

State: UTTARAKHAND
Agriculture Contingency Plan for District: Rudraprayag

| | | | |
|------------|--|---|-------------------|
| 1.0 | District Agriculture profile | | |
| 1.1 | Agro-Climatic/Ecological Zone | | |
| | Agro Ecological Sub Region (ICAR) | Western Himalayas, warm subhumid (to humid with inclusion of perhumid) ecoregion (14.2) | |
| | Agro -Climatic Region (Planning Commission) | Western Himalayan Region (I) | |
| | Agro –Climatic Zone (NARP)* | AZ27, Mid Hills | |
| | List all the district falling under the NARP Zone | Nainital, Udham Singh nagar, Haridwar, Dehradun, Almora, Pithoragarh, Chamoli, Champawat, Bageshwar, Pauri, Tehri, Uttarkashi | |
| | Geographic Coordinates of district | Latitude | Longitude |
| | | 30 ⁰ N | 78 ⁰ E |
| | Name and address of the concerned ZRS/ ZARS/RARS/RRS/RRTTS | Altitude | |
| | | 610-3500m above MSL | |
| | Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone | Dr A K Singh, Zonal Project Director, GT Road, Rawatpur, Near Vikas Bhawan, Kanpur 0512-2550927(O) | |
| | Mention the KVK located in the district | KVK, Jakhdhari, Via Guptkashi Distt.-Rudra Prayag-246439 Dr. V. B. Singh, Programme Coordinator, Ph: 7500241510, 09410104959, kvkjakh@rediffmail.com | |
| | Name and address of the nearest Agromet Field Unit (AMFU, IMD) for agro-advisories in the Zone | Dr H S Kushwaha, Professor, Agro meteorology, GBPUA &T, Pantnagar-263145 U S Nagar (UK) India | |

| | | | | |
|------------|------------------------|--------------|---------------------------------------|---|
| 1.2 | Rainfall | Average (mm) | Normal Onset (Specify week and month) | Normal Cessation (Specify week and month) |
| | SW monsoon (June-Sep) | 1810 | 2 nd week of June | 4 th week of September |
| | NE Monsoon (Oct.-Dec.) | 55.4 | | |
| | Winter (Jan-March) | 140.0 | | |
| | Summer (Apr-May) | 104.6 | | |
| | Annual | 2110 | | |

| | | | | | | | | | | |
|------------|--|-------------------|-------------|--------------------------------|--------------------|----------------------|---------------------------------------|------------------------------|-----------------|---------------|
| 1.3 | Land use pattern of the district (latest statistics) | Geographical area | Forest area | Land under non-agriculture use | Permanent pastures | Cultivable wasteland | Land under Misc tree crops and groves | Barren and uncultivable land | Current fallows | Other fallows |
| | Area (000 ha) | 23542100 | 17989500 | 800800 | 430800 | 300400 | 1160000 | 725700 | 68600 | 68000 |

* <http://rudraprayag.nic.in/pages/display/170-statistical-handbook-2009>

| 1.4 | Major Soils | Area ('000 ha) | Percent (%) of total |
|-----|---|----------------|----------------------|
| | Brown forest soils and residual sandy loam (Acidic, rocky, stone & gravels with poor moisture regime) | | |

* Data source: Soil Resource Maps of NBSS & LUP, estimated values

| 1.5 | Agricultural land use | Area (000 ha) | Cropping intensity % |
|-----|--------------------------|---------------|----------------------|
| | Net sown area | 19.5 | 143.6 |
| | Area sown more than once | 8.5 | |
| | Gross cropped area | 28.0 | |

* <http://rudraprayag.nic.in/pages/display/170-statistical-handbook-2009>

| 1.6 | Irrigation | Area ('000ha)/ Number | Percent (%) | |
|-----|--|-----------------------|----------------------|-------------------------|
| | Pump set | | | |
| | Lift irrigation | | | |
| | Micro-irrigation | | | |
| | Gross water availability and use | Area | % area | Quality of water |
| | Irrigated area | 2413 | 12.4 | |
| | Rainfed area | 17961 | 87.6 | |
| | Sources of irrigation | Number | Area ('000ha) | % area |
| | Canal | | 1.555 | 64.4 |
| | Open wells | | | |
| | Bore wells | | | |
| | Others (Lift pump, Water storage tank, Irrigation channel) | | 0.85 | 35.6 |

* <http://rudraprayag.nic.in/pages/display/170-statistical-handbook-2009>

Area under major field crops & horticulture etc.

| 1.7 | Major field crops cultivated | Total area | Irrigated Area (000 ha)* | Rainfed |
|--|---|-------------|--------------------------|---------|
| Kharif | | | | |
| Cereals | | | | |
| | Paddy | 10.4 | | |
| | Figmillet | 6.3 | | |
| | Barnyard millet | 3.2 | | |
| | Maize | 0.2 | | |
| | Amaranthus | 0.2 | | |
| Pulses | | | | |
| | Black Gram | 0.4 | | |
| | Horse Gram | 0.2 | | |
| | Pigeon Pea | 0.2 | | |
| | French bean | 0.2 | | |
| | Soybean(Black) | 0.1 | | |
| Oil Seeds | | | | |
| | Soybean | 0.160 | | |
| | Sesame | 0.02 | | |
| Rabi | | | | |
| Cereals | | | | |
| | Wheat | 12.8 | | |
| | Barley | 1.1 | | |
| Pulses | | | | |
| | Gram | 0.02 | | |
| | Pea | 0.08 | | |
| | Lentil | 0.07 | | |
| Oil Seeds | | | | |
| | Mustard | 0.3 | | |
| Horticulture crops-Fruits | | | | |
| | Temperate Fruits(Apple, Plum, Pear, Peach etc) | 0.8 | | |
| | Citrus (Malta, orange etc.) | 0.6 | | |
| | Dry Fruits (Walnut, Almond etc.) | 0.2 | | |
| | Others(Mango, Litchi, Guava, Anar etc.) | 0.8 | | |
| Other Horticultural crops | | | | |
| | Vegetables | 1.5 | | |
| | Spices | 0.4 | | |
| | Flowers | 0.02 | | |
| Medicinal & Aromatic plants | | 0.02 | | |
| Grazing land | | 6.6 | | |

* <http://rudraprayag.nic.in/pages/display/170-statistical-handbook-2009>

| | | | | |
|-------------|--|------------------------------------|---------------------|---------------------------|
| 1.8 | Livestock | Number | | |
| | Cattle | Dairy-54522, plough animals- 48184 | | |
| | Buffaloes | 36012 | | |
| | Commercial dairy farms | Nil | | |
| | Goat | 39726 | | |
| | Sheep | 15636 | | |
| | Others (Rabbit, Horse & ponnies, mules etc.) | 1912 | | |
| 1.9 | Poultry (commercial + Backyard) | 5606 | | |
| 1.10 | Inland Fisheries | Area (ha) | Yield (t/ha) | Production (tones) |
| | Brackish water | | | |
| | Fresh water | | | |
| | Others | | | |

* <http://rudraprayag.nic.in/pages/display/170-statistical-handbook-2009>

| 1.11 | Production and Productivity of major crops (Average of last 3 years: 2006, 07, 08) | Kharif | | Rabi | | Summer | | Total | |
|---------------|---|-----------------|----------------------|-----------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| | | Production (MT) | Productivity (Qt/ha) | Production (MT) | Productivity (Qt/ha) | Production ('000 t) | Productivity (kg/ha) | Production ('000 t) | Productivity (kg/ha) |
| Kharif | | | | | | | | | |
| | Paddy | 13947 | 13.10 | | | | | 13947 | 13.10 |
| | Fingermillet | 7881 | 14.61 | | | | | 7881 | 14.61 |
| | Maize | 242.25 | 12.75 | | | | | 242.25 | 12.75 |
| | Barnyard millet | 4082 | 12.15 | | | | | 4082 | 12.15 |
| | Blackgram | 82 | 2.27 | | | | | 82 | 2.27 |
| | Horse gram | 132 | 6.90 | | | | | 132 | 6.90 |
| | Kidney bean | 77 | 9.14 | | | | | 77 | 9.14 |
| | Soybean | 130.61 | 19.79 | | | | | 130.61 | 19.79 |
| | Sesame | 7 | 1.63 | | | | | 7 | 1.63 |
| | Wheat | | | 12849 | 12.05 | | | 12849 | 12.05 |
| | Barley | | | 1906 | 1.4 | | | 1906 | 1.4 |
| | Gram | | | 1.5 | 7.5 | | | 1.5 | 7.5 |
| | Pea | | | 42 | 7.5 | | | 42 | 7.5 |
| | Lentil | | | 11 | 4.5 | | | 11 | 4.5 |
| | Toria | | | 125 | 5.77 | | | 125 | 5.77 |
| 1.12 | Sowing window (start and end) | | | | | | | | |

| of sowing period) | 1:Paddy DSR | 2:Finger millet | 3: Horse gram | 4:Wheat | 5:Toria |
|-----------------------|--|---|---|---|---|
| Kharif-Rainfed | 4 th week of March to 4 th week of April | 4 th week of May to 2 nd week of June | 4 th week of May to 2 nd week of June | - | - |
| Kharif-Irrigated | - | - | - | - | - |
| Rabi-Rainfed | - | - | - | 2 nd week of October to 2 nd week of November | 2 nd week of October to 2 nd week of November |
| Rabi-Irrigated | - | - | - | - | - |

* <http://rudraprayag.nic.in/pages/display/170-statistical-handbook-2009>

| 1.13 | What is the major contingency the district is prone to? (Tick mark) | Regular | | | Sporadic (specify month of occurrence in brackets) | | | None |
|------|---|---|----------|------|---|----------|------|---------------|
| | | Severe | Moderate | Mild | Severe | Moderate | Mild | |
| | Drought | | ✓ | | | | | |
| | Flood | | - | | | | | ✓ |
| | Cyclone | | - | | | | | ✓ |
| | Hail storm | | ✓ | | | | | |
| | Heat wave | | | | | | | ✓ |
| | Cold wave | ✓ | | - | | | | |
| | Frost | | | ✓ | | | | |
| | Sea water inundation | | | | | | | ✓ |
| | Pests and diseases (specify) | Fruit fly of guava, mango, tomato and cucurbits, brown plant hopper, stem borer and leaf folder of rice, powdery mildew and leaf miner of peas, rhizome rot of ginger, buckeye rot of tomato, brown and false smut of rice, loose smut of wheat, Erwinia stalk rot, maydis leaf blight in maize, yellow rust and Karnal bunt in wheat | | | Rice hispa, wheat aphid, mustard aphid, cabbage butter fly of mustard and maize stem borer, aphids and white fly of cole crops mealy bug and hoppers of mango, blast and bacterial leaf blight Brown leaf spot ,false smut in rice, bacterial stalk rot and leaf sheath blight of maize, Late and early blight of potato, yellow rust, loose smut and covered smut of wheat and barley, alternaria blight and white rust of mustard, powdery and downy mildew of cucurbits, stalk rot of cole crops, bacterial wilt and phytophthora blight of Solanaceous crops, Yellow rust, helminthosporium leaf blight in barley | | | |
| 1.14 | Include Digital maps of the district for | | | | Location map of district with in State as Annexure 1 | | | Enclosed: Yes |
| | | | | | Soil map as Annexure 2 | | | Enclosed: Yes |
| | | | | | Mean annual rainfall as Annexure 3 | | | Enclosed: No |

Annexure 01 : Location map of the Uttarakhand state and district Rudraprayag



Annexure 02 : Mean annual rainfall (mm) of district Rudraprayag



2.0 Strategies for weather related contingencies

2.1 Drought

2.1.1 Rainfed situation

| Early season drought (delayed onset) | Major Farming situation ^a | Crop/cropping system ^b | Change in crop/cropping system ^c | Agronomic measures ^d | Remarks on Implementation ^e |
|--|---|---|--|---|---|
| Delay by 2 weeks 4 th week of June | (1) Tropical climate with moderately high temperature (18-30 ⁰ C), medium rainfall, low humidity, Irrigated Valley/low hill, High rainfall and Alluvial sandy soil, in nature | Paddy-wheat | Finger millet(VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2) -wheat Barnyard millet (VL Madira-172)-wheat Paddy-wheat | a) Use of short duration varieties. b) Gap filling with improved seeds. c) Timely weed control. d) Plough the field just after harvesting of kharif crop. e) Conserve residual moisture for sowing of rabi crop | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building. |
| | | Tomato/Brinjal/Chillies- Wheat/Barley /Torla/Potato/Onion/ Garlic | No Change | a) Use of life saving irrigation b) Delayed transplanting c) Use of FYM and mulches to conserve moisture d) Use of bioinoculants like <i>Trichoderma</i> | Public –private partnership taking advantage of Corporate Social Responsibility. |
| | (2) Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Torla/Potato/Barley/ Rai,/Lentil/Buckwheat | No Change | a) Use of short duration varieties. b) Gap filling with improved seeds. c) Timely weed control. d) Plough the field just after harvesting of kharif crop. e) Conserve residual moisture for sowing of rabi crop | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building. |
| | | Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow-Rainfed Paddy / Finger millet / | No Change | a) Use of life saving irrigation b) Delayed transplanting c) Use of FYM and mulches to conserve moisture d) Use of bioinoculants like | Public –private partnership taking advantage of Corporate Social Responsibility. |
| | | | | | |

| | | | | | |
|---|--|--|-----------|--|---|
| | | Barnyard millet / Maize | | <i>Trichoderma</i> | |
| | | Fallow- Wheat/Toria/Potato/B arley | No Change | | |
| (3) South facing mid hills, low rainfall, dry receiving maximum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish | No Change | a) Use of short duration varieties. b) Gap filling with improved seeds. c) Timely weed control. d) Plough the field just after harvesting of kharif crop. e) Conserve residual moisture for sowing of rabi crop | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | | Horse gram/ Urd/ Arhar+Barnyard Millet | No Change | | |
| | | Rainfed Horse gram/Urd- Wheat/Barley | No Change | | |
| | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | No Change | | |
| | | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet+ (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - | No Change | | |
| (4) North facing mid hills, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight | | | | a) Use of short duration varieties. b) Gap filling with improved seeds. c) Timely weed control. d) Plough the field just after harvesting of kharif crop. e) Conserve residual moisture for sowing of rabi crop | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

| | | | | | |
|-----|--|---|-----------|---|--|
| | and more number of perennial springs and silty sandy soil | Wheat/Toria/Potato/Barley/Mustard/Radish | | | |
| | | Rainfed Horse gram/Urd/ Soyabean-Wheat/Barley | No Change | | |
| | | Fallow-Wheat/Toria/Potato/Barley/Mustard/Radish | No Change | | |
| (5) | High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | Rainfed Paddy/Finger millet/Sanwa/ Tomato /Amaranthss/ Rajma -Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | No Change | <ul style="list-style-type: none"> a) Use of short duration varieties. b) Gap filling with improved seeds. c) Timely weed control. d) Plough the field just after harvesting of kharif crop. e) Conserve residual moisture for sowing of rabi crop | <ul style="list-style-type: none"> a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| (6) | Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranthss-Wheat/Buckwheat/Pea/Cole Crop/ Cabbage/ Barley/Potato | No Change | <ul style="list-style-type: none"> a) Use of short duration varieties. b) Gap filling with improved seeds. c) Timely weed control. d) Plough the field just after harvesting of kharif crop. e) Conserve residual moisture for sowing of rabi crop | <ul style="list-style-type: none"> a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

| Early season drought (delayed onset) | Major Farming situation ^a | Crop/cropping system ^b | Change in crop/cropping system ^c | Agronomic measures ^d | |
|--|---|---|--|--|---|
| Delay by 4 weeks 2 nd week of July | (1) Tropical climate with moderately high temperature (18-30 ⁰ C), medium rainfall, low | Irrigated & rain fed Paddy /Finger millet/Barnyard millet/Maize-Wheat/Toria/Wheat+ Toria/Potato/Onion/G | Finger millet (VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2) /Barnyard millet (VL Madira-172)- | Use of short duration ,rainfed varieties Change of Crop, Use failed crop as fodder, addition of organic manures (FYM/compost) @ 5-10 t/ha | <ul style="list-style-type: none"> a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm |

| | | | | | |
|-----|--|---|---|--|--|
| | humidity, Irrigated Valley/low hill, High rainfall and Alluvial sandy soil,in nature | arlic/Barley | Wheat/Toria/Wheat+Toria/Potato/Onion/Garlic/Barley | treated with <i>Trichoderma</i> Addition of organic manures (FYM/compost) @ 5-10 t/ha treated with <i>Trichoderma</i> , Sowing may be delayed till appropriate soil moisture condition reaches | machineries. c) Capacity building |
| | | Tomato/Brinjal,/Chillies- Wheat/Barley /Toria/Potato/Onion/ Garlic | Fallow- Wheat/Barley /Toria/Potato/Onion/Garlic | | |
| (2) | Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Toria/Potato/Barley/ Rai,/Lentil/Buckwheat | Finger millet (VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2)/ Barnyard millet (VL Madira-172)/Black Gram (U-31, 35) /Red Gram/Horse Gram- Wheat/Toria/Potato/Barley/ Rai/Lentil/Buckwheat | Use of short duration ,rainfed varieties | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | | Rainfed Paddy / Finger millet / barnyard millet / Maize-Fallow- Rainfed Paddy / Finger millet / Barnyard millet / Maize | Finger millet (VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2)/ Barnyard millet (VL Madira-172)-Fallow- Rainfed Paddy / Finger millet / Barnyard millet / Maize | | |
| | | Fallow- Wheat/Toria/Potato/Barley | Fallow- Wheat/Toria/Potato/Barley | | |
| (3) | South facing mid hills,low rainfall,dry receiving maximum sunlight, agricultural | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranthss/ Sesamum/ Soybean- | Finger Millet(VL Mandua 315, 324)/ Barnyard Millet (VL 29, VL 21, VL Madira 172, PRJ 1)/Amaranths PRA 123, | Use of short duration ,rainfed varieties Change of crops, use failed crop as fodder, Increased seed rate, | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting |

| | | | | |
|---|--|--|---|---|
| activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish | VL Chua / Sesamum/ Soybean- Barley/ Lentil & Mustard/Wheat/Toria/Potato / Radish | Intercropping, Timely weeding | hill based farm machineries. c) Capacity building |
| | Horse gram/ Urd/ Arhar+Barnyard Millet | Horse gram VLG1, VLG 8, VLG 10/ Urd/ Arhar+Barnyard Millet | | |
| | Rainfed Horse gram/Urd- Wheat/Barley | Rainfed Horse gram/Urd- Wheat/Barley | | |
| | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranthss/ Sesamum/ Soybean- Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | Finger Millet(VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2)/ Barnyard Millet(VL Madira-172)/ Amaranths/ Sesamum/ Soybean- Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths PRA 123, VL Chua / Sesamum/ Soybean | | |
| (4) North facing mid hiolls, moderate rainfall, agricultural activities are being taken in terraced fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and silty sandy soil | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet+ (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/B arley/Mustard/Radish | Finger millet/(VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2)Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet(VL Madira-172)+ (Horse gram/Urd/Arhar) / Amaranths/PRA 123, VL Chua 44 Sesamum - Wheat/Toria/Potato/Barley/ Mustard/Radish | Use of short duration ,rainfed varieties Change of crops, use failed crop as fodder, Increased seed rate, Intercropping, Timely weeding | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

| | | | | | |
|---|--|--|--|--|---|
| | | Rainfed Horse gram/Urd/Soyabean-Wheat/Barley | Rainfed Horse gram VLG1, VLG 8, VLG 10//Urd/Soyabean-Wheat/Barley | | |
| | | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranthss/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/Finger millet+(Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | Finger millet(VLM 146, VLM 149, VLM 315, VLM 324, PRM 1, PRM 2)/Finger millet+(Horse gram VLG1, VLG 8, VLG 10// Urd/Arhar) /Barnyard millet(VL Madira-172), Horse gram/Urd/Arhar) / Amaranths PRA 123, VL Chua 44/ Sesamum –Fallow- Rainfed Paddy/Finger millet/Finger millet+(Horse gram, Urd, Arhar) /Barnyard millet + Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | | |
| | | Fallow-Wheat/Toria/Potato/Barley/Mustard/Radish | Fallow-Wheat(VL-829, HPW-251)//Toria(Bhawani)/Potato /Barley/Mustard/Radish | | |
| (5) High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | | Rainfed Paddy/Finger millet/Barn Yard millet/ Tomato /Amaranths/ Rajma - Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Finger millet/Sanwa//Amaranths/ Rajma -Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Use of short duration ,rainfed varieties | |
| (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean | | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths-Wheat//Buckwheat/Pea/Cole Crop/ | Finger millet/Barnyard millet/Amaranths-Wheat(VL-829, HPW-251)//Buckwheat/Pea/Cole Crop/ Cabbage/ Barley/(HBL-276)Potato | Use of short duration ,rainfed varieties | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm |

| | | | | | |
|--|---|---------------------------|--|--|--------------------------------------|
| | temperature. The snowfall is high., mountainous topography and clay loam soil | Cabbage/ Barley/Potato | | | machineries. c) Capacity building |
|--|---|---------------------------|--|--|--------------------------------------|

| Early season drought (delayed onset) | Major Farming situation ^a | Crop/cropping system ^b | Change in crop/cropping system ^c | Agronomic measures ^d | Remarks on Implementation ^e |
|--|--|--|--|---|---|
| Delay by 6 weeks 4th week of July | (1) Tropical climate with moderately high temperature (18-30 ⁰ C), medium rainfall, low humidity, Irrigated Valley/low hill, High rainfall and Alluvial sandy soil,in nature | Irrigated/Paddy /Finger millet/Barnyard millet/Maize- Wheat/Toria/Wheat+ Toria/Potato/Onion/G arlic/Barley | Finger millet/Barnyard millet- Wheat/Toria/Wheat+Toria// Barley | Use of short duration , rainfed, late sown varieties, mulching ,tillage and weed control | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | | Tomato/Brinjal,/Chill ies- Wheat/Barley /Toria/Potato/Onion/ Garlic | Fallow- Wheat(VL-829, HPW-251)//Barley HBL- 276)/Toria (Bhawani) | | |
| | (2) Rainfed valley/Low hill, undulating topography,Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Toria/Potato/B arley/ Rai,/Lentil/Buckwhea t | Finger millet / Barnyard millet /Black Gram /Red Gram/Horse Gram,- Wheat/Toria(Bhawani)/Barley/ Rai,/Lentil/Buckwheat | Use of short duration , rainfed, late sown varieties, mulching ,tillage and weed control Use | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow- Rainfed Paddy / Finger millet / Barnyard millet / Maize | Finger millet / Barnyard millet -Fallow- Rainfed Paddy / Finger millet / Barnyard millet / Maize | | | | |

| | | | | | |
|---|--|--|--|---|---|
| | | Fallow- Wheat/Toria/Potato/B arley | Fallow-Wheat/Toria/Barley HBL-276) | | |
| (3) South facing mid hills, low rainfall, dry receiving minimum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish | Finger Millet/ Barnyard Millet/Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/Wheat/Toria (Bhawani) | Use of short duration , rainfed, late sown varieties, mulching ,tillage and weed control Use | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | | Horse gram/ Urd/ Arhar+Barnyard Millet | Horse gram/ Urd/ Arhar+Barnyard Millet | | |
| | | Rainfed Horse gram/Urd- Wheat/Barley | Rainfed Horse gram/Urd- Wheat(VL-829, HPW- 251)//Barley | | |
| | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | Finger Millet/ Barnyard Millet/ Amaranths/ Sesamum - Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | | |
| (4) North facing mid hills, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and | | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/B arley/Mustard/Radish | Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Horse gram/Urd/Arhar) / Amaranths/ Sesamum - Wheat(VL-829, HPW- 251)//Toria /Barley/Mustard | Use of short duration , rainfed, late sown varieties, mulching ,tillage and weed control Use | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

| | | | | | |
|-----|--|--|--|---|--|
| | silty sandy soil | Rainfed Horse gram/Urd/Soyabean-Wheat/Barley | Rainfed Horse gram/Urd/Soyabean-Wheat/Barley HBL-276) | | |
| | | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/ Finger millet+(Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/ Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) / Amaranths/ Sesamum – Fallow- Finger millet/Finger millet+(Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum | | |
| | | Fallow- Wheat/Toria/Potato/Barley/Mustard/Radish | Fallow-Wheat(VL-829, HPW-251)//Toria/Potato/Barley/Mustard/Radish (Pusa Chetki, Pusa Himani) | | |
| (5) | High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | Rainfed Paddy/Finger millet/Sanwa/ Tomato /Amaranths/ Rajma -Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Finger millet/Sanwa//Amaranths/ Rajma - Wheat/ Rapeseed/ Barley HBL-276)/ | Use of short duration , rainfed, late sown varieties,mulching ,tillage and weed control Use | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

| | | | | | |
|--|---|--|---|--|--|
| | (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths- Wheat/Buckwheat/Pea/Cole Crop/ Barley/Potato | Finger millet/Barnyard millet/Amaranths- Wheat/ (VL-829, HPW-251)/Buckwheat/Pea/Cole Crop/ Barley HBL-276)/Potato | Use of short duration , rainfed, late sown varieties, mulching ,tillage and weed control Use | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
|--|---|--|---|--|--|

| Early season drought (delayed onset) | Major Farming situation ^a | Crop/cropping system ^b | Change in crop/cropping system ^c | Agronomic measures ^d | Remarks on Implementation ^e |
|---|---|---|---|---|--|
| Delay by 8 weeks 2nd week of August | (1) Tropical climate with moderately high temperature (18-30 ⁰ C), medium rainfall, low humidity,Irrigated Valley/low hill, High rainfall and Alluvial sandy soil,in nature | Irrigated/Paddy /Finger millet/Barnyard millet/Maize- Wheat/Toria/Wheat+ Toria/Potato/Onion/G arlic/Barley Tomato/Brinjal,/Chill ies- Wheat/Barley /Toria/Potato/Onion/ Garlic | Fallow- Wheat/Toria/Wheat+Toria// Barley Fallow- Wheat/Barley /Toria | Use of short duration , Rainfed varieties, mulching ,tillage and weed control Left the field fallow in the kharif Resowing/ Gap filling with higher (15-20%) Seed Rate Wider Spacing by (10-20%) Regular weeding Scientific use of chemical fertilizers based on soil test Maintenance of soil cover Addition of high doses of FYM 1-2 tonnes /ha and organic manures Intercropping with legumes Thinning | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

| | | | | | |
|---|--|---|--|--|--|
| | | | | (5-10%) Ridge and furrow cultivation | |
| (2) Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Toria/Potato/B arley/ Rai,/Lentil/Buckwhea t | Fallow- Wheat/Toria/Barley/ Rai,/Lentil/Buckwheat | | Use of short duration , Rainfed varieties, mulching ,tillage and weed control Left the field fallow in the kharif Resowing/ Gap filling with higher (15-20%) Seed Rate Wider Spacing by (10-20%) Regular weeding Scientific use of chemical fertilizers based on soil test Maintenance of soil cover Addition of high doses of FYM 1-2 tonnes /ha and organic manures Intercropping with legumes Thinning (5-10%) Ridge and furrow cultivation | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow- Rainfed Paddy / Finger millet / Barnyard millet / Maize | | | | |
| | Fallow- Wheat/Toria/Potato/B arley | | | | |
| | | | | | |
| (3) South facing mid hills,low rainfall,dry receiving mainmum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish | Fallow- Barley/ Lentil & Mustard/Wheat/Toria | | Use of short duration , Rainfed varieties, mulching ,tillage and weed control Left the field fallow in the kharif Resowing/ Gap filling with higher (15-20%) Seed Rate Wider Spacing by (10-20%) Regular weeding Scientific use of chemical fertilizers based on soil test Maintenance of soil cover Addition of high doses of FYM 1-2 tonnes /ha and organic manures Intercropping with legumes Thinning (5-10%) | a) . Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | Horse gram/ Urd/ Arhar+Barnyard Millet | | | | |
| | Rainfed Horse gram/Urd- Wheat/Barley | Fallow-Wheat/Barley/Lentil | | | |
| | Finger Millet/ Barnyard Millet/ | | | | |

| | | | | | |
|--|--|---|---|---|--|
| | | Maize/ Tomato Amaranths/ Sesamum/ Soybean- Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | | Ridge and furrow cultivation | |
| (4) North facing mid hiolls, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and silty sandy soil | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/B arley/Mustard/Radish | Fallow-Wheat/Toria /Barley/Mustard/Lentil | Use of short duration , Rainfed varieties, mulching ,tillage and weed control Left the field fallow in the kharif Resowing/ Gap filling with higher (15-20%) Seed Rate Wider Spacing by (10-20%) Regular weeding Scientific use of chemical fertilizers based on soil test Maintenance of soil cover Addition of high doses of FYM 1-2 tonnes /ha and organic manures Intercropping with legumes Thinning (5-10%) Ridge and furrow cultivation | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building | |
| | Rainfed Horse gram/Urd/Soyabean- Wheat/Barley | | | | |
| | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/Finger millet+(Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | | | | |

| | | | | | |
|--|--|--|---|--|---|
| | | Fallow- Wheat/Toria/Potato/B arley/Mustard/Radish | | | |
| (5) High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | | Rainfed Paddy/Finger millet/Barnyard millet/ Tomato /Amaranths/ Rajma - Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Fallow - Wheat/ Rapeseed/ Barley/ | Use of short duration , Rainfed varieties,mulching ,tillage and weed control | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths- Wheat//Buckwheat/P ea/Cole Crop/ Cabbage/ Barley/Potato | Fallow- Wheat//Buckwheat/Pea/Cole Crop/ Barley/Potato | Use of short duration , Rainfed varieties,mulching ,tillage and weed control | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |

*Matrix for specifying condition of early season drought due to delayed onset of monsoon (2, 4, 6, & 8 weeks) compared to normal onset (2.1.1)

| | Delay in onset of monsoon by | | | |
|-------------------------|------------------------------|-------------------------|-------------------------|------------------------|
| | 2 wks | 4 wks | 6 wks | 8 wks |
| June 1 st wk | June 3 rd wk | July 1 st wk | July 3 rd wk | Aug 1 st wk |
| June 2 nd wk | June 4 th wk | July 2 nd wk | July 4 th wk | Aug 2 nd wk |
| June 3 rd wk | July 1 st wk | July 3 rd wk | Aug 1 st wk | Aug 3 rd wk |
| June 4 th wk | July 2 nd wk | July 4 th wk | Aug 2 nd wk | Aug 4 th wk |
| July 1 st wk | July 3 rd wk | Aug 1 st wk | Aug 3 rd wk | Sep 1 st wk |
| July 2 nd wk | July 4 th wk | Aug 2 nd wk | Aug 4 th wk | Sep 2 nd wk |

| Early season drought (Normal onset) | Major Farming situation ^a | Crop/cropping system ^b | Crop management ^c | Soil nutrient & moisture conservation measures ^d | Remarks on Implementation ^e |
|--|---|--------------------------------------|--|--|--|
| Normal onset followed by | (1) Tropical climate with | Irrigated/Paddy /Finger | Use of late sowing varieties , re-sowing , select short | Hoeing and weeding, organic mulching | Re-sowing late and short duration varieties |

| | | | | | |
|---|---|--|--|--------------------------------------|---|
| 15-20 days dry spell after sowing leading to poor germination/ crop stand etc. | moderately high temperature (18-30 ⁰ C), medium rainfall, low humidity, Irrigated Valley/low hill, High rainfall and Alluvial sandy soil,in nature | millet/Barnyard millet/Maize-Wheat/Toria/Wheat+ Toria/Potato/Onion/G arlic/Barley | duration varieties/gap filling and keep lesser spacing between the plant | | and use moisture conservation practices. |
| | | Tomato/Brinjal,/Chillies- Wheat/Barley /Toria/Potato/Onion/ Garlic | | | |
| | (2) Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Toria/Potato/B arley/ Rai,/Lentil/Buckwheat | Use of late sowing varieties , re-sowing , select short duration varieties/gap filling and keep lesser spacing between the plant | Hoeing and weeding, organic mulching | Re-sowing late and short duration varieties and use moisture conservation practices |
| | | Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow-Rainfed Paddy / Finger millet / Barnyard millet / Maize | | | |
| | | Fallow- Wheat/Toria/Potato/B arley | | | |
| | (3) South facing mid hills,low rainfall,dry receiving maimum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish | Use of late sowing varieties , re-sowing , select short duration varieties/gap filling and keep lesser spacing between the plant | Hoeing and weeding, organic mulching | Re-sowing late and short duration varieties and use moisture conservation practices |
| | | Horse gram/ Urd/ Arhar+Barnyard | | | |

| | | | | | |
|--|--|---|--|--------------------------------------|---|
| | | Millet | | | |
| | | Rainfed Horse gram/Urd-Wheat/Barley | | | |
| | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean-Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | | | |
| | | | | | |
| | (4) North facing mid hills, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and silty sandy soil | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Gahat/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/Barley/Mustard/Radish | Use of late sowing varieties , re-sowing , select short duration varieties/gap filling and keep lesser spacing between the plant | Hoeing and weeding, organic mulching | Re-sowing late and short duration varieties and use moisture conservation practices |
| | | Rainfed Horse gram/Urd/Soyabean-Wheat/Barley | | | |
| | | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/Finger millet+(| | | |

| | | | | | |
|--|---|--|--|--------------------------------------|---|
| | | Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | | | |
| | | Fallow- Wheat/Toria/Potato/B arley/Mustard/Radish | | | |
| | (5) High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | Rainfed Paddy/Finger millet/Sanwa/ Tomato /Amaranths/ Rajma -Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Use of late sowing varieties , re-sowing , select short duration varieties/gap filling and keep lesser spacing between the plant | Hoeing and weeding, organic mulching | Re-sowing late and short duration varieties and use moisture conservation practices |
| | (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths- Wheat//Buckwheat/Pea/Cole Crop/ Cabbage/ Barley/Potato | Use of late sowing varieties , re-sowing , select short duration varieties/gap filling and keep lesser spacing between the plant | Hoeing and weeding, organic mulching | Re-sowing late and short duration varieties and use moisture conservation practices |

| Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5 mm) period) | Major Farming situation ^a | Crop/cropping system ^b | Crop management ^c | Soil nutrient & moisture conservation measures ^d | Remarks on Implementation ^e |
|--|--|---|---|--|--|
| At vegetative stage | (1) Tropical climate with moderately high temperature (18-30 ⁰) | Irrigated/Paddy /Finger millet/Barnyard millet/Maize- | Mid season correction (thinning with in the row and between the row (remove every third row), | Hoeing and weeding, organic mulching, windbreak and shelterbelts | a) Link SAU, NSC, department of agriculture for getting good quality seed. |

| | | | | | |
|--|--|---|---|--|--|
| | C), medium rainfall, low humidity, Irrigated Valley/low hill, High rainfall and Alluvial sandy soil, in nature | Wheat/Toria/Wheat+ Toria/Potato/Onion/Garlic/Barley Tomato/Brinjal,/Chillies- Wheat/Barley /Toria/Potato/Onion/ Garlic | praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of anti-transpirant | | b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | (2) Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Toria/Potato/Barley/ Rai,/Lentil/Buckwheat Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow-Rainfed Paddy / Finger millet / Barnyard millet / Maize Fallow- Wheat/Toria/Potato/Barley | Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of antitranspirant | Hoeing and weeding, organic mulching, windbreak and shelterbelts | |
| | (3) South facing mid hills, low rainfall, dry receiving maximum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish Horse gram/ Urd/ Arhar+Barnyard | Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of | Hoeing and weeding, organic mulching, windbreak and shelterbelts | |

| | | | | |
|--|--|--|---|--|
| | | Millet | antitranspirant | |
| | | Rainfed Horse gram/Urd-Wheat/Barley | | |
| | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean-Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | | |
| | (4) North facing mid hills, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and silty sandy soil | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/Barley/Mustard/Radish | Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of antitranspirant | Hoeing and weeding, organic mulching, windbreak and shelterbelts |
| | | Rainfed Horse gram/Urd/Soyabean-Wheat/Barley | | |
| | | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/Finger millet+(| | |

| | | | | | |
|--|---|---|---|---|--|
| | | Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | | | |
| | | Fallow- Wheat/Toria/Potato/Barley/Mustard/Radish | | | |
| | (5) High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | Rainfed Paddy/Finger millet/Sanwa/ Tomato /Amaranths/ Rajma - Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of antitranspirant | Hoeing and weeding, organic mulching, windbreak and shelterbelts | |
| | (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths- Wheat//Buckwheat/Pea/Cole Crop/ Cabbage/ Barley/Potato | Mid season correction (thinning with in the row and between the row (remove every third row), praying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favorable conditions, ratooning of drought affected crops if subsequent rain is possible and use of antitranspirant | Hoeing and weeding, organic mulching, windbreak and shelterbelts | |
| Condition | | | | | |
| Mid season drought (long dry spell) | | Crop/cropping system^b | Crop management^c | Soil nutrient & moisture conservation measures^d | Remarks on Implementation^e |
| At | (1) | Irrigated/Paddy | Remove 3-4 basal leaves of the crop in | Hoeing and | a) Link SAU, NSC, |

| | | | | | |
|--|--|--|--|---|--|
| reproductive stage | Tropical climate with moderately high temperature (18-30 ⁰ C), medium rainfall, low humidity, Irrigated Valley/low hill, High rainfall and Alluvial sandy soil, in nature | /Finger millet/Barnyard millet/Maize- Wheat/Toria/Wheat+ Toria/Potato/Onion/G arlic/Barley Tomato/Brinjal,/Chillies- Wheat/Barley /Toria/Potato/Onion/ Garlic | case of early stoppage of rain,), spraying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions | weeding, organic mulching, use of windbreak and shelterbelts, water harvesting and its recycling for supplemental irrigation to save the crop, | department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. c) Capacity building |
| | (2) Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Toria/Potato/Barley/ Rai,/Lentil/Buckwheat | Remove 3-4 basal leaves of the crop in case of early stoppage of rain,), spraying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions | Hoeing and weeding, organic mulching, use of windbreak and shelterbelts, water harvesting and its recycling for supplemental irrigation to save the crop, | |
| | | Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow- Rainfed Paddy / Finger millet / Barnyard millet / Maize | | | |
| | | Fallow- Wheat-Toria/Potato/Barley | | | |
| (3) South facing mid hills, low rainfall, dry receiving minimum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Toria/Potato/ Radish Horse gram/ Urd/ | Remove 3-4 basal leaves of the crop in case of early stoppage of rain,), spraying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions | Hoeing and weeding, organic mulching, use of windbreak and shelterbelts, water harvesting and its recycling for supplemental irrigation to save the crop, | | |

| | | | | | |
|--|---|--|--|---|--|
| | sandy soil | Arhar+Barnyard Millet | | | |
| | | Rainfed Horse gram/Urd-Wheat/Barley | | | |
| | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean-Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | | | |
| | (4) North facing mid hills, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and silty sandy soil | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/Barley/Mustard/Radish | Remove 3-4 basal leaves of the crop in case of early stoppage of rain,), spraying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions | Hoeing and weeding, organic mulching, use of windbreak and shelterbelts, water harvesting and its recycling for supplemental irrigation to save the crop, | |
| | | Rainfed Horse gram/Urd/Soyabean-Wheat/Barley | | | |
| | | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/Finger millet+(| | | |

| | | | | | |
|--|---|---|--|---|--|
| | | Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | | | |
| | | Fallow- Wheat/Toria/Potato/Barley/Mustard/Radish | | | |
| | (5) High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | Rainfed Paddy/Finger millet/Sanwa/ Tomato /Amaranths/ Rajma - Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Remove 3-4 basal leaves of the crop in case of early stoppage of rain,), spraying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions | Hoeing and weeding, organic mulching, use of windbreak and shelterbelts, water harvesting and its recycling for supplemental irrigation to save the crop, | |
| | (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths- Wheat//Buckwheat/Pea/Cole Crop/ Cabbage/ Barley/Potato | Remove 3-4 basal leaves of the crop in case of early stoppage of rain,), spraying of 2% urea and recommended concentration of other plant nutrient to take the advantage of favourable conditions | Hoeing and weeding, organic mulching, use of windbreak and shelterbelts, water harvesting and its recycling for supplemental irrigation to save the crop, | |

| Terminal drought | Major Farming situation^a | Crop/cropping system^b | Crop management^c | Rabi Crop planning^d | Remarks on Implementation^e |
|-------------------------|--|--|--|--|--|
| | (1) Tropical climate with moderately high temperature (18-30 ^o C), medium rainfall, low humidity,Irrigated Valley/low hill, High | Irrigated/Paddy /Finger millet/Barnyard millet/Maize- Wheat/Toria/Wheat+Toria/Potato/Onion/Garlic/Barley | Remove 3-4 basal leaves of the crop in case of early stoppage of rain, harvesting at physiological maturity stage if there is moisture stress at very late stage | Early sowing and use of short duration and drought resistant varieties, mixed cropping (barley+torial) | a) Link SAU, NSC, department of agriculture for getting good quality seed. b) Link RKY for getting hill based farm machineries. |

| | | | | | |
|-----|--|--|--|--|----------------------|
| | rainfall and Alluvial sandy soil, in nature | Tomato/Brinjal,/Chillies- Wheat/Barley /Torja/Potato/Onion/Garlic | | and use of high seed rate | c) Capacity building |
| (2) | Rainfed valley/Low hill, undulating topography, Moderate rainfall and Silty sandy soil | Rainfed Paddy / Finger millet / Barnyard millet / Maize /Black Gram /Red Gram/Horse Gram/ Frenchbean,- Wheat/Torja/Potato/Barley/ Rai,/Lentil/Buckwheat | Remove 3-4 basal leaves of the crop in case of early stoppage of rain, harvesting at physiological maturity stage if there is moisture stress at very late stage | Early sowing and use of short duration and drought resistant varieties, mixed cropping (barley+torial) and use of high seed rate | |
| | Rainfed Paddy / Finger millet / Barnyard millet / Maize-Fallow-Rainfed Paddy / Finger millet / Barnyard millet / Maize | | | | |
| | Fallow- Wheat/Torja/Potato/Barley | | | | |
| (3) | South facing mid hills, low rainfall, dry receiving maximum sunlight, agricultural activities are being taken in terrace fields and this situation is mostly dry due to high duration & intensity of sunlight and silty sandy soil | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Barley/ Lentil & Mustard/ Wheat/Torja/Potato/ Radish | Remove 3-4 basal leaves of the crop in case of early stoppage of rain, harvesting at physiological maturity stage if there is moisture stress at very late stage | Early sowing and use of short duration and drought resistant varieties, mixed cropping (barley+torial) and use of high seed rate | |
| | Horse gram/ Urd/ Arhar+Barnyard Millet | | | | |
| | Rainfed Horse gram/Urd- Wheat/Barley | | | | |

| | | | | | |
|---|--|---|--|--|--|
| | | Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean- Fallow- Finger Millet/ Barnyard Millet/ Maize/ Tomato Amaranths/ Sesamum/ Soybean | | | |
| (4) North facing mid hills, moderate rainfall, agricultural activities are being taken in terrace fields and this situation is comparatively cool & moist due to less intensity of sunlight and more number of perennial springs and silty sandy soil | Irrigated Paddy /Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/ Arhar) /Barnyard millet, (Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato - Wheat/Toria/Potato/B arley/Mustard/Radish | Remove 3-4 basal leaves of the crop in case of early stoppage of rain, harvesting at physiological maturity stage if there is moisture stress at very late stage | Early sowing and use of short duration and drought resistant varieties, mixed cropping (barley+torial) and use of high seed rate | | |
| | Rainfed Horse gram/Urd/Soyabean- Wheat/Barley | | | | |
| | Rainfed Paddy/Finger millet/Finger millet+(Horse gram/ Urd/Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato – Fallow- Rainfed Paddy/Finger millet/Finger millet+(Horse gram, Urd, Arhar) /Barnyard millet, Horse gram/Urd/Arhar) /Maize/ Amaranths/ Sesamum/Tomato | | | | |

| | | | | | |
|--|--|---|---|--|--|
| | | Fallow- Wheat/Toria/Potato/B arley/Mustard/Radish | | | |
| | (5) High hills, high rainfall, agricultural activities are being taken in terrace fields and clay loam | Rainfed Paddy/Finger millet/Sanwa/ Tomato /Amaranths/ Rajma - Barley / Potato / Wheat/ Rapeseed/ Cabbage/ Potato/Pea/ Radish. | Remove 3-4 basal leaves of the crop in case of early stoppage of rain, harvesting at physiological maturity stage if there is moisture stress at very late stage | Early sowing and use of short duration and drought resistant varieties, mixed cropping (barley+torial) and use of high seed rate | |
| | (6) Very high hills, very high rainfall, climate is of humid temperate type with low to very low annual mean temperature. The snowfall is high., mountainous topography and clay loam soil | Rainfed Paddy/ Arbi /Finger millet/Barnyard millet/Amaranths- Wheat//Buckwheat/Pe a/Cole Crop/ Cabbage/ Barley/Potato | Remove 3-4 basal leaves of the crop in case of early stoppage of rain, harvesting at physiological maturity stage if there is moisture stress at very late stage | Early sowing and use of short duration and drought resistant varieties, mixed cropping (barley+torial) and use of high seed rate | |

Notes:

- a: Describe the major farming situation such as shallow red soils, deep black soils, uplands, medium lands, eroded hill slopes etc. tank fed black soils, shallow acid soils, sodic vertisols etc.
- b: Describe the normal crop or cropping system grown in that farming situation including catch crop, sequence, rotation & variety if known.
- c: Describe the alternative crop or variety or cropping pattern in view of the delay in monsoon and shortening of the growing period including delay in sowing of nurseries in case of paddy.
- In case of normal onset followed by early season droughts re-sowing may be recommended including variety seed rate etc.
 - In case of early or mid season dry spells indicate crop management techniques to save standing crop.
 - In case of terminal drought indicate giving life saving supplemental irrigation, if available or taking up harvest at physiological maturity with some realizable grain/fodder yield etc.
- d: Describe all agronomic practices which help in coping with late planting like increased or decreased spacing, changes in planting geometry, intercropping in case of sole crops, thinning, mulching, spray of anti-transpirants or other chemicals, supplemental irrigation, soil and moisture conservation practices like ridging, conservation furrows, dust mulch etc.
- In case of early and mid season dry spells indicate moisture conservation techniques to save standing crop.
 - In case of terminal drought indicate early rabi cropping with suitable crops/varieties with a possibility of giving pre-sowing/come up irrigation etc.

e: Give details on the source of the breeder seed, in case an alternate crop or variety is suggested as part of the contingency. For agronomic measures, indicate any convergence possible with ongoing central or state schemes like National Rural Employment Guarantee Scheme (NREGS), Integrated Watershed Management Programme (IWMP), Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Integrated Scheme on Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), National Horticulture Mission (NHM), Community Land Development Programme (CLDP)etc., to meet the cost of materials, labour or implements etc. to carry out any field based activity quickly.

2.1.2 Irrigated situation: Not applicable

| | | | | | |
|---|--|---|---|---------------------------------------|--|
| Delayed/limited release of water in canals due to low rainfall | Major Farming situation^f | Crop/cropping system^g | Change in crop/cropping system^h | Agronomic measuresⁱ | Remarks on Implementation |
| | | | | | |
| Non release of water in canals under delayed onset of monsoon in catchment | Major Farming situation^f | Crop/cropping system^g | Change in crop/cropping system^h | Agronomic measuresⁱ | Remarks on Implementation |
| | | | | | |
| Lack of inflows into tanks due to insufficient/delayed onset of monsoon | Major Farming situation^f | Crop/cropping system^g | Change in crop/cropping system^h | Agronomic measuresⁱ | Remarks on Implementation |
| | | | | | |
| | | | | | |
| Insufficient groundwater recharge due to low rainfall | Major Farming situation^f | Crop/cropping system^g | Change in crop/cropping system^h | Agronomic measuresⁱ | Remarks on Implementation^j |
| | | | | | |
| | | | | | |

^f Describe such as uplands, medium and low lands and source of irrigation such as tank fed medium or deep black/alluvial/red soils, tube well irrigated alluvial soils, canal irrigated red soils, well irrigated black soils etc.,

^g The normal crop or cropping systems grown in a given irrigated situation

^h Suggested change in the crop, variety or cropping system in view of delay in release of irrigation water, less water availability etc.

ⁱ All agronomic measures like improved methods of irrigation (skip row etc.), micro irrigation (drip/sprinkler/sub-surface), deficit irrigation, limited area irrigation, mulching etc, that improve water use efficiency and make best use of limited water including methods of ground water recharge and sharing.

^j Comments on source of availability of seed of the alternate crop or variety, any constraints in marketing of alternative crop implications for livestock and dairy sectors and details of state or central schemes like National Rural Employment Guarantee Scheme (NREGS), Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Integrated Scheme on Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), National Horticulture Mission (NHM), etc., which facilitate implementation of the agronomic measures suggested.

2.2 Unusual rains (untimely, un seasonal etc) (for both rainfed and irrigated situations)

| Continuous high rainfall in a short span leading to water logging: Not applicable | Vegetative stage^k | Flowering stage^l | Crop maturity stage^m | Post harvestⁿ |
|--|--|---|--|--|
| Wheat | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition. | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, Early sowing, use of short stature and short duration varieties and harvest the crop at physiological maturity stage in situation of weather vagaries in irrigated condition | Dry the grains and bring down the moisture content to desired level (13-14%). |
| Rice | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition and Use of short stature varieties | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, Early sowing, use of short stature and short duration varieties and harvest the crop at physiological maturity stage in situation weather vagaries. | After harvesting the crop store the same in the covered area. And bring down the moisture content to the desired level |
| Finger millet | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, Early sowing, use of short stature and short duration varieties and harvest the crop at physiological maturity stage in situation of weather vagaries. | After harvesting the crop store the same in the covered area. And bring down the moisture content to the desired level |

| | | | | |
|--|---|---|--|--|
| Barn yard millet | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, Early sowing, use of short stature and short duration varieties and harvest the crop at physiological maturity stage in situation of weather vagaries. | After harvesting the crop store the same in the covered area. And bring down the moisture content to the desired level |
| Maize | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, minimum use of nitrogenous fertilizers and use of phosphatic fertilizers and avoid irrigation to the fields in situation of weather vagaries in irrigated condition | Use wind break and shelter belts and sowing of crop parallel to the wind direction, Early sowing, use of short stature and short duration varieties and harvest the crop at physiological maturity stage in situation of weather vagaries. | After harvesting the crop store the same in the covered area. And bring down the moisture content to the desired level |
| Horticulture | | | | |
| Crop1 (specify) | | | | |
| Outbreak of pests and diseases due to un seasonal rains | | | | |
| Horticulture | | | | |

2.3 Floods

| | | | | |
|--|---------------------------------|-------------------------|---------------------------|-------------------|
| | | | | |
| Transient water logging/ partial inundation¹ | Seedling / nursery stage | Vegetative stage | Reproductive stage | At harvest |

2.4 Extreme events : Heat wave/ Cold wave/ Frost/ Hailstorm/ Cyclone

| | | | | |
|-------------------|--------------------------------|--|----------------------------|-------------------|
| | | | | |
| | Seedling/ nursery stage | Vegetative stage | Reproductive stage | At harvest |
| Heat wave | | | | |
| Upland rice | - | Use of wind breaks, life saving irrigation | | |
| Transplanted rice | Light irrigation | Irrigation, mulching | | |
| Finger millet | - | Irrigation, mulching | | |
| Horticulture | | | | |
| Fruit crop | Irrigation in the | Irrigation and mulching in tree basin | Irrigation and mulching in | |

| | | | | |
|---|---------------|--|-----------------------------|--|
| | evening hours | | tree basin | |
| Veg crop (Tomato, Capsicum, Cauliflower etc.) | | Life saving irrigation in evening hours | | |
| Cold wave | | | | |
| Wheat | | Use of wind breaks, light irrigation | | |
| Oil seed | | Use of wind breaks, light irrigation | | |
| Pulse | | Use of wind breaks, light irrigation | | |
| Frost | | | | |
| Wheat | | Light irrigation, spray of 2@ urea, burning around the field | | |
| Oilseed | | Light irrigation, spray of 2@ urea, burning around the field | | |
| Pulse | | Light irrigation, spray of 2@ urea, burning around the field | | |
| Veg pea | | Light irrigation and spray of karathane 1 ml/ltr water in January | | |
| Potato | | Light irrigation and two spray of Indofill M-45 | | |
| Mango | | Fumigation by burning of waste material near orchard during Jan. in evening hour and spray of COC 2g/ltr water in Feb. | | |
| Hailstorm | | | | |
| Apple | | | Cover the tree with halenet | |
| Pear | | | Cover the tree with halenet | |
| Peach | | | Cover the tree with halenet | |
| Plum | | | Cover the tree with halenet | |

2.5 Contingent strategies for Livestock, Poultry & Fisheries

2.5.1 Livestock

| | Before the event ^s | During the event | After the event |
|------------------------------|---|--|--|
| Drought | | | |
| Feed and fodder availability | Increasing area under fodder production; Collect crop residues, and tree fodder to store at safe place, use mangers, use chaff cutters , hay storage. | Utilization of fodder from Perennial & reserve sources, Open grazing in forests and alpine slopes/ community lands. and feeding of crop residues; use of mangers and chaff cutters , feeding of household waste, Prepare the silage of non-leguminous fodder crops for the scarcity period. | Availing Insurance, culling undesirable Livestock; Raising of fodder trees, replacement of unproductive animals with improved ones |

| | | | |
|-----------------------------------|---|---|---|
| | | | |
| Drinking water | Storage of water in tanks , Traditional water ponds , rivers | Utilization of stored water, Stall drinking , rivers , traditional water ponds | Rejuvenation of water sources |
| Health and disease management | Advance preparation with medicines and vaccination, local ethno pharmaceutical and alternate medicines, keeping of disease resistance varieties. | Treatment of affected livestock by mass campaign, Modern veterinary care , veterinary camps , insulation, create smoke during nights in the cattle sheds to protect animals from mosquito and fleabites | Proper veterinary care , awareness , capacity building of locals, health care management |
| Floods | | | |
| Feed and fodder availability | | | |
| Drinking water | | | |
| Health and disease management | | | |
| Cyclone | | | |
| Feed and fodder availability | | | |
| Drinking water | | | |
| Health and disease management | | | |
| Cold wave | | | |
| Shelter/environment management | Brought back from high hill pasture lands to nearby pastures; restricted open grazing, | Stationary conditions in cowsheds , group living, dry grass flooring, gunny bags on windows, gunny bags wrapped on the belly of milking animals , restricted open grazing during sunny days only, adequate shelter. Prevent water-logging conditions in animal houses. In <i>Kachha</i> houses, the floor should be elevated with bricks, Feed straw & other fodder to milch animals with concentrates and protect the young ones from cold. | Open grazing, grazing in open sun , massage of milking animals and other species, hot water bath of animals |
| Health and disease management | Traditional herbs fed to animals | Warm living conditions, syrup of lassi (curd juice) after roasting fed to animals, avoid exposure to cold and rains/ snow. The prophylactic and preventive measures for the control of diseases should be adopted on the advice of veterinarian. For control of liver flukes, do the deworming of animals. | Open grazing in sunny days and feeding of medicinal herbs. In case of acute problem , veterinary care |

2.5.2 Poultry

| | Before the event ^a | During the event | After the event | |
|--------------------------------|--|--|---|--|
| Drought | | | | |
| Shortage of feed ingredients | Surplus storage of poultry feed ; No special preparations these are kept as backyard activity | Utilization of surplus feed; No impact as these is kept in captivity. Moreover these are kept as backyard and household waste is sufficient for their keeping | Kept as backyard activity Availing Insurance Culling affected birds | Feed can be supplied through fair price shops , cooperatives and the SHGs/ VOs |
| Drinking water | Storage of water in tanks | Utilize stored water | Kept as backyard activity | Water storage structures can be constructed in collaboration with MNERAGA |
| Health and disease management | Advance preparation with medicines and vaccination | Mass Vaccination, Locally managed with the help of veterinary care | Kept as backyard activity and local health care is practiced | Collaboration with rural development programmes |
| Heat wave and cold wave | | | | |
| Shelter/environment management | Proper Ventilation | Proper aeration and fan , open spacing, water supply , gunny bags on windows during cold wave, proper warming .supply of hot water during cold waves. | Kept as backyard activity | |
| Health and disease management | Local | Local and Veterinary care | Kept as backyard activity | |

2.5.3 Fisheries/ Aquaculture

| | Before the event ^a | During the event | After the event |
|--|--|---|--|
| 1) Drought | | | |
| (i) Shallow water depth due to insufficient rains/inflow | <ul style="list-style-type: none"> Water harvesting structures with rain water impounding from catchment areas Keep a deeper portion as a refuge | <ul style="list-style-type: none"> Up to 50% of pond surface area may be covered with floating algae like azolla to reduce evaporation. Water to supplement at least 20% of the | Water harvesting structures with rain water impounding from catchment areas; watershed development |

| | | | |
|-----------------------------------|---|--|--|
| | pond/ depression/trench preferably at lowside of pond | impoundment of pond to safeguard the stocked fish biomass may be arranged if available. •Partial or complete fish harvesting may be done in extreme events to reduce the density. | planning and implementations with focus on renovation and desilting of pond. |
| 2) Heat wave and cold wave | | | |
| Management of pond environment | Keep a deeper portion as a refugee pond / depression preferably at lower side of pond | | |
| Health and disease management | Rapid mobile veterinary team (RMVT) may be formed | | |