/Bombay green(15 May)/ Himsagar (20-25 May irregular bearer),

Spacing- 10 m X 10m

ii). Recommended package of practicises

a).Mango + Guava(Up to 10 years as filler) + Papaya (Less than 3 years) + Blackgram- Chickpea/Lentil

b).Mango + Lemon + Papaya + Rabi pulses/vegetables

c).Mango + Custard apple + Papaya + Black gram – Pea/Ckickpea/Lentil/ Vegetables

2. Guava base orchard-

Variety- Arka Mridula, Pant Prabhat, Allahabad safeda, L 49

Spacing- 5m X 5m

Recommended package of practices- Intercrops

a).Guava + Papaya (For 3 years) + Black gram-Chickpea

b).Guava + Custard apple + Black gram/Soybean- Pea/Vegetables

3. Ber Based Orchard –

Variety- Banarsi, Karakka, Gola, Apple ber

Spacing- 5m X 5m

Recommended package of practices Intercrops

Ber + Custard apple + Sesame/Black gram- Toria/Linseed/Safflower

N.B.- Cucurbits, beans or any creaper or climber vegetable should be avoided

- Field crops having height more than one meter should be avoided such as Pigenpea, Maize, Sorghum
- After 3-5 years when shading effects started shade loving crops like ginger, Turmeric, Ol or leafy vegetavles should be growm
- In citrus leaf minor and aphid suceptible crops should be avoided
- Aphid should be managed of mustard /toria taken in citrus orchard

4. Cashewnut based orchard for Kolhan region
5. Cassava should be grown for the requirement as feed for pig animals
6. Moringa should also be growm as fodder or vegetable purpose on upland main field bunds as shelter belt/wind break. Every year prunning and thinning should be followed for bushy look.

1. Monsoon/Weather Situation: **2 Weeks Delay** (Onset: 4th Week of June) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Upland Less rainfall, shallow depth** red light textured sandy soils	
3. Normal Crop/cropping system	Upland Rice , Pigeonpea, Maize, Pigeonpea + Maize,

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Rice crop

Sole crop

Pigeonpea, Sorghum, Finger millet, Soybean, Black gram, Green gram, Lady's finger

Intercrop

Pigeonpea + Maize (1:1), Pigeonpea + Lady's finger (1:2)/Green gram (1:2), Maze+ creeper vegetables (Sponge Gourd) (1:2), Pigeonpea + Sorghum (1:1)

Horticulture Crop

Vegetable :Radish/Early Cabbage/ Cauliflower/ French bean / Cowpea

Variety

Pigeonpea- Birsa Arhar (200-220), Narendra Arhar 1 and 2 (240-250), Asha (200-220), ICPH 2671 (200)
Sorghum- CSV 20-110-20, MP chari, CSV 1616
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Soybean- R 518 (110), JS 9752 (100), Birsa soybean 1 black(120-125), JS 335
Birsa safed soybean 2 (105-110), RKS 18, RAUS 5
Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75), WBU 109 (70-75), Uttara (75-80 small grain)
Green gram- HUM 16, IPM-02-03-60-65, SML 668 (summer)
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Vegetable crops
Radish- Pusa chetki, Pusa deshi, Jaunpur/ Pusa himani, Pusa roshni
Cabbage- early- Golden acer, Early drumfead, Pride of India
Cauliflower-Early- Kuwari, Pusa katki, Pusa him jyoti, Pant subhra, Hybrid- Himani, Swati, Endum early Pusa hybrid 1
Frenchbean- Bushy- Pant anupma, Swarna priya, Arka Komal, Stringless
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati

4 (b) Agronomic measures

- Summer deep ploughing with Mould Board or dics
- Dobha construction for In-situ rain water conservation Line sowing in upland rice areas through suitable seeding devices is required to be made popularized for desired plant population. This will facilitate to control weeds and also to carry out intercultural operations.
- RD Spacing
- Zero tillage practices
- Seed rate – Sole- full quantity and in case of Intercropping reduce seed rate by 30-40 % according to spacing
- RDF and in case of Intercropping reduce 1/3rd dose for intercrop
- Weed control (Maize- Atrazine as pre-emergence, Pulses- pre-emergence Imizathyper or Pendimithilin@ 1 kg a.i./ha, Soybean- Flucloralin or Basalin and also for vegetables
- Bund construction for Unbunded uplands
- Broadcast Well rotten FYM along with 1/4th N + Full basal pplication of P, K of recommended dose for all crops and for vigorous seedling growth of vegetables
- Ridge and furrow method for moisture Conservation in cereals, pulses and vegetables
- Inter-cropping to meet the consequences of occasional Drought.
- Follow RDF for all upland crops and add Sulphor @ 20kg/ha soil application for pulses and oilseed.
- In case of phospho gypsum for soil application apply @ 120 kg/ha
- Lime or dolomite application for pulses and oilseed @ 3-5 q/ha in furrow at the time of sowing.
- In vegetable nursery apply carbofuran @ 3gm/m^2 or phorate 10 G @ 1gm/ m^2 or neem cake @ 50 kg/ha

- Follow recommended seed rate
- Treat the leguminous seed in the sequence of FIR (Bavistin @ 2gm/kg, Imaidacloprid@ 3 ml or Chlorpyriphos @ 5ml/kg, Rhizobium 500 gm/ha , PSB @ 500 gm/ha and for non leguminous treat seed with Fungicide + Insecticide + soil application Azotobacter @ 2kg /ha
- Foliar application of Urea 2% solution + lime in lady's finger
- Application of required fungicide and insecticide in case of population count more than the ETL or as prophylactic measure
- Dry seeding with 15% to 20% higher seed rate. Seed treatment with Rhizobium in pulses. Maximum use of organic manure

4 (c) Remarks on Implementation

- Linkage with RKVY , ATMA, and NFSM
- Vermicomposting through KVKs ATMA and NHM
- Goatery and poultry rearing through KVKs, ATMA and Vetrinary Dept of. Govt. and BAU for livelihood support.
- Awareness about balanced use of fertilizers to increase their fertility, productivity and sustainability
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1. Mango based orchard-

Variety- Amrapali (30 June-5 July), Mallika (15020 JuneRegular bearer), Sunder langra(15-20 May)
Spacing- 5 m X 5m

i). Recommended package of Practices- Intercrops

a).Mango + Papaya (Filler crop for two years) + Blackgram (rainy)/ Chickpea

b).Mango + Custard apple (for 10 years and renovate or remove after 10 years) + Black gram/Chickpea

Variety- Langra (15 June)/Bombay green(15 May)/ Himsagar (20-25 May irregular bearer),
Spacing- 10 m X 10m

ii). Recommended package of practicises

a).Mango + Guava(Up to 10 years as filler) + Papaya (Less than 3 years) + Blackgram- Chickpea/Lentil

b).Mango + Lemon + Papaya + Rabi pulses/vegetables

c).Mango + Custard apple + Papaya + Black gram – Pea/Ckickpea/Lentil/ Vegetables

2. Guava base orchard-

Variety- Arka Mridula, Pant Prabhat, Allahabad safeda, L 49
Spacing- 5m X 5m

Recommended package of practices- Intercrops

a).Guava + Papaya (For 3 years) + Black gram-Chickpea

b).Guava + Custard apple + Black gram/Soybean- Pea/Vegetables

3. Ber Based Orchard –

Variety- Banarsi, Karakka, Gola, Apple ber
Spacing- 5m X 5m

Recommended package of practices Intercrops

Ber + Custard apple + Sesame/Black gram- Toria/Linseed/Safflower

N.B.- Cucurbits, beans or any creaper or climber vegetable should be avoided

- Field crops having height more than one meter should be avoided such as Pigenpea, Maize, Sorghum
- After 3-5 years when shading effects started shade loving crops like ginger, Turmeric, Ol or leafy vegetavles should be growm
- In citrus leaf minor and aphid suceptible crops should be avoided
- Aphid should be managed of mustard /toria taken in citrus orchard

4. Cashewnut based orchard for Kolhan region
5. Cassava should be grown for the requirement as feed for pig animals
6. Moringa should also be growm as fodder or vegetable purpose on upland main field bunds as shelter belt/wind break. Every year prunning and thinning should be followed for bushy look.

1. Monsoon/Weather Situation: **2 Weeks Delay** (Onset: 4th Week of June) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Midland** High rainfall, slightly deep sandy loam soils	
3. Normal Crop/cropping system	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum,Pigeonpea + Maize

4. Suggested Contingency measures

4 **(a) Change in crop/cropping system**

Don 2

DSR (Improved variety) Var.-IR 64 Drt 1, Shabhagi Dhan, BVD 111,Rice + Dhaincha/Sunhemp (Green manuring/ Brown manuring) in DSR
Transplanting (Hybrid Rice varieties) Var.-PAC 801, 807, PHB 71, Arize Tej (Gold)

Don3

Ridge and Furrow method or raise bed broad furrow: Replace Rice with cereal/ Pulse/ Vegetable
Cereal – Maize/ Sorghum/
Pulse- Pigeonpea + Lady's finger (1:1) / Soybean (1:2)/ Finger millet (1:1)
Vegetable-Amranthus leaf/Coriander leaf/ Ladys's Finger/ Cowpea/ Dolichos bean
Variety
Maize- Birsa makka (Vikash) 2 (75-80), Shaktiman 1(105-1010), KDMH, LG 32-81 –Yuvral gold (80-85), Malvia makka 2 (90), Kanchan(K 25) 100-110
Sorghum- CSV 20-110-20, MP cheri, CSV 1616
Pigeonpea- Birsa Arhar (200-220), Malvia 13 (240-250), Asha (200-220), ICPH 2671 (200
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Vegetable crops
Coriander- Pant haritima, Rajendra swati
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati Creeper- Birsa sweta, Swarna sweta, Swarn harit
Dolichos bean-Swarna utkrist, Swarna rituwar

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/DAPOG method
- Follow community based nursery raising
- Follow RDF,INP
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O
- DSR-Use plastic drum seeder rice tools
- Follow RDF and
- INPM

- Use of post weedicide
- Rice disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt
  Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha
  Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %
  Blast- Beam or Tricyclazole @ 0.6 gm /lt water
  Termite- Methyl parathion dust @ 25 kg/ha
  Disease managemnt- Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; S vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt.

4 (c) Remarks on Implementation

- A campaign trough RKVY , ATMA, NFSM, KVKs, NHM and other State Govt. line departments are needed to be launched trough different district, block, panchayat and village level programme.
- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weathet insurance to meet losses in case of drought/cyclone situation.

1. Monsoon/Weather Situation: **2 Weeks Delay** (Onset: 4th Week of June) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Midland** Less rainfall, medium depth, light to medium textured sandy loam soils.	
3. Normal Crop/cropping system	Rice, Pigeonpea, Maize, Pigeonpea + Maize , Pigeonpea + Sorghum

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Don 2

DSR (Improved rice variety) Var.-Sahbhagi, Abhishek, IR 64-Drt 1, BVD 111, Rice + Dhaincha/Sunhemp (Green manuring/ Brown manuring) in DSR
Transplanting (Hybrid Rice varieties)Var.-PAC 801, 807, PHB 71, Arize Tej (Gold)

Don 3

Ridge and Furrow method or raise bed broad furrow: Replace Rice with cereal/ Pulse/ Vegetable
Cereal – Maize/ Sorghum
Pulse- Pigeonpea + Lady's finger (1:1) /Soybean (1:2)/ Finger millet (1:1)
Vegetable-Radish/ Ladys's Finger/ Cowpea/ Dolichos bean
Variety
Maize- Birsa makka (Vikash) 2 (75-80), Shaktiman 1(105-1010), KDMH, LG 32-81 –Yuvral gold (80-85), Malvia makka 2 (90), Kanchan(K 25) 100-110
Sorghum- CSV 20-110-20, MP cheri, CSV 1616
Pigeonpea- Birsa Arhar (200-220), Malvia 13 (240-250), Asha (200-220), ICPH 2671 (200
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Vegetable crops
Radish- Pusa deshi, Kashi hansh, Jaunpur/ Pusa himani, Japanese white,
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati
Dolichos bean-Swarna utkrist, Swarna rituwar

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/DAPOG method
- Follow community based nursery raising

- Follow RDF,INP
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O
- DSR-Use plastic drum seeder rice tools
- Follow RDF and
- INPM
- Use of post weedicide
- Rice disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt
  Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha
  Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %
  Blast- Beam or Tricyclazole @ 0.6 gm /lt water
  Termite- Methyl parathion dust @ 25 kg/ha
  Disease managemnt- Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; S vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt.

4 (c) Remarks on Implementation

- A campaign trough RKVY , ATMA, NFSM, KVKs, NHM and other State Govt. line departments are needed to be launched trough different district, block, panchayat and village level programme.
- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weathet insurance to meet losses in case of drought/cyclone situation.

1.Monsoon/Weather Situation: **2 Weeks Delay** (Onset: 4th Week of June) – Early Season Drought	
2.Major Farming Situation/Land Situation: **Lowland** High rainfall, medium depth, heavy textured clay loam soils	
3. Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Long duration variety (Swarna , BPT 5204 and Rajshree) with Medium duration rice variety of Don 2 in Don 1

DSR(Improved Rice variety) Var.- Shabhagi Dhan, IR 64-Drt 1, Abhishek (120 days), Vardhan, MTU 1010, MTU 1001

Transplanting (Hybrid rice varieties) var.-Arize 6444 (Gold), Arize Tej (Gold), Akshay Dhan, PHB 71, 26P52, 25P25

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/ DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use Post emergence weedicide
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- Use of post weedicide
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt. Gundhi bug, leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha. Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %. Blast- Beam or Tricyclazole @ 0.6 gm /lt water

4 (c) Remarks on Implementation

- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
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- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weather insurance to meet losses in case of drought/cyclone upside-down situation.

1.Monsoon/Weather Situation: **2 Weeks Delay** (Onset: 4th Week of June) – Early Season Drought
2.Major Farming Situation/Land Situation: **Lowland** medium depth, heavy textured clay loam soils

3. Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Long duration variety (Swarna , BPT 5204 and Rajshree) with Medium duration rice variety of Don 2 in Don 1

DSR(Improved Rice variety) Var.- Shabhagi Dhan, IR 64-Drt 1, Abhishek (120 days), Vardhan, MTU 1010, MTU 1001

Transplanting (Hybrid rice varieties) var.-Arize 6444 (Gold), Arize Tej (Gold), Akshay Dhan, PHB 71, 26P52, 25P25

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/ DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use Post emergence weedicide
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- Use of post weedicide
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt. Gundhi bug, leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha. Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %. Blast- Beam or Tricyclazole @ 0.6 gm /lt water

4 (c) Remarks on Implementation

- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weather insurance to meet losses in case of drought/cyclone upside-down situation.

1. Monsoon/Weather Situation: **4 Weeks Delay** (Onset: 2nd Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Upland** High rainfall, shallow light textured sandy soils	
3. Normal Crop/cropping system	Upland Rice , Finger millet , Pigeonpea + Sorghum, Pigeonpea + Maize

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Rice Crop

Sole crop

Pigeonpea, Sorghum, Finger millet, Soybean, Black gram, Green gram, Sweet potato, lady's Finger

Intercrop :

Pigeonpea/Maize + Lady's finger (1:2), Pigeonpea + Maize (1:1) , Pigeonpea + Black gram (1:2)/ Green gram (1:2)
Pigeonpea + Sorghum (1:1),

Horticulture Crop-

Vegetable- Tomato/ Brinjal/ Chilli/ Amaranthus leaf/ Lobia/ French bean/ Creepers

Fodder Crop -

Sorghum, Maize, Black gram, Green gram

Veriety

Pigeonpea- Birsa Arhar (200-220), Narendra Arhar 1 and 2 (240-250), Asha (200-220), ICPH 2671 (200)
Finger millet- BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Soybean- JS 335
Birsa safed soybean 2 (105-110), RKS 18, RAUS 5
Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75)
Green gram- HUM 16, IPM-02-03-60-65, SML 668
Sweet potato-Shribhadra (80-90), Kalinga, Birsa sakarkand 1, Gauri
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika

Vegetable crops

Tomato- Hybrid- Swarn sampada, Swarn samridih, Pusa hybrid 1 Suraksha
Brinjal- Pusa purple long, Pusa purple round, Pusa purple cluster, Mukta keshi, Banaras giant,
Chili- Spices- Andhrajyoti, Pusasadabahar, Yellow wonder, Bharat
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati
Frenchbean- Bushy- Pant anupma, Swarna priya, Arka Komal, Cucurbits
Bitter gourd- Arka hait, Pusa domausami,
Bottle gourd- Arka bahar, Pusa samar, Pusa Naveen, PusaMeghdoot, Coimbtur long green, local, Arka harit

Sponge gourd- Pusa chikni, Pusa supriya, Rajendra nema, Long green,Long white
Ridge gourd- Swarn manjari, Swarn uphar, Swarn baha, Pusa nasdar, Satputia,
Red Pumpkin- CO 1, CO 2, Arka chandan, Arka suryamukhi

Fodder crop

Sorghum-PC-1, PC-6, PC-23, HC-136, HC-171, PSC-1, Pant Chari-5, Pant Chari-6 and Sorghum Sudan hybrid.
Maize- African tall, JS-1006 and Vijaya composite.
Black gram- PU 19/31/35 (70-75)
Green gram- HUM 16, IPM-02-03-60-65

4 (b) Agronomic Measures

- Summer deep ploughing with Mould Board or dics
- Dobha construction for In-situ rain water conservation Line sowing in upland rice areas through suitable seeding devices is required to be made popularized for desired plant population. This will facilitate to control weeds and also to carry out intercultural operations.
- RD Spacing
- Zero tillage practices
- Seed rate – Sole- full quantity and in case of Intercropping reduce seed rate by 30-40 % according to spacing
- RDF and in case of Intercropping reduce 1/3rd dose for intercrop
- Weed control (Maize- Atrazine as pre-emergence, Pulses- pre-emergence Imizathyper or Pendimithilin@ 1 kg a.i./ha, Soybean- Flucloralin or Basalin and also for vegetables
- Bund construction for Unbunded uplands
- Broadcast Well rotten FYM along with 1/4th N + Full basal pplication of P, K of recommended dose for all crops and for vigorous seedling growth of vegetables
- Ridge and furrow method for moisture Conservation in cereals, pulses and vegetables
- Inter-cropping to meet the consequences of occasional Drought.
- Follow RDF for all upland crops and add Sulphor @ 20kg/ha soil application for pulses and oilseed.
- In case of phospho gypsum for soil application apply @ 120 kg/ha
- Lime or dolomite (3-5 q/ha) sulphur and phosphogypsum (30 Kg/ha) with compost application few days before sowing.
- In vegetable nursery apply carbofuran @ 3gm/m^2 or phorate 10 G @ 1gm/ m^2 or neem cake @ 50 kg/ha
- Follow recommended seed rate
- Treat the leguminous seed in the sequence of FIR (Bavistin @ 2gm/kg, Imaidacloprid@ 3 ml or Chlorpyriphos @ 5ml/kg, Rhizobium 500 gm/ha , PSB @ 500 gm/ha and for non leguminous treat seed with Fungicide + Insecticide + soil application Azotobacter @ 2kg /ha
- Foliar application of Urea 2% solution + lime in lady's finger
- Application of required fungicide and insecticide in case of population count more than the ETL or as prophylactic measure
- Leguminous/pulse crops may be included in the cropping system in order to improve the soil fertility. Apply Borax @ 10 kg/ha
- For in-situ moisture conservation in vegetables, 15-20 DAS follow intercultural operations by making ridges and furrows
- Cultivate vegetables like Brinjal Tomato, Cucurbits, Lady's finger, Chilli, Coriander leaf, Amaranthus leaf, Oel, Arvi, Dolichos bean, Cole crop, French bean Cowpea etc.
- Gap filling and resowing should be done If mortality is more than 50 per cent and even if necessary replace the crops with short duration high yielding low water requiring crops like : Greengram, Blackgram, Horsegram , Niger, Cow pea Fodder maize, fodder cowpea, fodder sorghum, fodder pearl millet, Sweet potato, Gundli, Guarfalli after receiving the downpour.
- Weed control by applying pre-emergence 5-6 DAS (Pendimithilin) or Post-emergence 18-28 DAS (Bispyribac).
- Irrigate only at critical stages
- Disease managemnt- Maize- Stem borer Monocrotophos @ 1ml/lt; Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; Soybean- Cercospora leaf spot- Indofil M 45 1 ml/lt Groundnut- Tikka and leaf minor- Hexaconazole(Cartap) @ 1ml/lt or Cartap hydrochloride @ 2 gm/lt, hairy catterpiller –Quinolphos 1.5ml /lt; Finger millet- Leaf/finger/neck and collar blast- Tricyclazole @ 6 gm/10 lt; vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt. water

4 (c) Remarks on Implementation

- Linkage with RKVY , ATMA and NFSM
- Vermicomposting awarness through KVKs, ATMA and NHM
- Backyard Goatery and poultry rearing awarness campaign through KVKs, ATMA and Vetrinary Dept of. Govt. and BAU for livelihood support.

- A special programme is needed to be launched in such areas on priority basis to motivate the farmers to adopt improved technology for stress management throuh ATMA, KVKs, Govt Dept., NGOs
- Campaign for awarness of crop-weather insurance to meet the lossess due to drought/cyclone like weather vagaries.

1. Monsoon/Weather Situation: **4 Weeks Delay** (Onset: 2nd Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Upland** Less rainfall, shallow depth red light textured sandy soils	
3. Normal Crop/cropping system	Upland Ric, Pigeonpea, Maize, Pigeonpea + Maize (Mixed)

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Rice crop

Sole crop

Pigeonpea, Sorghum, Finger millet, Soybean, Black gram, Green gram, Lady's finger

Intercrop

Pigeonpea + Maize (1:1), Pigeonpea + Lady's finger (1:2)/Green gram (1:2), Maze+ creeper vegetables (Sponge Gourd) (1:2), Pigeonpea + Sorghum (1:1)

Horticulture Crop

Vegetable :Radish/Early Cabbage/ Cauliflower/ French bean / Cowpea

Veriety

Pigeonpea- Birsa Arhar (200-220), Narendra Arhar 1 and 2 (240-250), Asha (200-220), ICPH 2671 (200)
Finger millet- BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Soybean- JS 335
Birsa safed soybean 2 (105-110), RKS 18, RAUS 5
Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75)
Green gram- HUM 16, IPM-02-03-60-65, SML 668

Vegetable crops

Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Cucurbits
Sponge gourd- Pusa chikni, Pusa supriya, Rajendra nema, Long green,Long white
Radish- Pusa chetki, Pusa deshi, Japanese white, Pusa roshni
Cabbage- early- Golden acer, Early drumfead, Pride of India, Shri ganesh cabbage 8
Cauliflower- - Early Kuwari, Early synthetic, Pusa him jyoti, Pant subhra
Frenchbean- Bushy- Arka Komal, Stringless, Creeper- Kentuky wonder, Birsa priya, Swarna lata
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati Creeper- Birsa sweta, Swarna sweta, Swarn harit

4 (b) Agronomic Measures

- Summer deep ploughing with Mould Board or dics
- Dobha construction for In-situ rain water conservation Line sowing in upland rice areas through suitable seeding devices is required to be made popularized for desired plant population. This will facilitate to control weeds and also to carry out intercultural operations.
- RD Spacing

- Zero tillage practices
- Seed rate – Sole- full quantity and in case of Intercropping reduce seed rate by 30-40 % according to spacing
- RDF and in case of Intercropping reduce 1/3rd dose for intercrop
- Weed control (Maize- Atrazine as pre-emergence, Pulses- pre-emergence Imizathyper or Pendimithilin@ 1 kg a.i./ha, Soybean- Flucloralin or Basalin and also for vegetables
- Bund construction for
  Unbunded uplands
- Broadcast Well rotten FYM along with 1/4th N + Full basal pplication of P, K of recommended dose for all crops and for vigorous seedling growth of vegetables
- Ridge and furrow method for moisture Conservation in cereals, pulses and vegetables
- Inter-cropping to meet the consequences of occasional Drought.
- Follow RDF for all upland crops and add Sulphor @ 20kg/ha soil application for pulses and oilseed.
- In case of phospho gypsum for soil application apply @ 120 kg/ha
- Lime or dolomite (3-5 q/ha) sulphur and phosphogypsum (30 Kg/ha) with compost application few days before sowing.
- In vegetable nursery apply carbofuran @ 3gm/m^2 or phorate 10 G @ 1gm/ m^2 or neem cake @ 50 kg/ha
- Follow recommended seed rate
- Treat the leguminous seed in the sequence of FIR (Bavistin @ 2gm/kg, Imaidacloprid@ 3 ml or Chlorpyriphos @ 5ml/kg, Rhizobium 500 gm/ha , PSB @ 500 gm/ha and for non leguminous treat seed with Fungicide + Insecticide + soil application Azotobacter @ 2kg /ha
- Foliar application of Urea 2% solution + lime in lady's finger
- Application of required fungicide and insecticide in case of population count more than the ETL or as prophylactic measure
- Leguminous/pulse crops may be included in the cropping system in order to improve the soil fertility. Apply Borax @ 10 kg/ha
- For in-situ moisture conservation in vegetables, 15-20 DAS follow intercultural operations by making ridges and furrows
- Cultivate vegetables like Brinjal Tomato, Cucurbits, Lady's finger, Chilli, Coriander leaf, Amaranthus leaf, Oel, Arvi, Dolichos bean, Cole crop, French bean Cowpea etc.
- Gap filling and resowing should be done If mortality is more than 50 per cent and even if necessary replace the crops with short duration high yielding low water requiring crops like : Greengram, Blackgram, Horsegram , Niger, Cow pea Fodder maize, fodder cowpea, fodder sorghum, fodder pearl millet, Sweet potato, Gundli, Guarfalli after receiving the downpour.
- Weed control by applying pre-emergence 5-6 DAS (Pendimithilin) or Post-emergence 18-28 DAS (Bispyribac).
- Irrigate only at critical stages
- Disease managemnt- Maize- Stem borer Monocrotophos @ 1ml/lt; Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; Soybean- Cercospora leaf spot- Indofil M 45 1 ml/lt Groundnut- Tikka and leaf minor- Hexaconazole(Cartap) @ 1ml/lt or Cartap hydrochloride @ 2 gm/lt, hairy catterpiller –Quinolphos 1.5ml /lt; Finger millet- Leaf/finger/neck and collar blast- Tricyclazole @ 6 gm/10 lt; vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt. water

4 (c) Remarks on Implementation

- Linkage with RKVY , ATMA and NFSM
- Vermicomposting awarness through KVKs, ATMA and NHM
- Backyard Goatery and poultry rearing awarness campaign through KVKs, ATMA and Vetrinary Dept of. Govt. and BAU for livelihood support.
- A special programme is needed to be launched in such areas on priority basis to motivate the farmers to adopt improved technology for stress management throuh ATMA, KVKs, Govt Dept., NGOs
- Campaign for awarness of crop-weather insurance to meet the lossess due to drought/cyclone like weather vagaries.

1. Monsoon/Weather Situation: **4 Weeks Delay** (Onset: 2nd Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Midland** High rainfall, slightly deep sandy loam soils	
3. Normal Crop/cropping system	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum , Pigeonpea + Maize

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Don 2

DSR (Improved rice variety) Var.-Sahbhagi, Abhishek, IR 64-Drt 1, BVD 111, Dhaincha/Sunhemp (Green manuring/ Brown manuring) in DSR
Transplanting (Hybrid Rice varieties) Var.-Arize 6444 (Gold), Arize Tej (Gold), PAC 801, 807

Don 3

Ridge and Furrow method or raise bed broad furrow: Replace rice with Cereal/Pulses/ vegetable/ Fodder crop
Cereal – Maize/Sorghum
Pulses- Pigeonpea+ Lady's finger(1:1)/Black gram (1:2)/Soybean (1:2)
Vegetables- Ladys's Finger/ Cowpea/ Dolichos bean/
Fodder Crop
Rice bean (Moth bean)/ Maize / Cowpea
Variety
Maize- Birsa makka (Vikash) 2 (75-80), Shaktiman 1(105-1010), KDMH, LG 32-81 –Yuvral gold (80-85), Malvia makka 2 (90), Kanchan(K 25) 100-110
Sorghum- CSV 20-110-20, MP cheri, CSV 1616
Pigeonpea- Birsa Arhar (200-220), Malvia 13 (240-250), Asha (200-220), ICPH 2671 (200
Black gram- Birsa urd 1 (75-80), WBU 109 (70-75), Uttara (75-80)
Soybean- R 518 (110), JS 9752 (100), JS 335
Birsa safed soybean 2 (105-110), RKS 18, RAUS 5
Vegetable crops
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati
Dolichos bean-Swarna utkrist, Swarna rituwar
Fodder crop
Maize- African tall, JS-1006 and Vijaya composite.
Cowpea-EC-4216, UPC-287

4 (b) Agronomic Measures

- Summer deep ploughing with Mould Board or dics
- Dobha construction for In-situ rain water conservation Line sowing in upland rice areas through suitable seeding devices is required to be made popularized for desired plant population. This will facilitate to control weeds and also to carry out intercultural operations.
- RD Spacing
- Zero tillage practices
- Seed rate – Sole- full quantity and in case of Intercropping reduce seed rate by 30-40 % according to spacing

- RDF and in case of Intercropping reduce 1/3rd dose for intercrop
- Weed control (Maize- Atrazine as pre-emergence, Pulses- pre-emergence Imizathyper or Pendimithilin@ 1 kg a.i./ha, Soybean- Flucloralin or Basalin and also for vegetables
- Bund construction for Unbunded uplands
- Broadcast Well rotten FYM along with 1/4th N + Full basal pplication of P, K of recommended dose for all crops and for vigorous seedling growth of vegetables
- Ridge and furrow method for moisture Conservation in cereals, pulses and vegetables
- Inter-cropping to meet the consequences of occasional Drought.
- Follow RDF for all upland crops and add Sulphor @ 20kg/ha soil application for pulses and oilseed.
- In case of phospho gypsum for soil application apply @ 120 kg/ha
- Lime or dolomite (3-5 q/ha) sulphur and phosphogypsum (30 Kg/ha) with compost application few days before sowing.
- In vegetable nursery apply carbofuran @ 3gm/m^2 or phorate 10 G @ 1gm/ m^2 or neem cake @ 50 kg/ha
- Follow recommended seed rate
- Treat the leguminous seed in the sequence of FIR (Bavistin @ 2gm/kg, Imaidacloprid@ 3 ml or Chlorpyriphos @ 5ml/kg, Rhizobium 500 gm/ha , PSB @ 500 gm/ha and for non leguminous treat seed with Fungicide + Insecticide + soil application Azotobacter @ 2kg /ha
- Foliar application of Urea 2% solution + lime in lady's finger
- Application of required fungicide and insecticide in case of population count more than the ETL or as prophylactic measure
- Leguminous/pulse crops may be included in the cropping system in order to improve the soil fertility.
- Apply Borax @ 10 kg/ha
- For in-situ moisture conservation in vegetables, 15-20 DAS follow intercultural operations by making ridges and furrows
- Cultivate vegetables like Brinjal Tomato, Cucurbits, Lady's finger, Chilli, Coriander leaf, Amaranthus leaf, Oel, Arvi, Dolichos bean, Cole crop, French bean Cowpea etc.
- Gap filling and resowing should be done If mortality is more than 50 per cent and even if necessary replace the crops with short duration high yielding low water requiring crops like : Greengram, Blackgram, Horsegram , Niger, Cow pea Fodder maize, fodder cowpea, fodder sorghum, fodder pearl millet, Sweet potato, Gundli, Guarfalli after receiving the downpour.
- Weed control by applying pre-emergence 5-6 DAS (Pendimithilin) or Post-emergence 18-28 DAS (Bispyribac).
- Irrigate only at critical stages

Disease and Pest managemnt- Maize- Stem borer Monocrotophos @ 1ml/lt; Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; Soybean- Cercospora leaf spot- Indofil M 45 1 ml/lt Groundnut- Tikka and leaf minor- Hexaconazole(Cartap) @ 1ml/lt or Cartap hydrochloride @ 2 gm/lt, hairy catterpiller –Quinolphos 1.5ml /lt; Finger millet- Leaf/finger/neck and collar blast- Tricyclazole @ 6 gm/10 lt; vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt. water.

Rice disease and pest management -Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha. Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %. Blast- Beam or Tricyclazole @ 0.6 gm /lt water. Termite- Methyl parathion dust @ 25 kg/ha

4 (c) Remarks on Implementation

- A campaign trough RKVY , ATMA, NFSM, KVKs, NHM programme and other State Govt. line departments are needed to be awared trough different district, block, panchayat and village level programme.
- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weathet insurance to meet losses in case of drought/cyclone situation.

1. Monsoon/Weather Situation: **4 Weeks Delay** (Onset: 2nd Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Midland** Less rainfall, medium depth, light to medium textured sandy loam soils	
3. Normal Crop/cropping system	Rice, Pigeonpea, Maize, Pigeonpea + Maize , Pigeonpea + Sorghum

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Don 2

DSR (Improved rice variety) Var.-Sahbhagi Dhan, Abhishek, IR 64-Drt 1, BVD 111, Rice +Dhaincha/Sunhemp (Green manuring/ Brown manuring) in DSR
Transplanting (Hybrid Rice varieties) Var.-Arize 6444 (Gold), Arize Tej (Gold), PAC 801, 807, 27P31, DRRH 2

Don 3

Ridge and Furrow method or raise bed broad furrow along the slope: Replace rice with Cereal/Pulses/ vegetable/ Fodder crop
Cereal – Maize/Sorghum
Pulses- Pigeonpea+ Lady's finger (1:1)/Black gram (1:2)/Soybean (1:2)/ Groundnut (1:2)/Maize (1:1)
Vegetables- Ladys's finger/ Cowpea/ Dolichos bean/

Fodder Crop

Black gram/ Green gram/ Cowpea/Maize / Sweet Sorghum

Variety

Maize- Birsa makka (Vikash) 2 (75-80), Shaktiman 1(105-1010), KDMH, LG 32-81 –Yuvral gold (80-85), Malvia makka 2 (90), Kanchan(K 25) 100-110
Sorghum- CSV 20-110-20, MP cheri, CSV 1616
Pigeonpea- Birsa Arhar (200-220), Malvia 13 (240-250), Asha (200-220), ICPH 2671 (200
Black gram- Birsa urd 1 (75-80), WBU 109 (70-75), Uttara (75-80)
Soybean- R 518 (110), JS 9752 (100), JS 335
Birsa safed soybean 2 (105-110), RKS 18, RAUS 5
Groundnut- Birsa mungfali 3, 4, Girnar 3

Vegetable crops

Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati
Dolichos bean-Swarna utkrist, Swarna rituwar

Fodder crop

Black gram- WBU 109 (70-75), Uttara (75-80)
Green gram- HUM 16, IPM-02-03-60-65,
Cowpea-EC-4216, UPC-287
Maize- African tall, JS-1006 and Vijaya composite
Sorghum-PC-1, PC-6, HC-171, PSC-1, Pant Chari-5, Pant Chari-6 and Sorghum Sudan hybrid

4 (b) Agronomic Measures

- Summer deep ploughing with Mould Board or dics
- Dobha construction for In-situ rain water conservation Line sowing in upland rice areas through suitable seeding devices is required to be made popularized for desired plant population. This will facilitate to control weeds and also to carry out intercultural operations.
- RD Spacing
- Zero tillage practices
- Seed rate – Sole- full quantity and in case of Intercropping reduce seed rate by 30-40 % according to spacing
- RDF and in case of Intercropping reduce 1/3rd dose for intercrop
- Weed control (Maize- Atrazine as pre-emergence, Pulses- pre-emergence Imizathyper or Pendimithilin@ 1 kg a.i./ha, Soybean- Flucloralin or Basalin and also for vegetables
- Bund construction for Unbunded uplands
- Broadcast Well rotten FYM along with 1/4th N + Full basal pplication of P, K of recommended dose for all crops and for vigorous seedling growth of vegetables
- Ridge and furrow method for moisture Conservation in cereals, pulses and vegetables
- Inter-cropping to meet the consequences of occasional Drought.
- Follow RDF for all upland crops and add Sulphor @ 20kg/ha soil application for pulses and oilseed.

- In case of phospho gypsum for soil application apply @ 120 kg/ha
- Lime or dolomite (3-5 q/ha) sulphur and phosphogypsum (30 Kg/ha) with compost application few days before sowing.
- In vegetable nursery apply carbofuran @ 3gm/m^2 or phorate 10 G @ 1gm/ m^2 or neem cake @ 50 kg/ha
- Follow recommended seed rate
- Treat the leguminous seed in the sequence of FIR (Bavistin @ 2gm/kg, Imaidacloprid@ 3 ml or Chlorpyriphos @ 5ml/kg, Rhizobium 500 gm/ha , PSB @ 500 gm/ha and for non leguminous treat seed with Fungicide + Insecticide + soil application Azotobacter @ 2kg /ha
- Foliar application of Urea 2% solution + lime in lady's finger
- Application of required fungicide and insecticide in case of population count more than the ETL or as prophylactic measure
- Leguminous/pulse crops may be included in the cropping system in order to improve the soil fertility.
- Apply Borax @ 10 kg/ha
- For in-situ moisture conservation in vegetables, 15-20 DAS follow intercultural operations by making ridges and furrows
- Cultivate vegetables like Brinjal Tomato, Cucurbits, Lady's finger, Chilli, Coriander leaf, Amaranthus leaf, Oel, Arvi, Dolichos bean, Cole crop, French bean Cowpea etc.
- Gap filling and resowing should be done If mortality is more than 50 per cent and even if necessary replace the crops with short duration high yielding low water requiring crops like : Greengram, Blackgram, Horsegram , Niger, Cow pea Fodder maize, fodder cowpea, fodder sorghum, fodder pearl millet, Sweet potato, Gundli, Guarfalli after receiving the downpour.
- Weed control by applying pre-emergence 5-6 DAS (Pendimithilin) or Post-emergence 18-28 DAS (Bispyribac).
- Irrigate only at critical stages

Disease and Pest managemnt- Maize- Stem borer Monocrotophos @ 1ml/lt; Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; Soybean- Cercospora leaf spot- Indofil M 45 1 ml/lt Groundnut- Tikka and leaf minor- Hexaconazole(Cartap) @ 1ml/lt or Cartap hydrochloride @ 2 gm/lt, hairy catterpiller –Quinolphos 1.5ml /lt; Finger millet- Leaf/finger/neck and collar blast- Tricyclazole @ 6 gm/10 lt; vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt. water.

Rice disease and pest management -Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha. Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %. Blast- Beam or Tricyclazole @ 0.6 gm /lt water. Termite- Methyl parathion dust @ 25 kg/ha

4 (c) Remarks on Implementation

- A campaign trough RKVY , ATMA, NFSM, KVKs, NHM programme and other State Govt. line departments are needed to be awared trough different district, block, panchayat and village level programme.
- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weathet insurance to meet losses in case of drought/cyclone situation.

1. Monsoon/Weather Situation: **4 Weeks Delay** (Onset: 2nd Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Lowland** High rainfall, medium depth, heavy textured clay loam soils	
3. Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Long duration variety (Swarna , BPT 5204 and Rajshree) with Medium duration rice variety of Don 2 in Don 1

DSR(Improved Rice variety) Var.- Shabhagi Dhan, IR 64-Drt 1, Abhishek (120 days), Vardhan, MTU 1001

Transplanting (Hybrid rice Varieties) Var.-Arize 6444 (Gold), Arize Tej (Gold), Akshay Dhan, PHB 71, 26P52, 25P25

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/ DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use Post emergence weedicide
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing

- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- Use of post weedicide
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt, Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha, Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %, Blast- Beam or Tricyclazole @ 0.6 gm /lt water

4 (c) Remarks on Implementation

- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weather insurance to meet losses in case of drought/cyclone upside-down situation

1. Monsoon/Weather Situation: **4 Weeks Delay** (Onset: 2nd Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Lowland** Less rainfall, medium depth, heavy textured clay loam soils	
3. Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Long duration variety (Swarna , BPT 5204 and Rajshree) with Medium duration rice variety of <u>Don 2 in Don 1</u>

DSR(Improved Rice variety) Var.- Shabhagi Dhan, IR 64-Drt 1, Abhishek (120 days), MTU-1001, MTU 1010,

Transplanting (Hybrid rice varieties) Var.–Arize 6444 (Gold), Arize Tej (Gold), Akshay Dhan, PHB 71, 26P52, 25P25

<u>Vegetable</u>

Cucurbits-

Bitter gourd- Arka hait, Pusa domausami,

Bottle gourd- Arka bahar, Pusa samar, Pusa Naveen, PusaMeghdoot, Coimbtur long green, Ranchi local, Arka harit

Sponge gourd- Pusa chikni, Pusa supriya, Rajendra nema, Long green,Long white

Ridge gourd- Swarn manjari, Swarn uphar, Swarn baha, Pusa nasdar, Satputia,

Red Pumpkin- CO 1, CO 2, Arka chandan, Arka suryamukhi

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/ DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use Post emergence weedicide
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling

- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- Use of post weedicide
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt, Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha, Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %, Blast- Beam or Tricyclazole @ 0.6 gm /lt water

4 (c) Remarks on Implementation

- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds through Lamps one month prior to the arrival of monsoon.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weather insurance to meet losses in case of drought/cyclone upside-down situation

1. Monsoon/Weather Situation: **6 Weeks Delay** (Onset: 6th Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Upland** High rainfall, shallow light textured sandy soils	
3. Normal Crop/cropping system	Upland Rice,Finger millet, Pigeonpea+ Sorghum, Pigeonpea + Maize
4. Suggested Contingency measures	
4 (a) Change in crop/cropping system	
Discard Rice Crop	

Sole crop
Ridge and Furrow method)-Niger, Horse gram, Cowpea, Finger millet, Black gram, Green gram
Intercrop
Ridge and Furrow method:Pigeonpea + Lady's finger (1:2), Pigeonpea + Maize (1:1)
Pigeonpea + Blackgram(1:2)/Greengram (1:2), Maize + lady's finger (1:1)
Horticulture crop
Ridge and Furrow method:Vegetable –Lady's Finger, Ridge Gourd, Bottle Gourd, Cowpea
Fodder Crop
Sadabahar/Chara badam/ Anjan grass/ Hybrid napier/ Cactus/ Sweet Sorghum
Variety
Niger- Birsa niger 1, 2 and 3 (95-105), Puja 1 (90), VLG 19
Horse gram- Birsa kulthi1 (90-95
Cowpea-rainy – Birsa sweta(80-90), Swarn sweta(80-90), Swarn harit (80-90)
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75), WBU 109 (70-75), Uttara (75-80 small grain)
Green gram- HUM 16, IPM-02-03-60-65, SML 668 (summer)
Maize- Birsa makka (Vikash) 2 (75-80), Pusa HM 9(AQH 9), KDMH, P3544, Malvia makka 2 (90), Vivek hybrid 9 (80)
Vegetable crops
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Cucurbits
Ridge gourd- Swarn manjari, Swarn uphar, Swarn baha, Pusa nasdar, Satputia,
Bottle gourd- Arka bahar, Pusa samar, Pusa Naveen, PusaMeghdoot, Coimbtur long green, Ranchi local, Arka harit
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati Birsa sweta, Swarna sweta, Swarn harit

4 (b) Agronomic Measures

- Top dressing of urea and DAP after receipt of the rain for all crops
- Lime or dolomite (3-5 q/ha) sulphur and phosphogypsum (30 Kg/ha) with compost application few days before sowing.
- Leguminous/pulse crops may be included in the cropping system in order to improve the soil fertility. Apply Borax @ 10-15 kg/ha
- Replace the crops with short duration high yielding low water requiring crops like : Greengram, Blackgram, Soybean, Seasame, Horsegram , Niger, Cow pea, Fodder maize, fodder cowpea, fodder sorghum, fodder pearl millet, Sweet potato, Gundli, Guarfalli after receiving the downpour
- Follow mulch after cultural operations to control the weeds in vegetables.
- For in-situ moisture conservation in vegetables, 15-20 DAS follow intercultural operations by making ridges
- Foliar application of 2 % DAP or 0.5 to 1 % potassium chloride (KCl) +0.3 % Boric acid or 2% urea at pre-flowering and flowering stage in pulses and vegetables
- 2 % DAP spray for pulses.
- Use antitranspirants :
  Stomatal closure (Growth hormones like ABA, Ethrel, TIBA, succinic acid, ascorbic acid and Cycocel (CCC) Reflectant (Calcium bicarbonate, Lime water) Thin film (Hexadecanol (Higher alcohols) Cetyl alcohol, Methanol
- Acidic soils should be reclaimed by application of soil ameliorants.
- Follow integrated pest management.
- Weed control by applying pre-emergence 5-6 DAS (Pendimithilin) or Post-emergence 18-28 DAS (Bispyribac)
- Disease managemnt- Maize- Stem borer Monocrotophos @ 1ml/lt; Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; Soybean- Cercospora leaf spot- Indofil M 45 1 ml/lt Groundnut- Tikka and leaf minor- Hexaconazole(Cartap) @ 1ml/lt or Cartap hydrochloride @ 2 gm/lt, hairy catterpiller –Quinolphos 1.5ml /lt; Finger millet- Leaf/finger/neck and collar blast- Tricyclazole @ 6 gm/10 lt; vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt.

4 (c) Remarks on Implementation

- A special programme is needed to be launched in such areas to motivate the farmers to adopt improved technology for stress management throuh ATMA, KVKs, Govt Dept., NGOs and others. Soybean and fodder

crops may be promoted.

- Promote Knowingness about climate resilient agriculture at distric, block, panchayat and village level through involvement of KVk's, ATMA, DAO, NGO's and other State Agril. Govt line departments.
- Awareness of mechanization and Supply of Mouldboard and disc chisel/harrow through govt. scheme on subsidised way.
- Promote for double their income by curtailing cost of cultivation by introduction of early duration crops variety.
- Campaign for Awareness programme about crop-weather insurance

1. Monsoon/Weather Situation: **6 Weeks Delay** (Onset: 6th Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Upland** Less rainfall, shallow depth red light textured sandy soils	
3. Normal Crop/cropping system	Upland Rice, Pigeonpea, Maize, Pigeonpea+ Maize

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard rice crop

Sole crop

Raised bed or ridge and furrow method-Niger, Horse gram, Sorghum, Pigeonpea, Blackgram, Green gram, Lady's Finger

Intercrop

Raised bed or ridge and furrow method- Pigeonpea+ Lady's finger (1:2), Lady's finger + Blackgram (1:2)
Maize + Lady's finger (1:2), Pigeonpea + Maize (1:1), Pigeonpea + Greengram (1:2)
Maize+ Black gram (1:1)/Green gram (1:1)

Horticulture crop

Vegetable –Lady's Finger, Bottle Gourd, Cowpea (lobia)

Fodder Crop

Maize/Chara badam/ Thin napier/ Cactus/ Sweet Sorghum

Variety

Niger- Birsa niger 1, 2 and 3 (95-105), Puja 1 (90), VLG 19
Horse gram- Birsa kulthi1 (90-95
Cowpea-rainy – Birsa sweta(80-90), Swarn sweta(80-90), Swarn harit (80-90)
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Black gram- Birsa urd 1 (75-80), PU
Green gram- HUM 16, IPM-02-03-60-65, SML 668 (summer)
Maize- Birsa makka (Vikash) 2 (75-80), Pusa HM 9(AQH 9), KDMH, P3544, Malvia makka 2 (90), Vivek hybrid 9 (80)

Vegetable crops

Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Bottle gourd- Arka bahar, Pusa samar, Pusa Naveen, PusaMeghdoot, Coimbtor long green, Ranchi local, Arka harit
Cowpea- bushy- CP 4, Arka garima, Pusa komal, Pusa barsati Birsa sweta, Swarna sweta, Swarn harit

Fodder crop

Maize- African tall, JS-1006 and Vijaya composite
Sorghum- HC-171, PSC-1, Pant Chari-5, Pant Chari-6 and Sorghum Sudan hybrid

4 (b) Agronomic Measures

- Top dressing of urea and DAP after receipt of the rain for all crops
- Lime or dolomite (3-5 q/ha) sulphur and phosphogypsum (30 Kg/ha) with compost application few days before sowing.
- Leguminous/pulse crops may be included in the cropping system in order to improve the soil fertility. Apply Borax @ 10-15 kg/ha
- Replace the crops with short duration high yielding low water requiring crops like : Greengram, Blackgram, Soybean, Seasame, Horsegram , Niger, Cow pea, Fodder maize, fodder cowpea, fodder sorghum, fodder pearl millet, Sweet potato, Gundli, Guarfalli after receiving the downpour
- Follow mulch after cultural operations to control the weeds in vegetables.
- For in-situ moisture conservation in vegetables, 15-20 DAS follow intercultural operations by making ridges
- Foliar application of 2 % DAP or 0.5 to 1 % potassium chloride (KCl) +0.3 % Boric acid or 2% urea at pre-

flowering and flowering stage in pulses and vegetables

- 2 % DAP spray for pulses.
- Use antitranspirants :
  Stomatal closure (Growth hormones like ABA, Ethrel, TIBA, succinic acid, ascorbic acid and Cycocel (CCC) Reflectant (Calcium bicarbonate, Lime water) Thin film (Hexadecanol (Higher alcohols) Cetyl alcohol, Methanol
- Acidic soils should be reclaimed by application of soil ameliorants.
- Follow integrated pest management.
- Weed control by applying pre-emergence 5-6 DAS (Pendimithilin) or Post-emergence 18-28 DAS (Bispyribac)
- Disease managemnt- Maize- Stem borer Monocrotophos @ 1ml/lt; Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; Soybean- Cercospora leaf spot- Indofil M 45 1 ml/lt Groundnut- Tikka and leaf minor- Hexaconazole(Cartap) @ 1ml/lt or Cartap hydrochloride @ 2 gm/lt, hairy catterpiller –Quinolphos 1.5ml /lt; Finger millet- Leaf/finger/neck and collar blast- Tricyclazole @ 6 gm/10 lt; vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt.

4 (c) Remarks on Implementation

- A special programme is needed to be launched in such areas to motivate the farmers to adopt improved technology for stress management throuh ATMA, KVKs, Govt Dept., NGOs and others. Soybean and fodder crops may be promoted.
- Promote Knowingness about climate resilient agriculture at distric, block, panchayat and village level through involvement of KVk's, ATMA, DAO, NGO's and other State Agril. Govt line departments.
- Awareness of mechanization and Supply of Mouldboard and disc chisel/harrow through govt. scheme on subsidised way.
- Promote for double their income by curtailing cost of cultivation by introduction of early duration crops variety.
- Campaign for Awareness programme about crop-weather insurance

1. Monsoon/Weather Situation: **6 Weeks Delay** (Onset: 6th Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Midland** High rainfall, slightly deep sandy loam soils	
3. Normal Crop/cropping system	Rice, Finger millet, Pigeonpea, Sorghum, Maize, Pigeonpea + Sorghum,Pigeonpea + Maize

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Don 2

DSR (Improved rice variety) Var.-Sahbhagi Dhan, Abhishek, IR 64-Drt 1, BVD 110, 111 Vardhan
Transplanting (Hybrid Rice varieties) var.-CR Dhan 40, DRRH 2, Arize Tej (Gold), 27P31, PAC 801, PHB 71

Don3

Ridge and Furrow method or raise bed broad furrow: Replace Rice withPulses and cereals/ Vegetable/ Fodder crop
Pulse and cereal - Black gram, Greengram, Maize, Finger millet,
Vegetable- Ladys's finger/Tomato,/ Brinjal, creepres/Chilli
Fodder Crop
Black gram/ Green gram/ Cowpea/ Sorghum/ Maize
Variety
Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75), Uttara (75-80)
Green gram-IPM-02-03-60-65, SML 668
Maize- Birsa makka (Vikash) 2 (75-80), HQPM 1 (90-100), Pusa HM 9(AQH 9), LG 32-81 –Yuvral gold (80-85), Kanchan(K 25) 100-110 , Vivek hybrid 9 (80)
Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149
Vegetable crops
Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika
Tomato-Hybrid- Swarn sampada, Swarn samridih, Pusa hybrid 1 Suraksha
Brinjal- Swarn pratibha, Swarn mani, Swarn shayamali, hybrid-Swarn shakti , Vijay, Swarna sampada 6
Cucurbits
Bitter gourd- Arka hait, Pusa domausami,
Bottle gourd- Arka bahar, Pusa samar, Coimbtor long green, Arka harit
Sponge gourd- Rajendra nema, Long green,Long white
Ridge gourd- Swarn uphar, Swarn baha, Pusa nasdar,
Red Pumpkin- CO 1, CO 2, Arka chandan, Arka suryamukhi
Chili- Spices- Andhrajyoti, Pusasadabahar, NP 46, Jwala, KA 2, California wonder, Chinese giant, Yellow wonder, Bharat
Fodder crop
Black gram- WBU 109 (70-75), Uttara (75-80)
Green gram- HUM 16, IPM-02-03-60-65,
Cowpea-EC-4216, UPC-287
Maize- African tall, JS-1006 and Vijaya composite
Sorghum-PC-1, PC-6, HC-171, PSC-1, Pant Chari-5, Pant Chari-6 and Sorghum Sudan hybrid

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use early to mid early duration of rice variety.

- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- INPM
- Use of post weedicide
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt; Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha; Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %; Blast- Beam or Tricyclazole @ 0.6 gm /lt water; Termite- Methyl parathion dust @ 25 kg/ha

  Disease managemnt- Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; S vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt.

4 (c) Remarks on Implementation

- Campaign for awareness improved technology trough RKVY , ATMA, NFSM, KVKs, NHM programme and other State Govt. line departments are needed to be at different district, block, panchayat and village level
- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds of contingency crops through Lamps within one months.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weathet insurance to meet losses in case of drought/cyclone situation.

1. Monsoon/Weather Situation: **6 Weeks Delay** (Onset: 6th Week of July) – Early Season Drought	
2. Major Farming Situation/Land Situation: **Midland** Less rainfall, medium depth, light to medium textured sandy loam soils.	
3. Normal Crop/cropping system	Rice, Pigeonpea, Maize,Pigeonpea + Maize Pigeonpea + Sorghum

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Don 2

DSR (Improved rice variety) Var.-Sahbhagi Dhan, Abhishek, IR 64-Drt 1, BVD 110, 111

Transplanting (Hybrid Rice varieties) Var.- Arize Tej (Gold), PHB 71, 27P52, 27P31, 25P25

Don 3

Ridge and Furrow method or raise bed broad furrow along the slope : Replace Rice with pulse/ vegetable/ Fodder crop

Pulse and cereal/ Black gram/ Green gram/ Maize/ Finger millet

Vegetable

Ladys's finger/Tomato,/ Brinjal/Chilli/

Fodder Crop

Cowpea/ Sorghum/ Maize/ Rice bean (Moth bean)/ Sudan grass(SC)/Thin Napier Late August-September- Berseem (MC)/ Oat (MC)/ Rye grass

Variety

Black gram- Birsa urd 1 (75-80), PU 19/31/35 (70-75), Uttara (75-80)

Green gram-IPM-02-03-60-65, SML 668

Maize- Birsa makka (Vikash) 2 (75-80), HQPM 1 (90-100), Pusa HM 9(AQH 9), LG 32-81 –Yuvral gold (80-85), Kanchan(K 25) 100-110 , Vivek hybrid 9 (80)

Finger millet- A 404, BM 2, BM 3 (BBM 10), GPU 28, 67, VL 149

Vegetable crops

Lady's finger- Pusa A 4, Arka anamika, Varsa uphar, Hybrid- Sonal, Sarika

Tomato-Hybrid- Swarn sampada, Swarn samridih, Pusa hybrid 1 Suraksha

Brinjal- Swarn pratibha, Swarn mani, Swarn shayamali, hybrid-Swarn shakti , Vijay, Swarna sampada 6

Chili- Spices- Andhrajyoti, Pusasadabahar, NP 46, Jwala, KA 2, California wonder, Chinese giant, Yellow wonder, Bharat

Fodder crop

Cowpea-EC-4216, UPC-287

Sorghum-PC-1, PC-6, HC-171, PSC-1, Pant Chari-5

Maize- African tall, JS-1006 and Vijaya composite

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing above mentiond dose 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- INPM
- Use of post weedicide
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt; Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha; Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %; Blast- Beam or Tricyclazole @ 0.6 gm /lt water; Termite- Methyl parathion dust @ 25 kg/ha

  Disease managemnt- Pigeonpea-leaf folder- Methyl demoton @ 1.5 ml/t; Black gram and green gram- Leaf minor- Monocrotophos @ 1ml/lt., Mosaic- Methyl Demoton @ 1.5 ml/lt; S vegetables- Nursery managemnt- Application of carbofuron 3G @ 3 gm/m^2 before 10 days of transplanting followed by application of Tricoderma along with half rotten cow dung @ 1 kg trichoderma in 100 kg cow dung (20 days staying period required for cow dung treated with trichoderma), rainy potato-Ridomyl MZ @ 1-2 gm/lt.

4 (c) Remarks on Implementation

- Campaign for awareness improved technology trough RKVY , ATMA, NFSM, KVKs, NHM programme and other State Govt. line departments are needed to be at different district, block, panchayat and village level
- Awareness of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds of contingency crops through Lamps within one months.
- Linkages of farmers through different line departments and BAU for providing alertness, warning and weather

vageries updates

- Campaign for more and more crop-weathet insurance to meet losses in case of drought/cyclone situation.

1.Monsoon/Weather Situation: **6 Weeks Delay** (Onset: 6th Week of July) – Early Season Drought	
2.Major Farming Situation/Land Situation: **Lowland** High rainfall, medium depth, heavy textured clay loam soils	
3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Long duration variety (Swarna , BPT 5204 and Rajshree) with Medium duration rice variety of Don 2 in Don 1

DSR(Improved Rice variety) Var.- Shabhagi Dhan, IR 64-Drt 1, Abhishek (120 days), Vardhan, MTU 1001, MTU 1010

Transplanting (Hybrid rice varieties) Var.-Arize 6444 (Gold), Arize Tej (Gold), Akshay Dhan, PHB 71, 26P52, 25P25, DRRH 2, KRH 2

Fodder crop- In case of fallow (Late heavy rainfall) Dallis grass/ Para grass/ Arundino Grass

4 (b) Agronomic Measures

- Staggered Nursery raising by MAT/ DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use Post emergence weedicide
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2 at 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt; Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha; Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %; Blast- Beam or Tricyclazole @ 0.6 gm /lt water

4 (c) Remarks on Implementation

- Awareness programme of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments in case of DSR
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds of contingeny mid early rice varieties through Lamps within one month Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates
- Campaign for more and more crop-weather insurance to meet losses in case of drought/cyclone upside-down situation
- Contigency technology awarness programme through KVK's, ATMA, NGO's and DAO's
- Achieve maxium fallow area in case of late drought and suggest to go for cultivation of early duration rabi and fodder crops.

1.Monsoon/Weather Situation: **6 Weeks Delay** (Onset: 6th Week of July) – Early Season Drought	
2.Major Farming Situation/Land Situation: **Lowland** Less rainfall, **medium depth** , heavy textured clay loam soil	
3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change in crop/cropping system

Discard Long duration variety (Swarna , BPT 5204 and Rajshree) with Medium duration rice variety of Don 2 in Don 1

DSR(Improved Rice variety) Var.-- Shabhagi, IR 64-Drt 1, Abhishek (120 days), MTU 1010, BVD 203, BVS 1

Transplanting (Hybrid rice varieties) Var.-Arize 6444 (Gold), Arize Tej (Gold), Akshay Dhan, PHB 71, 26P52, 25P25, DRRH 2, KRH 2

Fodder crop -In case of fallow (Late heavy rainfall)-Para grass/Dallis grass

4 (b) Agronomic Measures

- Staggered Nursery raising b**y** MAT/ DAPOG method
- Follow community based nursery raising
- Follow RDF,INPM
- Use Post emergence weedicide
- Use early to mid early duration of rice variety.
- Nursery management- 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2
- Seed rate 80-100 kg/ha for improved rice variety and 15 kg/ha for hybrid rice
- Topdressing 1 kg N + 1kg P_2O_5 + 1 kg K_2O for 100 m^2 at 10-15 days after sowing
- In nursery- Carbofuron 3G @300 gm/100 m^2 10 days before uprooting of seedling
- Spacing DSR- 20 cm row for PDS and for transplanting 20-25 X 15-25 cm
- Fertilizer dose- 80:40:20 kg/ha N : P_2O_5 : K_2O (Basal ½ N + full dose P_2O_5 + 2/3rd K_2O and rest before flowering and for hybrid 120-150 kg N + 60 Kg P_2O_5 + 40 K_2O/ha ((Basal ½ N + full dose P_2O_5 + 2/3rd K_2O ; ¼th N at 20-25 DAS; 1/4th N at 45 DAS ; 1/3rd K_2O at the time of flowering.
- DSR-Use plastic drum seeder rice tools
- Rice Disease and pest management- Stem borer- Carbofuron 3 G 12 kg/acre , Gall midge- Monocrotophos @ 1ml/lt; Gundhi bug,leaf folder and BPH -Quinolphos 25 EC(Ekalux) dust @ 25 kg/ha; Falsesmut- 1st spraying at time of flowering and 2nd 10 days after 1st spraying of Propiconazole @ 0.1 % or Nativo @ 0.04 %; Blast- Beam or Tricyclazole @ 0.6 gm /lt water

4 (c) Remarks on Implementation

- Awareness programme of MAT/DAPOG method of raising nursery and nursery management through different district, block, panchayat and village level programme
- Supply of Plastic drum seeder through line departments in case of DSR
- Awareness about climate smart agriculture throuh Birsa Agricultural university and state Govt. Ag. Dept.
- Supply of improved and hybrid seeds of contingeny mid early rice varieties through Lamps within one month

Linkages of farmers through different line departments and BAU for providing alertness, warning and weather vageries updates

- Campaign for more and more crop-weather insurance to meet losses in case of drought/cyclone upside-down situation
- Contigency technology awarness programme through KVK's, ATMA, NGO's and DAO's
- Achieve maxium fallow area in case of late drought and suggest to go for cultivation of early duration rabi and fodder crops.

Part 2

1.Monsoon/Weather Situation: **Normal onset followed by 15-20 days dry spell after sowing** (Early Season Drought-Normal onset)	
2.Major Farming Situation/Land Situation: **UP LAND** Sandy red lateritic soils	
3 Normal Crop/cropping system	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize

4. Suggested Contingency measures

4 (a) Change management

Cultivate drought tolerent promising non paddy crops like Pigeonpea, blackgram, greengram, rice bean, fingermillet, guar, sesame, Soyabean, Sorghum, Pear millet, sweet potato, castor and vegetables like radish, tomato,, brinjal, creeper bean, chilli, Lady's finger wherever possible in place of upland rice

- Maximum use of organic manures for early seedling vigour along with RDF ($N:P_2O_5:K_2O$)
- Recommend to resow with subsequent rains for better plant stand.
- When damage is Less than 30 per cent then go for Gap filling in all upland crops
- When damage is More than 50 per cent then go resowing in all upland crops
- Removing excess plants where are over crowded,to reduce crop stand to conserve soil moisture
- Water spraying during evening and early morning

4 (b) Soil nutrient & moisture conservation measures

- Avoid top dressing of Urea during dry spell and wait till downpour
- Go for in-situ moisture conservation
- One hand weeding followed by hoeing and simultaneous eartingup after 20 DAS is highly recommened in all upland crops.

4 (c) Remarks on Implementation

Awareness for Construction of rain water harvesting structures for recycling of water during dry spell like DOVAS through SHG or on subsidised basis through State Govt.schemes.

1.Monsoon/Weather Situation: **Mid season drought** (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period : **At vegetative phase**	
2.Major Farming Situation/Land Situation: **UP LAND** Sandy red lateritic soils	
3 Normal Crop/cropping system	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize

4. Suggested Contingency measures

4 (a) Change management

- Use organic mulches such as tree leaves, straw and other available crop residue to conserve soil moisture
- Avoid top dressing of fertilizers till sufficient moisture is available in soil
- Use reflactant or antitranspirant like Kaolin @ 3-5 kg/100 lt or
- In pulses, at weekly interval foliar spray of KCl @ 0.5- 1 % + 100 ppm Boric acid followed by foliar spraying of 2 percent urea during evening time
- Spray wax emulser
- Manual weeding followed by hoeing for germinating weeds.
- For termite and leaf folder control spraying or drenching of Chlorpyriphos @ 2ml/lt water and for all pulses and cereals.
- For leaf folder control in Maize (Stem borer) and Pigeonpea apply Carbofuran 3 G @ 12 Kg/acre or Phorate 10 G @ 4 kg/acre or Quinolphos @ 1 ml/lt water in Maize for leaf folder
- Also, spray @ 20/40/60 ppm $CaCl_2$ in pulses
- Vegetables- Foliar spray of water with 2 per cent KCl + 100 ppm Boron
- Tomato- Foliar spray of $CaCl_2$ @ 20/40/60 ppm
- Gap filling may be done with pigeonpea to maintain adequate plant stand.
- For termites in pigeonpea, maize and other standing cereal crops which can be controlled by soil drencing with chlorpyriphos 20 EC @ 2 ml/lt water or by adding Chlorpyriphos 1.5% dust @ 8– 10 kg/ha or Carbofuran 3G @ 12 kg or Phorate 10 G @ 4 kg.acre before final land preparation and also contol Gallmidge
- In green and blackgram, cowpea, bean and lady's finger the spread of YMV by insect vector may increase. Hence, to cotrol insect vectors spray Dimethoate @1ml/ lt or Imidacloprid 4 ml/10 lt twice at 10 days interval
- In groundnut crop termites and white grub incidence is expected to be more. Methods suggested in rice may be followed to reduce the pest infestation.
- Incidence of leaf miner in groundnut may increase which can be managed by spraying Monocrotophos 36 SL or Triazophos 40 EC @ 1 ml/lt. water twice at fortnight intervals.
- Under dry condition incidence of mites is expected to be more in vegetable crops which can be brought down by spraying of dicofol @ 2 ml/lt water.
- Early and mid season drought favours disease like brown spot of rice, bacterial wilt of brinjal and other vegetables

4 (b) Soil nutrient & moisture conservation measures

- Foliar spraying of DAP @ 2 per cent along with Boric acid @ 0.3 per cent. Also, spray Urea @ 1 per cent
- Provide micro- irrigation with drip for wide spaced crops such as chillies and vegetables and Sprinklers for groundnut, maize and vegetables wherever ground/ surface water is available.
- Go for life saving and protective irrigation from constructed dovas.

4 (c) Remarks on Implementation

Promote construction of Rain water harvesting structure watershed programme and MNREGA

1.Monsoon/Weather Situation: **Mid season drought** (long dry spell) : **At flowering/ fruiting stage**	
2.Major Farming Situation/Land Situation: **UP LAND** Sandy red lateritic soils	
3 Normal Crop/cropping system	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize

4. Suggested Contingency measures

4 (a) Change management

- Maize- Harvest it for fodder use
- Pulses- and vetables- At 2-3 days interval spraying of water followed by 2 per cent KCl + 100 ppm Boron during evening time is recommended.
- In case of grounnut maturing in the month of September which can be harvested after providing light irrigation through dobhas to loose the soil.

4 (b) Soil nutrient & moisture conservation measures

Go for life saving and protective irrigation from constructed DOVAS.

4 (c) Remarks on Implementation

Promote for the construction of Rain water harvesting structure watershed programme and MNREGA

1.Monsoon/Weather Situation: erminal drought (Early withdrawal of monsoon): **At fruiting/pre physiological maturity stage**	
2.Major Farming Situation/Land Situation: **UP LAND** Sandy red lateritic soils	
3 Normal Crop/cropping system	Upland rice, Maize, Vegetables, Cow pea, Groundnut+ Pigeonpea, Maize + Pigeonpea, Bhendi + Maize

4. Suggested Contingency measures

4 (a) Change management

- Life saving irrigation to vegetables through stored moisture from constructed DOVA
- If not possible to make survival harvest it for fodder use

4 (b) Rabi Crop planning

- Cultivation of Niger, Horsegram, Toria, linseed as relay/paira cropping
- In case of availability of irrigation, go for cultivation of early Potato and pea (early Arkel group)
- Prepare kachha check dam or Bora Bandh for Water conservation
- Mid early variety of radish cultivation is recommended

4 (c) Remarks on Implementation

Promote for the construction of Farm ponds through watershed management programme and MNREGA

1.Monsoon/Weather Situation: **Normal onset followed by 15-20 days dry spell after sowing** (Early Season Drought-Normal onset)	
2.Major Farming Situation/Land Situation: **MID LAND** Sandy loam solis	
3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change management

Don 2

- If possible, go for staggered raising of nursery in rice crop
- If possible, raise community nursery of rice at a reliable water source to save time for further delay.
- In case, if rice population is less than 40-50 percent, gap filled by retransplanting the rice crop and for more than 50 per cent mortility use fresh seeding for fresh transplanting.
- Follow gap filling by removing seedlings from profuse tillers to have a uniform distribution of same aged plants
- For termite and disease management in nursery spray Indofil M 45 and Chlorpyriphos @ 0.2 per cent
- life saving irrigation
- DSR on receipt of rain by using Paddy drum seeder or
- High yielding varieties- follow transplanting while, Improved varieties – follow DSR
- In case of DSR- Use sprouted seeds in plastic drum seeder with incresased seed rate by 20-25 per cent for good crop stand
- Late transplanted rice during early season drought results in the occurrence of sheath rot and grain discoloration diseases.
- Follow pre emergenge and post emergence weedicide to disturb/ckeck the crop-weed competition for nutrient
- Provide life saving and protective irrigation to over aged seedling in nursery through dovas (harvested rain water). Also, take care of blast disease in nursery and avoid using urea in nursey.
- Strengthen the bunds to check the drainage holes and seepage loss in transplanted and direct sown medium land rice regularly

Don3

- Follow raised bed broad furrow or Ridge and furrow method for Maize/ Pigeonpea/ Lady's finger/ Black gram/ Soybean
- Adopt surface mulching with crop residue or tree loppings of *Glyricidia* wherever possible.If farm waste is not available, use blade to form a thin layer of soil mulch to avoid cracks
- Life saving irrigation
- In case of transplanting of over aged seedling (35-45 days), increase number of seedling per hill (5-6 seedling/hill)

4 (b) Soil nutrient & moisture conservation measures

- Dry seeding of rice with appication of pre and post emergence weedicide in over aged seedlings (>25 DOS
- Split application of Urea fertilizer
- Foliar spray of 2% KNO_3 or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells

4 (c) Remarks on Implementation

Awareness for Construction of rain water harvesting structures for recycling of water during dry spell like DOVAS through SHG or on subsidised basis through State Govt.schemes.

1.Monsoon/Weather Situation: **Mid season drought** (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period : **At vegetative phase**

2.Major Farming Situation/Land Situation: **MID LAND** Sandy loam soils

3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Crop management

Don 2

- Manual weeding followed by hoeing for germinating weeds
- Take care of mealy bug and termite attack which are more prevalent in dry weather .
- Top dressing should be followed only after receipt of rain .
- No urea should be top dressed untill receipt of rainfall in rice crop.
- For BPH, dusting field bunds and around with Carbaryl (Savin)4% or malathion 5% @ 10 – 12 kg/acre

Don 3

- One manual weeding for germinating weeds
- Apply 4 Kg N/acre in sorghum and oilseed crops soon after receipt of rains.
- In pigeonpea, if the drought affected plants to recoup with the revival of the rains, spray 2 to 3% urea after the foliage is wetted with the rains.
- Foliar application of Sulphur @ 1ppm to mitigate the stress condition in oilseed is necessary after receipt of rainfall
- Apply post emergence weedicide for controling weeds in oilseed (Groundnut) to undisturb the pegging process.
- During 40-45 DAS, if there is a severe moisture stress, thinning may be done in *kharif* sorghum and pearlmillet.

4 (b) Soil nutrient & moisture conservation measures

- Foliar spray of KCl or $ZNSO_4$ @ 2 per cent
- Foliar spray of 2% KNO_3 or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells
- Life saving irrigation through dovas,well, ponds, check dams and bora bandh

4 (c) Remarks on Implementation

Promote for the construction of Rain water harvesting structure watershed programme and MNREGA

1.Monsoon/Weather Situation: **Mid season drought** (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period : **At flowering/ fruiting stage**	
2.Major Farming Situation/Land Situation: **MID LAND** Sandy loam soils	
3 Normal Crop/cropping system	Rice
4. Suggested Contingency measures	

4 (a) Crop management

Don 2 and Don 3

- Life saving irrigation with harvested water
- Spray of urea @ 1-2 percent
- Drought condition during the month of August-September onwards shall result in severe incidence of foliar blast and brown spot diseases in rice. It is advised to spray Tricyclazole (Tilt) @ 6 g/ 10 lt or Casugamycin @ or Kasu B @ 2 ml/lt. water twice at 10 days intervals during drought period.

4 (b) Soil nutrient & moisture conservation measures

- Foliar spray of KCl or $ZNSO_4$ @ 2 per cent
- Foliar spray of 2% KNO_3 or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells
- Life saving irrigation through dovas,well, ponds, check dams and bora bandh

4 (c) Remarks on Implementation

Promote for the construction of Rain water harvesting structure watershed programme and MNREGA

1.Monsoon/Weather Situation: **Terminal drought (Early withdrawal of monsoon)**

At fruiting/pre physiological maturity stage

2.Major Farming Situation/Land Situation: **MID LAND** Sandy loam soils

3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Crop management

Don 2

- At milking , soft and dough stage spray KCL @ 2 per cent
- In case of gundhi bug attack found more than ETL(>2 gundhibug /m^2), spray Chlorpyriphos dust or Monocrotophos @ 1 ml/lt
- If possible go for life saving irrigation
- Late season drought generally results in outbreak of foliar, node, collar or neck blast of rice depending on the stage of crop.

Don 3

Instead of grain purpose crops like sorghum, pearmillet, maize, cowpea, black and green gram that can be harvested for fodder use

4 (b) Rabi crop planning

- Ensure for all inputs required for rabi season in advance.
- In case of failure of kharif crops prefer sowing of pre rabi catch crops like, Toria, Niger, Horsegram, blackgram, sesame linseed in uplands to medium lands

4 (c) Remarks on Implementation

Promote construction of Rain water harvesting structure watershed programme and MNREGA

1.Monsoon/Weather Situation: **Normal onset followed by 15-20 days dry spell after sowing** (Early Season Drought-Normal onset)

2.Major Farming Situation/Land Situation: **LOW LAND** Sandy clay loam soils

3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Change management

- If possible, go for staggered nursery raising in rice crop
- If possible, raise community nursery of rice at a reliable water source to save time for further delay.
- In case, if rice population is less than 40-50 percent, gap filled by retransplanting the rice crop and for more than 50 per cent mortility use fresh seeding for fresh transplanting.
- Follow gap filling by removing seedlings from profuse tillers to have a uniform distribution of same aged plants
- Prefer mid early rice variety instead of late variety
- Use pre and post emergence weedicide
- Over aged seedling should be top cut and treat the seedlings root byDursban/Chlorpy- riphos @ 5 ml per lt water and transplant immediately after treated seedlings with 2 per cent Urea solution
- In case of transplanting over aged seedling (35-45 days), increase number of seedling per hill (5-6 seedling/hill)
- In fallow land go for cuktivation of mid early duration rice variety through DSR @ 70-80 Kg/ha

4 (b) Soil nutrient & moisture conservation measures

- Split application of Urea fertilizer
- Foliar spray of 2% KNO_3 or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells

4 (c) Remarks on Implementation

Awareness for Construction of Ponds, check dam through water shed management & MNREGA scheme through SHG or on subsidised basis through State Govt.schemes.

1.Monsoon/Weather Situation: **Mid season drought** (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period : **At vegetative phase**	
2.Major Farming Situation/Land Situation: **LOW LAND** Sandy clay loam soils	
3 Normal Crop/cropping system	Rice
4. Suggested Contingency measures	
4 (a) Crop management • Foliar spray of 2 per cent KCL followed by 1-2 per cent Urea. • Weeding should be done • Drought makes the crop vulnerable to sheath rot and sheath blight diseases. Maintenance of field sanitation followed by twice spraying at 10 days interval with validamycin 2-3 ml/lt water or Tricyclazole @ 6g/10 lt or carbendazim @ 2 g/lt water are advised. • Life saving irrigation	
4 (b) Soil nutrient & moisture conservation measures • Foliar spray of Foliar spray of Urea @ 2 per cent • Foliar spray of 2% KNO_3 or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells • Life saving irrigation through dovas,well, ponds, check dams and bora bandh	
4 (c) Remarks on Implementation Awareness for Construction of Ponds, check dam through water shed management & MNREGA scheme through SHG or on subsidised basis through State Govt.schemes.	

1.Monsoon/Weather Situation: **Mid season drought** (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period - **At flowering/ fruiting stage**	
2.Major Farming Situation/Land Situation: **LOW LAND** Sandy clayloam soils	
3 Normal Crop/cropping system	Rice
4. Suggested Contingency measures	
4 (a) Crop management	

- Drought condition during flowering and fruiting and onwards shall result in severe incidence of foliar blast and brown spot diseases in rice. It is advised to spray Tricyclazole (Tilt) @ 6 g/ 10 lt or Casugamycin @ or Kasu B @ 2 ml/lt. water twice at 10 days intervals during drought period.
- Life saving irrigation
- During drought, attack of gundhi bug shall be more more. Apply Quinolphos or Monocrotophos @ 1-2 ml per lt. water.

4 (b) Soil nutrient & moisture conservation measures

- Weeding and foliar spray of urea @ 2 per cent
- Foliar spray of 2% KNO3 or 2% urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition during dry spells
- Life saving irrigation through dovas,well, ponds, check dams and bora bandh

4 (c) Remarks on Implementation

Promote for the construction of Rain water harvesting structure watershed programme and MNREGA

1.Monsoon/Weather Situation: **Terminal drought (Early withdrawal of monsoon)**
At fruiting/pre physiological maturity stage

2.Major Farming Situation/Land Situation: **LOW LAND** Sandy loam soils

3 Normal Crop/cropping system	Rice

4. Suggested Contingency measures

4 (a) Crop management

- Life saving irrigation.
- The land should be tilled properly in case *kharif* crop fails sow *rabi* crops like safflower, pigeonpea in sept-Oct (Short duration
- Spray KCL @ 2 per cent followed by Uear @ 2 per cent
- Mid early rice crop may be harvested at Physiological maturity
- Cultivate vegetables like Tomato, Brinjal, Capsimum, Shimla mirch, Broccoli, Cabbage and Cauliflower, green pea and potato as per suitability near and around turbutries

4 (b) Rabi crop planning

Prefere early sowing of wheat, Mustard, Chickpea,linseed and lentil as sole or intercrop Wheat + Chickpea (4:2) Wheat+ Mustard (4:3)

4 (c) Remarks on Implementation

Promote construction of Rain water harvesting structure watershed programme and MNREGA

Part 3

1. Unusual rains (untimely, unseasonal etc) (for both rainfed and irrigated situations)

Continuous high rainfall in a short span leading to water logging

2. Suggested Contingency measures

2 (a) Crop management

Pigeonpea /sorghum/Pearlmillet

Vegetative stage- Prefer ridge and furrow methow of sowing. Ensure for proper drainage through channel. Collect runoff water in Dovas for further use.

Flowering stage- Ensure for proper drainage through channel. Collect runoff water in Dovas for further use.

Crop maturity stage- No such situation at the time fof maturity

Post harvest- After Sundrying follow grading and storing

Blackgram and other pulses/Oilseeds

Vegetative stage- Follow Ridge and furrow sowing

Ensure for proper drainage through channel

Collect runoff water in Dovas for further use

Avoid application of fertilizer

Flowering stage- Ensure for proper drainage through channel

Collect runoff water in Dovas for further use

Avoid application of fertilizer

Prophylactic measure for jassid and YMV

Crop maturity stage-

Post harvest-

Rice

Vegetative stage- Safe disposal of excess water from rice field. Bund reparing and strengthing. Application of insecticides in the afternoon hours is preferred seeing the weather condition or after spraying weather should remain rainfree for at least 4-5 hrs. Retransplant to maintain plant population in case of mortality more than 50 %

In partially damaged crop allow the withstand upright. Flood occurs due to heavy storm in mid and lowland which when recedes probability of occurrence of swarming caterpillar on field bunds and around of rice crop is more. So, when it crosses the Economic Threshold Limit (ETL) i.e., one larva / hill then spray the crop with Chlorpyriphos/ Triazophos/ Profenophos @ 2 ml/lt water or dust the crop with Quinalphos @ 1.5% D @ 10kg/ acre. To prevent migration of larvae from one field to other, bunds should be heavily dusted with the dust formulation mentioned above. In partially ponded field, rice caseworm and in general leaf folder attack is expected. If 1-2 cases or folded leaves/hill is seen spray the crop with Monocrotophos / Chlorpyriphos @ 1 ml/lt water or with Cartap Hydrochloride 50 SP / Fipronil 5 SP @ 200 g/acre. Rain storms during *kharif* may result in severe occurrence of bacterial leaf streak and bacterial blight in rice. It is advised to spray the crop immediately after every rainspell with streptocycline @ 1g/10 lt water or plantomycin @ 1g/lt water or bacterinol @ 2g/lt. water. Control snail occurrence by Acaricide

Flowering stage- Safe disposal of excess water from rice field. Bund reparing and strengthing. Avoid application of fertilizer. Flood occurs due to heavy storm in mid and lowland which when recedes probability of occurrence of swarming caterpillar, BPH and cut worm on field bunds and around of rice crop is more. So, when it crosses the Economic Threshold Limit (ETL) i.e., one larva / hill then spray Chlorpyriphos/ Triazophos/ Profenophos @ 2 ml/lt water or dust the crop with Quinalphos @ 1.5% D @ 10kg/ acre. To prevent migration of larvae from one field to other, bunds should be heavily dusted with the dust formulation mentioned above. In partially ponded field, rice caseworm and in general leaf folder attack is expected. If 1-2 cases or folded leaves/hill is seen spray the crop

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Crop maturity stage- Provide drainage for fast removal of water from the field to favour harvesting

Post harvest- Protect the grain from rain and store it after sun drying for 2-3 days

Maize

Vegetative stage- Prefer ridge and furrow method of sowing. Ensure for proper drainage through channel. Earthingup after downpour. At Knee stage apply thimate 10 G @ 4-6 grains in whirl

Flowering stage- Ensure for proper drainage through channel. At flowering and silking stage stage for ant attack apply dust on silks @ 0.5 g / cob

Crop maturity stage- Provide drainage for fast removal of water from the field to favour harvesting

Post harvest- Protect grains from rain and store it after sun drying for 2-3 days

Horticulture

Vegetative stage- Prefer ridge and furrow method for sowing and proper drainage. Ensure for proper drainage through water ways. Collect runoff water in Dovas for further use. Soil drenching Carbofuran 3G @ 3 g/lt water againts insects. In case of web formation with leaves apply (Nuvan)DDVP @ 1 ml/lt water as a fumigant

Flowering stage- Apply hormone to prevent flower drop. Ensure for proper drainage. Take precaution againts wilting and fruit rot. In Tomato and Brinjal-drenching Bavisting @ 2 ml/lt + Streptocycline @ 1-2 g/lt water. In Cauliflower -In case of Incidence of collar rot -Spraying of Saaf (Metalaxyl + Mancozeb) @ 2 g/lt water solution. Dainage of excess water.In Lady's finger- **YVMV**- Spray insectide followed by fungicide. Soil drenching Carbofuran 3G @ 3 g/lt water againts insects. In case of web formation with leaves apply (Nuvan)DDVP @ 1 ml/lt water as a fumigant

Crop maturity stage- Take precaution againts wilting and fruit rot. For wilting– Soil drenching with Bavisting @ 2 ml/lt + Streptocycline @ 1-2 g/lt water. In YMVM- Insecticide followed by fungicid

Post harvest- Immediate harvest and safe disposal of produce

Vegetables- (Cucurbits,/ Tomato/ Brinjal/ cauliflower/ cabbage/ lady's finger/Dolichos bean/Amaranthus leaf/Cariander leaf/Radish)

Vegetative stage- Sowing on ridge and drainage through furrow. Prophylactic measures against pest and diseases. Damaged twigs and leaves may be removed and follow fungicide spraying and stacking

Flowering stage- Apply hormone to prevent flower drop. Ensure for proper drainage. Take precaution againts wilting and fruit rot. In Tomato and Brinjal-drenching Bavisting @ 2 ml/lt

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Provide support through stacking.

Post harvest- Immediate harvest and sell produce safely in the market

2. Outbreak of pests and diseases due to unseasonal rains
2. Suggested Contingency measures
2 (a) Disease and pest management Rice Vegetative stage- Sheath blight- Hexaconazole @ 1ml/lt wate. Blast- Tricyclazole @ 6 g/10 lt water Flowering stage- Sheath blight- Hexaconazole @ 1ml/lt water. Blast- Tricyclazole @ 6 g/10 lt water. Falsesmut- Nativo @ 4g/10 lt water Crop maturity stage- False Smut - Control- Nativo @ 4g/10 lt water or Propiconazole + Tricyclazole 52.5 SE @ 1ml/lt water. In case of graing discolourness(Grain blast). Spray tricyclazole @ 6 ml / 10 liter water Post harvest- Store grains after proper sun drying to minimize the incidence of stored grain pest Maize Vegetative stage- Stem borer Control- Carbofuron 3 G @ 12 Kg/acre or Phorate 10G@ 4 kg/acre Flowering stage- Sheath blight Control- Hexaconazole1-2 ml/lt water Vegetables- (Cucurbits,/ Tomato/ Brinjal/ cauliflower/ cabbage/ lady's finger/Dolichos bean/Amaranthus leaf/Cariander leaf/Radish) Vegetative stage- Before sowing apply in soil, Carbofuran 3 G @2-3 g/m^2. Post heavy rainfall affected areas where vegetable is grown are likely to be affected by bacterial wilt, leaf spot and canker disease. Therefore, total package of practices starting from planting need to be followed as given below. Seedling root dip for 30 minutes in 1g/10 lt streptocycline or 2-3 g/lt plantomycin. Perform soil drenching to the base of the plants with a solution of carbendazim @ 2g/lt water and streptocycline @ 1g/10 lt. water at 10 DAP, 25 DAP and 40 DAP coinciding with

intercultural operations. Spray Ridomil MZ @ 1.5 ml/lt. water against downy mildew diseases of cucurbit crops.
Flowering stage- Post heavy rainfall affected areas where vegetable is grown are likely to be affected by bacterial wilt, leaf spot and canker disease. Therefore, total package of practices starting from planting need to be followed as given below. Seedling root dip for 30 minutes in 1g/10 lt streptocycline or 2-3 g/lt plantomycin. Perform soil drenching to the base of the plants with a solution of carbendazim @ 2g/lt water and streptocycline @ 1g/10 lt. water at 10 DAP, 25 DAP and 40 DAP coinciding with intercultural operations. Spray Ridomil MZ @ 1.5 ml/lt. water against downy mildew diseases of cucurbit crops. YVM Control- Carbofuran 3G @ 3 or Phorate 10 G @ 1 g/m^2 followed by any funcicide
Crop maturity stage- Stop spraying 1 week before harvesting
Post harvest- Harvest and sell produce in the market
French bean-
Vegetative stage- Rust disease Control- Mancozeb 2g/ lt water. Post heavy rainfall affected areas where vegetable is grown are likely to be affected by bacterial wilt, leaf spot and canker disease. Therefore, total package of practices starting from planting need to be followed as given below. Seedling root dip for 30 minutes in 1g/10 lt streptocycline or 2-3 g/lt plantomycin. Perform soil drenching to the base of the plants with a solution of carbendazim @ 2g/lt water and streptocycline @ 1g/10 lt. water at 10 DAP, 25 DAP and 40 DAP coinciding with intercultural operations. Spray Ridomil MZ @ 1.5 ml/lt. water against downy mildew diseases of cucurbit crops.

Flowering stage- Take care of pod borer and aphid attack. Post heavy rainfall affected areas where vegetable is grown are likely to be affected by bacterial wilt, leaf spot and canker disease. Therefore, total package of practices starting from planting need to be followed as given below. Seedling root dip for 30 minutes in 1g/10 lt streptocycline or 2-3 g/lt plantomycin. Perform soil drenching to the base of the plants with a solution of carbendazim @ 2g/lt water and streptocycline @ 1g/10 lt. water at 10 DAP, 25 DAP and 40 DAP coinciding with intercultural operations. Spray Ridomil MZ @ 1.5 ml/lt. water against downy mildew diseases of cucurbit crops.
Crop maturity stage- Stop spraying 1 week before harvesting
Post harvest- Harvest and sell produce in the market

3. Extreme events: Heat wave / Cold wave/Frost/ Hailstorm /Cyclone

3. Suggested Contingency measures

Hail storm
Seedling / nursery stage- Vegetable nursery should be raised in poly house or make proper arrangement of low height polly tunnels in open area or cover with plastic sheet or thatching should be done
Vegetative stage- In vegetables-Remove damages parts immediately and apply insectide followed by fungicide as prophylactic measures. Follow fertization through foliar as well as broadcasting
Reproductive stage- n vegetables- Remove damaged parts immediately and apply insectide followed by fungicide as prophylactic measures. Follow fertization through foliar as well as broadcasting for proper fruiting
At harvest- Safely sell in the market after grading for immediate returns

Heat Wave

Wheat Chickpea/pea

Seedling / nursery stage- For protection from heat and cold wave there is intervention to sow the rabi crops in between 2nd week of October to 2nd week of November to protect theirs vegetative phase from ground/radiation frost results from cold wave/wind chill injury and reproductive phase from terminal heat stress on Mustard, Chickpea, Wheat, Lentil, Linseed and pea crops.Life saving irrigation

Vegetative stage- Timely sown crop never face heat stress while very late sown(January) crop face heat stress hence only one option is to provide life saving irrigation and water spray during evening time frequently at 2-3 days intervals. Take care of termite attcak by sparaying Chlorpyriphos @ @ 1 ml/lt and drenching @ 3-5 ml/lt water

In Chickpea because of high soil and ambient temperature (> 35 ^{0}C) favours the dry root rot disease starts during flowering/reproductive stage (spraying Captan or thiram or carbendazim or ridomil MZ or Saaf @ 1,5-2 g/lt water)

Reproductive stage- To minimize the terminal heat stress druing the month of March and April the only and only way is to provide frequent protective irrigation irrespectic of theirs stages(Life saving irrigation). Take care of termite attcak by sparaying Chlorpyriphos @ @ 1 ml/lt and drenching @ 3-5 ml/lt water. In Chickpea because of high soil and ambient temperature (> 35 ^{0}C) favours the dry root rot disease starts during flowering/reproductive stage (spraying Captan or thiram or carbendazim or ridomil MZ or Saaf @ 1,5-2 g/lt water)

At harvest- Frequent irrigation should be provided to meet the evaporative losses.

Tomato/Brinjal/ lady's finger/Cucurbits

Seedling / nursery stage- Due to heat stress wilting and mortality is more hence frecuent irrigatio and cover the nursery with mulch(Straw/leaves

Vegetative stage- Due to heat stress wilting and mortality is more hence frecuent irrigatio and cover the nursery with mulch(Straw/leaves

Reproductive stage- Drying of flower- Spray PCOA. Follow mulching after irrigation

At harvest- Immediate harvest after irrigation and shift it to safer place

Cold wave

Wheat

Seedling / nursery stage- Cold environment during tillering or branching stage favours more number of tillers in wheat and more branching in mustard, chickpea, lentil and linseed crops which prospects for high yield. But it is detrimental for potato, tomato, brinjal, pea, creeper vegetables and fruits.Irrigation. Balanced fertilizer application. Foliar spray of nutrients

Vegetative stage- Light irrigation. Mulching with crop residue \ weeds . Fertilizer application

Reproductive stage- Irrigation, fertilizer application

At harvest- N/A

Pigeonpea/Mustard/Linseed/Chickpea/pea

Seedling / nursery stage- In Mustard because of cool weather aphid insects attack is more prominent (spraying Rogor (Dimethoate) @ 2 ml or or Monocrotophos 36 EC @ 1 ml /lt water during evening time is advised).

In linseed Alterneria blight(For blight spray Double dose (Iprodione 25 % WP + Carbendazim 25 % WP) @ 2 g per lt. water) and powdery mildew (prohylactic spraying of Sulfex @ 3 g or Karathene 1 ml per lt water twice at weeky interval during evening thime) disease are more common. For powdery mildew in pea (spraying Calixin (Tridemorf 80 % EC @ 5 ml per 10 lt water twice are highly recommended).

In Chickpea-Cold and wet environmet (High humidity) during seedlig stage cause collar rot, black root rot, wet rot, Pythium root and seed rot in Chickpea, while in potato, pea and tomato favours late blight(spraying of Krilaksil or Ridomil MZ chemical@ 1.5 g per liter water), powdery mildew (spraying newly emerged fungicide Double dose (Iprodione 25 % WP + Carbendazim 25 % WP) 2 g per lt water twice at weekly interval) and bacterial wilt, leaf spot and canker (sprayingcarbendazim @ 2g/lt water and streptocycline @ 1g/10 lt. water at 10 DAP, 25 DAP and 40 DAP) diseases in respective vegetable crops. Anthracnose in cucurbitace species .

Vegetative stage- Provide light irrigation. Follow mulching with crop residue \ weeds\straw\leaves. **In Mustard** because of cool weather aphid insects attack is more prominent (spraying Rogor (Dimethoate) @ 2 ml or or Monocrotophos 36 EC @ 1 ml /lt water during evening time is advised)

Reproductive stage- Pigeonpea- During flowering and pod formation stage attack of Pod borer/sucking bug, mites, blister beetle insects as well as sterility disease may occur more(spraying Profenophos 50 EC, methomyl 40 SP or monocrotophos 36 SL kill the larvae but as the webs protect them from contact insecticides hence along with contact insecticides, mixing of fumigant insecticide such as DDVP @ 0.5 ml/l is required to make the larvae come out from the web. For Mites and Aphids, Dimethoate 30 EC @ 2ml/l and acaricides such as Dicofol 18.5 EC @ 2.5 ml/l water , for Blister beetle synthetic pyrethroids such as Cypermethrin 10 EC @ 1.0 ml/l or Lamda cyhalothrin 5 EC @ 1.0 ml/l water; for sterility mosaic Dicofol 18.5 EC 2.5 ml or Oxydemeton methyl 25 EC or Dimethoate 30 EC

2.0 ml or ml/l water on alternate row twice at an interval of 10 days are recommended).

Vegetables
Seedling / nursery stage- Raising of seedling in Poly house, re sowing if damage is more. Provide shelter belt (Wind break) at appropriate spacing with Shisham, Ghamhar. Provide irrigation and mulching with straw and leaves

Vegetative stage- Provide light irrigation. Follow mulching with crop residue \ weeds\straw\leaves . Disease and pest control, care for chilling injury or replanting

Reproductive stage- Drying of flower- Spray PCOA. Follow mulching after irrigation
At harvest- Grading and safely dispose produce in the marketing

Frost
Wheat
Seedling / nursery stage- N/A
Vegetative stage- Provide light irrigation. Follow mulching with crop residue \ weeds\straw\leaves

Pigeonpea
Seedling / nursery stage- Exposure of crop to smoke by burning waste material during night time
Vegetative stage- Exposure of crop to smoke by burning waste material during night time, Light sprinkler irrigation

Reproductive stage- Exposure of crop to smoke by burning waste material during night time, Light sprinkler irrigation

At harvest- Exposure of crop to smoke by burning waste material during night time, Light sprinkler irrigation

Tomato & Potato and Horticultural crops (fruit)
Seedling / nursery stage- Create smoke around the field by using waste materials or set afire with used mobile oil in north-west or west-north direction towards incoming cold waves. Use polythene or bamboo hoogli in small horticultural /nursery/cash vegetable crops during morning hour and remove it during daytime. In Perenial or Horticulture crop (Fruit) also frequent irrigation followed by mulching, thaching , creating smoke screen s and lighting of fire should be practiced in availability of irrigation facility
Vegetative stage- Earthing up, Irrigation and create smoke around the field by using waste materials or set a fire with used mobile oil in north-west or west-north direction towards incoming cold waves. Use polythene or bamboo hoogli in small horticultural /nursery/cash vegetable crops during morning hour and remove it during daytime.In Perenial or Horticulture crop (Fruit) also frequent irrigation followed by mulching, thaching , creating smoke screen s and lighting of fire should be practiced
Reproductive stage- Immediade harvesting and disposal
At harvest- Harvest in dry weather

Cyclone – Not applicable

Part 4

1.Contingent strategies for Livestock, Poultry & Fisheries
1.1 Livestock
1.1 Suggested contingency measures
1.1 (a)Drought –Before event
Feed and fodder availability Preservation of surplus fodder, encourage fodder cultivation and tree plantation and also encourage supply of molasses to cattle feed plants • Preservation of surplus fodder

Green grass is a good source of vitamin A which is present in the form of Carotene. One kg of green grass provides 50mg of vitamin A and 15 to 20g protein to the animal. Cowpea, beans, subabul leaves etc. give 30 to 40g of protein. From grass fodder herbivorous animals get the carbohydrates (energy source), proteins ("building material" of the body) and vitamins (especially carotene), which are the main drives of sustainable operation of the body.

Two methods are available for preserving or conserving the seasonal excess of green fodder, viz. hay making and silage making. Each method has its own limitations and advantageous. Ensiling is preferred on the basis of fodder quality.

Hay making

Hay -refers to cereals, grasses or legumes that are harvested at appropriate stage, dried and stored

Ensilage / Silage making

Silage may be defined as the green succulent roughage preserved under controlled anaerobic fermentation in the absence of oxygen by compacting green chops in air and watertight receptacles.

- Complete Feed Blocks

  Supply enriched complete feed blocks containing dry roughage, concentrates/ unconventional supplements 50:50 ratio. Complete feed blocks may be sourced from different commercial sources.

  Feeding practices for livestock in India at present separate feeding of roughage and concentrate
  - Chopped roughage and soaked concentrate mixed together
  - Chopped roughage mechanically mixed with concentrate as mash
  - Chopped roughage and concentrate ingredients mixed and densified as Complete Feed Block

  Concept of densified complete feeds with fibrous crop residues is a noble way to increase the intake and improve the nutrients utilization. A complete feed block has been defined as a system of feeding all ingredients including roughages, processed and mixed uniformly, to be made available ad lib to the animals.
- Urea molasses mineral block licks

  Urea-molasses mineral block lick can sustain the animals by providing protein, energy and essential minerals. It is cost effective, easy to handle and transport and available commercially through milk cooperatives. Therefore, it is required that urea molasses blocks stocks (UMBS) are made available in the rain-deficient areas.
- Methods used for improving nutritive quality of straws and other crop residues like urea treatment

  Spray dry roughages such as paddy and wheat straw with about 10% molasses and 2% urea for maintenance of animals in fodder deficit areas.

  Preparation of 100 kg roughage-based enriched feed containing 88.8 kg wheat straw or any other straw/stover, 10 kg molasses, 1 kg urea and 0.5 kg mineral mixture will cost about Rs. 375-450 per quintal.
- Utilization of forest byproducts for feeding of livestock

  Use of dry and fallen tree leafs like Pipal, Neem, Mango and Kathal etc.
- Making Leaf meal
  - Use of conventional and non conventional feeds
  - Rice Mills

  The main by-products of rice are rice straw, rice husk or hull, and rice bran. Rice straw is produced when harvesting paddy. Rice husks generated during the first stage of rice milling, when rough rice or paddy rice is husked.
- Aquatic plants
  - One kg DM/100 kg BW
  - Water hyacinth, aquatic spinach, Stalks & leaves of lotus plant, Hydrilla, Pistia etc.
- Encourage supply of molasses to cattle feed plants

  Molasses and Bagasse are the byproducts from sugarcane industry and are available in abundance. They can be used as cattle feed after supplementation with urea. Such a ration is a ready feed during drought and scarcity conditions when nothing else is available for feeding to animals.
- Crop Residue Enrichment & Densification

  Crop residues can be fortified with feed ingredients like cakes, brans, grains, molasses, hay, minerals and then densified into blocks or pellets to save on storage and transport costs. Also balanced ration in the form of complete diet or total mixed ration as per need of animals can be supplied for improved productivity.
- Demonstration of Re-vegetation of Common Grazing Land

  The grazing lands play an important role in the lives of rural people who are getting fodder, fuel, drinking water from commons. However, such lands are being continuously degraded due to overgrazing and overexploitation by locals. Re-vegetation of such lands on scientific lines suiting to agro-climatic conditions is to be demonstrated through strengthening institutional arrangement at village level. Fodder production from such lands can be

enhanced substantially by introducing high yielding cultivated fodder crops, grasses and pasture legumes. An integrated approach of growing cultivated crops, grasses, trees and shrubs under silvi-pastural/ horti - silvipasture system will improve overall productivity of such land.

Drinking water

Repairs of tube wells, clear off the sludge in the canals and local water catchments and clean the water tanks, large ponds and lakes

Health and Hygiene

Tick damage and tick-borne diseases

- Tick damage - Vaccinate the cattle against tick-borne diseases
- Tick-borne diseases- Vaccination is best done in calves under 6 months of age and one dose is sufficient
- Babesiosis (Redwater)- Treatment involves keeping the cattle calm. They should not be driven over long distances and should be injected with Berenil or Imizol. The dose for Berenil is 5 ml of made up solution (1 packet mixed with 12,5 ml of sterile water) for each 100 kg (for example, 20 ml for a 400 kg animal)
- Sarcoptic Mange in pigs- Not applicable before event

Diseases caused by biting insects

- Trypanosomiasis- Fly control is important for prevention of the disease.
- Three-day stiffsickness- Prevention is by vaccination
- Lumpy-skin disease- Prevention is by vaccination

Diet related Disease problems

- Eating plastic bags and wire(Pica)- Feed cattle well, especially in winter. Clear wires and plastic bags from the grazing area. Watch cattle closely when they are grazing. Mineral mixture supplement should be give to the animal
- Poisonous plants- Not applicable before event
- Botulism- Prevention involves vaccination and good nutrition.Burn or bury all carcasses, bones or decaying material

Deficiency diseases

Cattle grazing on drought-stricken pastures can suffer serious depletion of reserves of minerals and vitamins.

- Copper and Cobalt- Not applicable before event
- Calcium, Phosphorous & Vit. D- Not applicable before event
- Vitamin A- Not applicable before event

Infectious Diseases

- Foot and Mouth Disease (FMD)- Vaccination at the age 4 months and above. Booster should be given 1 month after first dose then every six monthly
- Haemorrhagic Septicaemia (HS)- Vaccination at the age 6 months and above. Annually in endemic areas. Vaccinate the animal before onset of monsoon every year preferably in the month of May and June.
- Black Quarter (BQ)- Vaccination at the age 6 months and above. Annually in endemic areas. Vaccinate the animal before onset of monsoon every year preferably in the month of May and June
- Anthrax- Vaccination at the age 4 months and above. Annually in endemic areas. Vaccinate the animal before onset of monsoon every year preferably in the month of May and June.
- Rabies (Post bite therapy only)- Not applicable
- Enterotoxaemia (pulpy kidney)- Vaccinate the anima at the age of 3-4 months, repeat after 15 days and then annually.
- Pneumonia- Not applicable

Non-Infectious Diseases

- Ruminal tympany (Bloat)- Not applicable
- Rumen acidosis- Not applicable
- Intussusception- Deworming should be give
- Pregnancy toxaemia (Ketosis)- Fed the pregnant animal with balanced ration.

Poisoning

- Organochlorine compounds- Not applicable
- Organophosporous compounds- This group consists of malathion, darathion, chlorathion, carbophenothion, demton, dasnon, dimethylparathion, trichlorphon, dioxalthion etc. Symptoms of toxicity are profuse salivation, muscle stiffness, dyspnoea with open mouth breathing, tremors. Treatment consists of administering antidote, usually atropine sulphate.
- Snake bite- Not applicable

1.1 (b)Drought –During event

Feed and fodder availability

- Lactating and pregnant animals need to be provided enriched feed to meet the requirements and rest of animals be provided the maintenance diet. In case of acute shortage, lactating animals be provided feed meeting 50% of the requirements to maintain minimum level of production.
- Drought tolerant fodder crops (like sorghum PC 6 and MP chari, cowpea - BL 1 and 2) and fodder grasses (like stylo, *cenchrus ciliaris*, *athropogan*, etc.) should be cultivated. Under the mini kit programme, the developmental department need to provide fodder crop seeds in the drought-affected areas.
- Provide salt dose daily through feed (40-50 g of salt per adult animal and 10-20 g for small ruminants and calves).

Issue

- Large scale migration -Creating additional resources in drought prone area
- Grazing of poisonous plants/toxicity problems -Inventory of antinutritional/toxic factors. Creating awareness in farmer for avoiding nitrate/nitrite HCN poisoning.
- Transport of fodder from normal DPA-Establishing feed and fodder banks. Effective mechanism for distribution of fodder/feed to productive animals. Densification/baling/briquetting technologies

Drinking water

Harnessing water through the existing reservoirs and exploitation of groundwater.

Health and Hygiene

Tick damage and tick-borne diseases

- Tick damage - If disease occurs Treat the cattle against tick-borne diseases. Consult Veterinarian.
- Tick-borne diseases- Prevention is by tick control, treatment of diseased animal and vaccination. Consult Veterinarian.
- Babesiosis (Redwater)- Treatment involves keeping the cattle calm. They should not be driven over long distances and should be injected with Berenil or Imizol. The dose for Berenil is 5 ml of made up solution (1 packet mixed with 12,5 ml of sterile water) for each 100 kg (for example, 20 ml for a 400 kg animal). Consult Veterinarian.
- Sarcoptic Mange in pigs- Itching; dermatitis; rubbing; scratching; reduced growth rate. Miticidal sprays; pour-ons injection and in-feed premix. Consult Veterinarian.

Diseases caused by biting insects

- Trypanosomiasis- Treated with SURAMIN through intramuscular injection or intravenous infusion if sufficient observation is possible. Consult Veterinarian.
- Three-day stiffsickness- It is important that the animal is given food and water if it is unable to stand
- Animal should be treated by Veterinarian
- Lumpy-skin disease- If your cattle get this disease, you should speak to your state veterinarian

Diet related Disease problems

- Eating plastic bags and wire(Pica)- Mostly occurring in those animals which are having shortage of feeds and fodder and deficiency of Phosphorus. Prevention involves the following:- Feed cattle well, especially in winter. Clear wires and plastic bags from the grazing area. Watch cattle closely when they are Grazing. Mineral mixture supplement should be given to the animal. Once the cow has eaten plastic bags or wire, the only effective treatment is an operation. Consult Veterinarian.
- Poisonous plants- Due to scarcity of feed s and fodder animals used to consume poisonous plans and are more likely to get toxicity.Poisoning can also happen when owner or animal handler move cattle to new paddocks where toxic plants occur. Consult Veterinarian.
- Botulism- Botulism can occur when cattle eat carcass and bone material when there is a lack of feed during drought or if they have a phosphorus deficiency
- Treatment is only possible in the early stages and requires an antitoxin. Consult Veterinarian.

Deficiency diseases

Cattle grazing on drought-stricken pastures can suffer serious depletion of reserves of minerals and vitamins.

- Copper and Cobalt- Characterized by anorexia and wasting. Deficiency affects growth and fertility of the cattle. Anemia, diarrhoea and unthriftiness occur in extreme cases. Copper or cobalt sulphate in the form of mineral mixture supllement causes rapid disappearance of the symptoms
- Calcium, Phosphorous & Vit. D- Deficiency may result in rickets in calves and osteomalacia in adults. Mineral supplementation in diet is essential to prevent this deficiency.
- Vitamin A- Vit. A deficiency occurs in cattle on dry countryside during periods of drought. Symptoms include night blindness, corneal keratinization, ptyriasis, hoof defects, loss of weight and infertility. Animals should have access to green pasture and should be supplied with Vit. A in feed to prevent deficiency.

Infectious Diseases

- Foot and Mouth Disease (FMD)- If outbreak occurs then the animal should be treated. Foot lesion should be washed with soap / detergent the apply Povidon iodine lotion while in mouth lesion boroglyserine should be applied. Consult Veterinarian.
- Haemorrhagic Septicaemia (HS)- If disease occurs animal should be treated with Broad Spectrum Antibiotic like penicillin at higher dose and other supportive medicine as per the symptoms. Consult local Veteterinarian.
- Black Quarter (BQ)- If disease occurs animal should be treated with Broad Spectrum Antibiotic like penicillin at higher dose and other supportive medicine as per the symptoms. Consult local Veteterinarian.
- Anthrax- If disease occurs animal should be treated with Broad Spectrum Antibiotic like penicillin at higher dose and other supportive medicine as per the symptoms. Consult local Veteterinarian.
- Rabies (Post bite therapy only)- Vaccinate the animal immediately after suspected bite. Booster should be given on 3, 7, 14, 28 and 90 (optional) days after first dose.
- Enterotoxaemia (pulpy kidney)- Not applicable
- Pneumonia- Not applicable

Non-Infectious Diseases

- Ruminal tympany (Bloat)- Not applicable
- Rumen acidosis- Ingestion of large amounts of highly fermentable carbohydrate feeds causes an acute illness due to excess production of lactic acid in the rumen. Clinically, the disease is manifested by dehydration, blindness, recumbency, complete rumen stasis and a high mortality rate. Normal saline, sodium bicarbonate and antihistaminics are advised.
- Intussusception- It occurs commonly due to nodular worms, change in feed and local intestinal problems. The animal is dull, off-feed, kicking at the belly with no rise of temperature, frequent straining with no defaecation, colic symptoms, and at later stages, recumbency. Emergency surgery is the only rational treatment.
- Pregnancy toxaemia (Ketosis)- It is a highly fatal disease caused due to a decline in the plane of nutrition and short periods of starvation (40 hrs) during the last two months of pregnancy. Treatment comprises intravenous administration of 50% glucose. Supply of molasses in the ration and concentrate in the last two months of pregnancy helps in preventing the condition.

Poisoning

- Organochlorine compounds- Not applicable
- Organophosporous compounds- This group consists of malathion, darathion, chlorathion, carbophenothion, demton, dasnon, dimethylparathion, trichlorphon, dioxalthion etc. Symptoms of toxicity are profuse salivation, muscle stiffness, dyspnoea with open mouth breathing, tremors. Treatment consists of administering antidote, usually atropine sulphate.
- Snake bite- Usually bitten on the scrotum or udder. The presence of hair may obscure the typical fang marks. Prolonged pain, muscular weakness, impaired vision, nausea and paralysis are generally exhibited along with symptoms of shock. If anti-venin is not available and the bite is located in an area where a tourniquet cannot be applied, excision of an area of skin and sub-cutaneous tissue can be life-saving

1.1 (c)Drought –After event

Feed and fodder availability

Promotion of fodder seed production, cultivation and storage, establishment of fodder block making machines in fodder surplus areas

Post flood feeding management

- Animal should not be allowed to graze in water logged area
- Feeds to be protected from fungal contamination & wet feeds to be dried & fed
- Provides clean drinking water to animals
- Provide ready to eat feed blocks particularly the pregnant and lactating animals
- Requirement of energy may be met providing crude molasses
- Top feeds/ tree leaves available in the area to be provided to meet the DM requirement

Specific contingencies can be adopted for livestock feeding depending upon availability as under in different regions during drought situation

Neem seed kernel cake (NSKC), Saw dust, Paper waste, Agave (Ketki), Cactus, Tree leaves and vegetable leaves, Cher leaves and fruits, Straw and gotars, Sugarcane bagasse as animal feed and Use of damaged grains as feed

Drinking water

To strengthen reservoirs by promoting recharging of water and rain water harvesting during rainy season.

Health and Hygiene

Tick damage and tick-borne diseases

- Tick damage - Treat the cattle against tick-borne diseases. Consult Veterinarian.
- Tick-borne diseases- Prevention is by tick control, treatment of diseased animal and vaccination. Consult Veterinarian.
- Babesiosis (Redwater)- Treatment involves keeping the cattle calm. They should not be driven over long distances and should be injected with Berenil or Imizol. The dose for Berenil is 5 ml of made up solution (1 packet mixed with 12,5 ml of sterile water) for each 100 kg (for example, 20 ml for a 400 kg animal).Consult Veterinarian.
- Sarcoptic Mange in pigs- Not applicable after event

Diseases caused by biting insects

- Trypanosomiasis- Treated with SURAMIN through intramuscular injection or intravenous infusion if sufficient observation is possible. Consult Veterinarian
- Three-day stiffsickness- It is important that the animal is given food and water if it is unable to stand.
- Animal should be treated by Veterinarian
- Lumpy-skin disease- If your cattle get this disease, you should speak to your state veterinarian

Diet related Disease problems

- Eating plastic bags and wire(Pica)- Feed cattle well, especially in winter. Clear wires and plastic bags from the grazing area. Watch cattle closely when they are grazing. Mineral mixture supplement should be given to the animal
- Poisonous plants- Not applicable
- Botulism- Prevention involves vaccination and good nutrition. Burn or bury all carcasses, bones or decaying material

Deficiency diseases

Cattle grazing on drought-stricken pastures can suffer serious depletion of reserves of minerals and vitamins.

- Copper and Cobalt- Not applicable
- Calcium, Phosphorous & Vit. D- Not applicable
- Vitamin A- Not applicable

Infectious Diseases

- Foot and Mouth Disease (FMD)- If outbreak occurs then the animal should be treated. Foot lesion should be washed with soap / detergent the apply Povidon iodine lotion while in mouth lesion boroglyserine should be applied. Consult Veterinarian.
- Haemorrhagic Septicaemia (HS)- Not applicable
- Black Quarter (BQ)- Not applicable
- Anthrax- Not applicable
- Rabies (Post bite therapy only)- Not applicable
- Enterotoxaemia (pulpy kidney)- It affects the animals in a high state of nutrition on a lush feed, grass or grain. Morbidity rates seldom exceed 10% but mortality rate approximates 100%. Under certain conditions, the organism proliferated rapidly in the intestines and produces lethal quantity of toxin. Suphadimidine with other supportive medicine may be effective for treatment
- Pneumonia- It is one of the most common and important pathological conditions . It is characterized clinically by increased respiration, coughing and abdominal breathing. Treatment with broad spectrum antibiotic, nabulization and other supportive drugs is effective.

Non-Infectious Diseases

- Ruminal tympany (Bloat)- It is the over-distension of the left flank either due to free gas or froth. This is generally encountered in “greedy feeders” when lush green pasture is available. Oral administration of sweet oil with turpentine oil or at times with formalin is advised.
- Rumen acidosis- Not applicable
- Intussusception- Not applicable
- Pregnancy toxaemia (Ketosis)- Not applicable

Poisoning

- Organochlorine compounds- This group includes DDT, BHC, lindane, aldrin, dieldrin, chlordane, toxaphane, methocychlor etc. which are used as pesticides on crops. Toxicity symptoms include increased excitability and irritability followed by muscle tremors, weakness, paralysis etc. Treatment consists of administering antidote, usually short-acting barbiturates.
- Organophosporous compounds- This group consists of malathion, darathion, chlorathion, carbophenothion, demton, dasnon, dimethylparathion, trichlorphon, dioxalthion etc. Symptoms of toxicity are profuse salivation, muscle stiffness, dyspnoea with open mouth breathing, tremors. Treatment consists of administering antidote, usually atropine sulphate.

- Snake bite-

1.2 Poultry

1.2 Suggested contingency measures

1.2 (a)Drought –Before event

Shelter management

Optimum space should be provided. Orientation of shed (Long axis) should be in North – South. Plantation of tree around shed to provide cool environment. Provision of ad lib. Fresh water

Shortage of feed ingredients

Storage of feed

Drinking water

Manage clean drinking water. Storage facility should be made. Water quality should be checked before drinking to animal

Health and disease management

- Newcastle Disease- egular vaccination - Broiler birds should be with RD vaccine (Lasota 'F' strain) at the age of 4-7 days through Intra-nasal or Intra-ocular route. Layer birds should be vaccinated with NDV vaccine at the age of 9-14 day, 4 weeks, 13-14 weeks in drinking water/eye drop. Then at the age of 17 week with NDV vaccine through Intra-muscular (IM) route
- Marek's disease Marek's disease- Birds should be vaccinated with Herpes virus turkey vaccine at the age of1 day through Sub-cutaneous route.
- Fowl pox- Chick embryo adopted fowl pox vaccine at the age 6-8 weeks. It important for the layer and broiler birds.
- Drop in Egg Production or Quality- Not applicable
- Nervous Signs and Lameness- Not applicable
- Diarrhoea- Not applicable
- Upper Respiratory Diseases- Vaccination against the some of the viral diseases like Newcastle disease, influenza, infectious bronchitis, infectious laryngotracheitis which are also responsible for the respiratory symptoms can prevent this syndrome.Antifungal and antiparasitic drugs should be given.

Heat Wave

Plantation of tree around shed to provide cooler environment. Proper ventilation should be provided. Optimum space should be provided. Orientation of shed (Long axis) should be in East- West. Plantation of tree around shed to provide cool environment. Provision of ad lib. Fresh water. Manage green fodder and silage preparation. Height of roof should be minimum 220 – 240 cm. Roof of shed should be painted with white.

Cold Wave

Provide ad lib fresh water. Proper ventilation should be provided. Optimum space should be provided. Orientation of shed (Long axis) should be in North – South. Plantation of tree around shed to provide break cold wave. Provision of ad lib. Fresh water. Manage green fodder and silage preparation. Height of roof should be minimum 220 – 240 cm Roof of shed should be painted with Black Floor of shed should be Dry

1.2 (b)Drought –During event

Shelter management

Optimum space should be provided, there must not be overcrowded. Protect the animal from direct sun light. Try to provide them cool water. Proper ventilation should be maintained. Allow for grazing during night/early morning. Provision of ad lib. Fresh water

Shortage of feed ingredients

Provide non conventional feed, supplement anti oxidant and anti stress

Drinking water

Provide clean fresh and cold drinking water all the time. Water availability may increase by 20-50% depending upon feed quality and environmental tempperature. Soft drinking water should be preferred. Add vit-C and other anti stress ingredients with wate

Health and disease management

- Newcastle Disease- Vaccination and treatment of diseased one. Newcastle disease is the most important disease for poultry farmers around the world. This disease causes a large number of deaths in chickens and huge losses to farmers and the industry. Diseased birds should be slaughtered immediately. Consult Veterinarian.
- Marek's disease Marek's disease- It is one of the important diseases of poultry caused by virus. Mortality is very high and causes economic losses to the farmer and poultry industry.
- Fowl pox- It is a viral infection of chickens and turkeys characterized by proliferative lesions in the skin

(Cutaneous form), it also affect the GI tract and respiratory tract (Diphtheritic form)

- Drop in Egg Production or Quality- There are many different types of organisms that can cause a drop in egg production or quality. These include: Bacteria (E. coli, Salmonella), Mycoplasma, Viruses (Newcastle disease, influenza, infectious bronchitis, infectious laryngotracheitis, avian encephalomyeli- tis, egg drop syndrome). The Parasites, lack of Nutrition and Stress factor also support the onset of this condition. Adding vitamins and minerals to the water or feed may help. Consult Veterinarian
- Nervous Signs and Lameness- Chickens lie down because they cannot stand up. They also walk with a limp or are reluctant to move.Nervous signs may include staring into the sky, pulling the head and neck over their backs, paralysis. Sores on the breast muscles from lying down
- Diarrhoea- The stool or droppings of the chickens are not firm but very loose, watery, not of the normal colour and may contain blood. This may cause the feathers of the vent to be soiled and caked together, Depression, reluctance to eat, drink and move about, poor growth and death. Use an antibiotic or coccidiostatic drug in the water that was recommended by the animal health technician or veterinarian in the water for 3 to 5 days. Stress preparations that contain electrolytes, vitamins and minerals can be added to the water
- Upper Respiratory Diseases- Not applicable

Heat Wave

Water sprinkling to animal. Prevent the animal from direct sunlight. Optimum space. should be provided, there must not be overcrowded. Fan should be provided to make the body cool. Try to provide them cool drinking water all time Proper ventilation should be maintained. Allow for grazing during night/early morning. Try to provide green fodder and silage. Stocking density should be less. Roof should be covered with tiles, paddy, dry leaves to protect from direct sun light

Cold Wave

Luke worm water should be provided at least 4-6 times a day. Prevent the animal from direct cold wave by closing the windows and doors. Optimum space should be provided, there must not be overcrowded. Proper ventilation should be maintained. Allow for grazing during sunny day time. Try to provide green fodder and silage. During extreme cold condition electric heater of wood fire heat should be provided. Try to make the environment inside and outside the shed dry. Gunny bags or blanket may be used to cover the body. Bedding material like paddy straw, Gunny Bag, Bhusa should be provided specially to young one shed.

1.2 (c)Drought –After event

Shelter management

Optimum space should be provided. Take care and fulfill the requirement of water along with proper nutrients. Take care of proper feeding as per requirement. Provision of ad lib. Fresh water

Shortage of feed ingredients

Not applicable

Drinking water

Provide adlib. Drinking water

Health and disease management

- Newcastle Disease- Disposal of dead birds
- Marek's disease Marek's disease- Disposal of dead birds
- Fowl pox- Disposal of dead birds
- Drop in Egg Production or Quality-Not applicable
- Nervous Signs and Lameness- A complete hygiene and disinfection programme should be planned together with the animal health technician or veterinarian. Antibiotics will only be effective against bacteria and can be used as recommended. If it is a viral disease, such as Newcastle disease, urgent steps have to be taken to prevent possible spread because it causes serious production losses
- Diarrhoea- Disposal of dead birds
- Upper Respiratory Diseases- There are many different types of organisms that can cause disease in the upper respiratory tract. These include: Mycoplasma Bacteria (E. coli, Pasteurella, Haemophilus), Viruses (Newcastle disease, influenza, infectious bronchitis, infectious laryngotracheitis), Parasites (mites and worms) And Fungi (Aspergillus). Cold stress is also one of the predisposing factor for the occurrence of respiratory problems. Use an antibiotic drug that was recommended by your animal health technician or veterinarian in the water for 3 to 5 days
- Stress preparations that contain electrolytes, vitamins and minerals can be added to the water

Heat Wave

Optimum space.should be provided. Take care and fulfill the requirement of water along with proper nutrients.Take care of proper feeding as per requirement. Provision of ad lib. Fresh water

Cold Wave

Provide ad lib. Normal drinking water. Optimum space should be provided. Take care and fulfill the requirement of water along with proper nutrients. Take care of proper feeding as per requirement. Provision of ad lib. Fresh water

1.3 Fisheries

1.3 Suggested contingency measures

1.3 (a)Drought –Before event

Aquaculture

- Shallow water in ponds due to insufficient rains/inflow- Increase depth of pond, Repair dyke, outlet and inlet of pond; Prepare duck/pig house & stock pig @ 50-60,duck @ 450-500 no/ha if farmer involve in Integrated fish farming, Allow manure and urine directly in pond, Remove unwanted, predatory & old fishes and for this apply Mahua oil cake @ 2500kg/ha. Fixed net in outlet & inlet to prevent escaping of fish, Plough the pond and apply lime @ 250 kg/ha, Check the natural feed (plankton)@ 1.0 1.5 ml/50 ltr of water; otherwise apply organic manure, Stock yearling (stunted grow fish) @ 6,000-8,000 no/ha
- Impact of salt load build up in ponds / change in water quality- Prevent entry of polluted water or apply lime at inlet.

Heat wave and cold wave

- Changes in pond environment (water quality)- Increase depth of pond. Reduce application of organic manure and supplementary feeds
- Health and Disease management- Apply lime @ 50 kg/ha

1.3 (b)Drought –Before event

Aquaculture

- Shallow water in ponds due to insufficient rains/inflow- Reduce the stocking density from 25000 fry (1inches size) to 10000-15000/ha, fingerling 6,000-8,000 no/ha. Check the availability of natural food, if it is not sufficient provide supplementary feed at fixed place, time, amount and ratio & if it is more greenish stop supplementary feed & manure, store manure in separate place for agricultural purpose. Check the growth & health status by regular netting, Apply lime @ 50kg/ha.
- Impact of salt load build up in ponds / change in water quality- Apply lime @ 50 kg/ha on every 15-30 days. Aerate the water as per need

Heat wave and cold wave

- Changes in pond environment (water quality)- Stop or reduce supplementary feed and manure, Remove bigger size fishes. Reduce/stop application of feed and fertilizer.
- Health and Disease management- Apply lime/salt as per need

1.3 (c)Drought –Before event

Aquaculture

- Shallow water in ponds due to insufficient rains/inflow- Remove the bigger size fishes (0.5kg). In winter season fish reduces feed consumption so reduce supplementary feed, duck start egg laying so they should not allow before 9'oclock otherwise loss of egg is possible, pig may attain 50 – 60 kg so that can be sell out and again stock same no of piglets. Apply bleaching powder @ 10kg/ha at place of litter deposition.
- Impact of salt load build up in ponds / change in water quality- Apply lime as per need @ 50 kg/ha

Heat wave and cold wave

- Changes in pond environment (water quality)- Stop or reduce supplementary feed and manure, Remove bigger size fishes. Harvest the bigger fishes, Reduce/stop application of supplementary feed, Apply lime @ 50 kg/ha and potassium per magnet in perforated plastic ball- 5-10g in each ball
- Health and Disease management- Apply lime/salt as per need