

Contingent Crop Planning for Aberrant Weather Conditions in Drylands

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Rainfall behaviour in dry farming areas is erratic and uncertain. The deviations in rainfall behaviour commonly met with in dry areas include delayed onset, early withdrawal and intermediary dry spells during rainy season. The adverse effect of these rainfall aberrations on crop growth vary with the degree of deviation and the crop growth stage at which such deviations occur. Suitable manipulations in crop management practices are needed to minimize such adverse effects of abnormal rainfall behaviour. These management decision, constitute contingency planning. Such management practices done after crop establishment and in the middle of crop growth are called mid season or mid term corrections.

Aberrant weather is a common feature of rainfed agriculture. Four important aberrations in the rainfall behaviour have been more commonly observed are:

1. The commencement of rains may be quite early or considerably delayed.
2. Dry spell immediately after sowing.
3. There may be prolonged breaks during the southwest monsoon season during which most of the dry land crops are grown and
4. Rains may terminate earlier than normal cessation date or may continue beyond the normal rainy season.

Contingency cropping is growing of a suitable crop in place of normally sown highly profitable crop of the region due to aberrant weather conditions. In dryland agriculture, contingency of growing another crop in place of normally grown crop arises due to delay in the onset of monsoon. Depending upon the date of receipt of rainfall, crops are selected. It is assumed that the rainfall for the subsequent period is normal and depending upon the

economic status of the farmer, certain amount of risk is taken to get good profits if season is normal or better than normal. Contingency cropping is highly location specific due to variation in amount and distribution of rainfall. Especially in arid regions, the spatial distribution of rainfall is highly variable. It is common to observe that rainfall received varies from field to field in the same location. Temperature gradually falls from August onwards reaching minimum in November and December. Contingency plan and midterm corrections vary with the type and time of occurrence of rainfall aberration. Crops have to be selected with suitable crop duration to coincide with the length of the growing season. Generally short duration pulses may suit the situation. However if the monsoon turns to be extraordinarily good, opportunity is lost if only short duration crops are sown. Farmers with economic strength and motivation for high profits with some amount of risk can go for crops of long duration. The long duration crops with flexibility or elasticity in yield are more suitable.

Aberrent weather and contingency crop planning

I. Early (Second to third week of June) and normal (Fourth week of June to Second week of July) on set of monsoon

- ✓ In early on-set of monsoon go for sowing of medium to short varieties of pearl millet. Whereas in normal on-set situation go for sowing in the order of bajra, guar, moth bean, mung bean, sesame etc.
- ✓ Fertilizer placement as per recommendations + insecticide application
- ✓ Inter/mix cropping of pearl millet with *kharif* legumes in appropriate ratios
- ✓ Short to medium duration crops and their varieties
- ✓ Safe removal of excess water

II. Monsoon delayed after 15th July up to 3rd week of July

- ✓ Short duration varieties of bajra and *Kharif* legumes
- ✓ Fertilizer placement + insecticides application
- ✓ Weed control and crust breaking
- ✓ Proper IPM measures
- ✓ Seed treatment in the order of FIB
- ✓ Wider spacing of crops with proper interculture operations

III. After 4th Week of July upto 1st week of August

- ✓ Divert more area to pulses and oil seeds with mixed cropping of both the crops along with use of short duration varieties
 - ✓ No fertilizer application but use insecticide for termite control
 - ✓ Seed treatment with FIB
 - ✓ Thiourea spray (0.05%)
 - ✓ High seed rate by 15-20%
 - ✓ Mixed/inter cropping of early maturing varieties of bajra with mung, moth, guar and cowpea
 - ✓ Dry sowing of clusterbean in single grain sandy soils
- IV. Rains after 10th of August:** Abstain sowing of kharif crops but go for moisture conservation measures and stale seed bed preparation for growing of rabi crops on conserved moisture and under certain agroecological situations (tankbed/*Khadin*/heavy to medium soils).
- V. Long dry spells during crop growth period**
- ✓ Drought is in early seedling stage re-sowing of crops with seed treatment
 - ✓ Dry period after 30-45 days of growth: Thinning of excess plants, moisture conservation in between the rows, with mulching and mechanical means
 - ✓ Life saving irrigation
 - ✓ Crop failure in kharif if occurs after mid August: Do not go for re-sowing but conserve soil moisture for rabi crop.
- VI. Early withdrawal of monsoon (by 15th to 20th of August)**
- ✓ Removal of weeds and their use for mulching
 - ✓ In the mixed cropping system remove the most sensitive crop first and use as fodder for animals
 - ✓ Life saving irrigation if feasible
 - ✓ In tank bed go for early sowing of rabi crops like taramera, chickpea, linseed etc.
 - ✓ In-situ moisture conservation measures
- VII. Mid season corrections for crops already sown**
- ✓ Breaking of crust and weed management by mechanical means
 - ✓ Removal of alternate rows of dryland crops and making use for animal feeding
 - ✓ *In-situ* moisture conservation through IRWH systems



- ✓ Effective pest and disease management
- ✓ Life saving irrigation to the crops in areas of water availability or through WHS
- ✓ Spray of thiourea 0.05% on the standing crop
- ✓ Mulching in row spaces as per feasibility

