



05 to 11 June is the first week.

12 to 18 June is the second week. 19 to 25 June is the third week.

The bars represent the weeks and are divided by IMD's rainfall categories, with the length of each category in a bar showing the proportion of that category's number of districts. Category-wise rainfall in the 36 meteorological subdivisions (but not by district).



#### Impact of Rainfall deficit on GDP

Rainfall Deficiency (%)	Impact on GDP (%)
45	15.8
40	14
30	10.5
25	8.8
20	7
15	5.25

The country's gross domestic product (GDP) falls by 0.35 per cent with every one per cent deficit in rains. In monetary terms, a 10% deficiency shaves off Rs 360,000 crores hurting lakhs of jobs in the unskilled sector. (ASSOCHAM, 2014)



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Drought has always caused serious losses to livestock productivity and wealth. It affects biological system of animals in terms of **no thriftiness, reproductive compromise, reduced immunity, greater disease attacks and poor quality feed availability ultimately leading to drop in production and health of the animal**. Therefore, drought mitigation strategies are centralized around ensuring survival of livestock (critical body weight loss reported upto 20%) by minimizing the loss of productivity and lives of animals for optimizing available resources. Preventing the loss of reproductive efficiency and recommencement of production of these animals remain ultimate aim.

### Housing Management

- Ensure proper ventilation in sheds and avoid over-crowding.
- Allow feeding at higher frequencies and especially during early mornings & late evenings for more consumption of dry matter.
- Grazing at early (cool) hours and at nearby distances to avoid longer duration sunlight exposure.
- Green cover i.e. shady tree are most suitable to protect livestock from direct sun and helps alleviating climatic thermal stress apart from providing fresh air.
- Open and partly shaded housing may be preferred over tying animals inside the sheds.
- If possible, buffaloes be given a bath / allowed wallowing.
- Sprinkle cold water on animal with bucket in afternoon, if possible.

### Feeding Management

- Optimization of feeding practices for efficient use of scarce resources becomes essential. Emphasis on green fodder conservation in view of looming threat of drought becomes important. However, in the face of unpreparedness, appropriate feed enrichment and supplementation strategies become more imperative. Choice of supplements is critical. Feed ingredients bearing high energy/ protein are preferred with minerals.
- Lack of green fodder causes vitamin deficiency (particularly Vit. A & E), therefore, supplementation becomes essential. A buffalo producing 15 to 18 Litres milk per day, requires 60 to 75 thousand, 15 to 20 thousand, 400 to 500 IU of vitamin A, D3, E, respectively, which can be met by feeding 10g Brivita.
- Supplementary feed comprising grains / oil cakes can be given twice a week.
- Use of grain as supplement for animals is hard to justify because of scarce availability and long-time storage problem, hence, other sources of improved concentrate feeds for draught animals include fodder trees and urea-treated straw [4% urea with Molasses].
- Wherever possible, by-products such as oil seed cake should be used, if available at reasonable price.
- Urea molasses enrichment of straw can be done using 1.00 quintal straw, sprinkled with 20 Litre water containing 10 kg molasses, 1 kg urea, 500 gm mineral mixture, 50 g Brivita (Vitamin A, D3 and E) and 1 kg salt for supplementing the feeding of affected the animals economically. If molasses is not available, ground grain can be mixed @ 1.5 kg per 10 kg urea enriched straw.



- Maize stovers/soyabean chaff etc. can be given upto 30% in ration.
- Sugarcane tops (contain 2.3% DCP and 49% TDN) supplemented with limestone powder.
- Leaves of mango, papal, banyan, babul, *subabul*, *mahua*, *Israili babool*, *kabulikikar*, vegetable leaves, fruit-pulp and waste; and dry sugarcane leaves are some unconventional fodders for difficult drought period.
- Tree leaves 50%, mixed with 5% cake, 25% available pods (Israili babool, Kabuli kikar) 15% molasses with 1 % urea with 2 % mineral mixture and 2% salt can be fed.
- Banana stem and leaves {containing 6.5% DCP and 75% TDN (based on DN)} can be used as animal feed @ 15 to 20 kg per animal per day.
- Grazing of poisonous plants and resulting toxicity problems become more common in the absence of quality fodder. Awareness in farmers is essential, especially, with regards to anti-nutritional / toxic factors as nitrate/ nitrite and HCN poisoning.
- To avoid HCN poisoning farmers should not try to take a cut before Jowar (sorghum) reaches the height of at least 24 inches (at initiation of milks stage).
- In available fallow lands, with any rainfall, farmers should grow short duration drought tolerant arid type crops (pearl millet, Bajra, Sorghum PC6 and MP Chari) legumes (*Moong*, *Moth*, Cowpea BL1 and BL2) as fodder and fodder grasses (like *stylo*, *cenchrusciliaris*, *athropogan*) etc. During following Rabi season, similar crop of Chinese cabbage can be grown, which has low water requirements and provides fodder during early winter months following low monsoon rainfall.
- In sugarcane growing areas, sugarcane tops and dry sugarcane leaves can be utilised, enriched for crude protein content and fed in scarcity areas.
- 50% sugarcane bagasse (3% CP and 40% TDN) + 17% oilcake + 25% molasses mixed with 4% bran, 1% salt, 2% mineral mixture and 1% urea is promising maintenance ration for adult animals.
- Partially damaged / discarded wheat / other grains may be diverted for feeding to productive animals.
- Urea Mineral Molasses Block (UMMB) can be effectively utilized as a combined source of protein, energy and mineral during drought situations. UMMB also help in preventing loss of fertility in case of prolonged drought. These blocks can be easily transported over long distances.
- Nutrient deficiency in lactating buffaloes is suggested to be met with feeding silage (10-15 Kg) along with concentrate as per availability.



### Reproduction Management

- Animals should not be treated for infertility till drought conditions are averted, however, cyclic animals must be inseminated through AI.

- Animals maintaining normal/ acceptable growth, milk production and cyclicity should be bred appropriately. Repeat breeders can be treated as per advice of the veterinarian.
- During hot summer, females may be inseminated during cool hours of the day (morning and evening).
- Periparturient problems such as premature births, retention of placenta, dystocia, mastitis etc. can be avoided by supplementing vitamin A, D and E with selenium orally or i/m during last trimester of pregnancy, especially, where forage is not available to animals. Most buffaloes shall be in this stage during drought period in later monsoon season.

### Health Management

- Higher risk of reduced immuno-competence against a range of pathogens may be encountered under stressful situations like drought.
- Global warming and drought can increase the risk of emergence or re-emergence of pathogens, vectors and epidemiological profiles for diseases.
- The occurrence of extreme drought episodes in dry areas can enhance migration of livestock toward less affected zones. These migrations represent important risk factors for the spread of pathogens particularly those more prevalent in dry areas.
- Farmer's resources get diverted to mobilization of feed and fodder resources for livestock, that too only after assuring food for his family. As a consequence, there is strong risk of marginalization of animal health expenses and subsequently an increased vulnerability to various pathogens.
- Rapid spread of diseases due to different host susceptibility in migrant animals may cause emergence of new pathogens to which livestock has not adapted, influencing the epidemiology of tropical enzootic diseases e.g. bluetongue, theileriosis etc.
- Extensive losses due to increased population of vectors carrying diseases.
- **Impaction:** Poor quality dry fodder, sudden change in diet and less water intake result in poor salivation, low feed intake, constipation and anorexia. Liquid Paraffin 4 L per day for 3 consecutive days or Mag Sulph 250 g mixed with *Himalyan Batisa* 50 g dissolved in lukewarm water can also be given per os.
- **Heat Stroke:** Panting, low production in lactating animals, fever etc. Iodized oil (750 mg elemental Iodine) administered sub-cutaneously is recommended.
- **Toxicity from Jowar:** Due to lack of water, seedling growth is slow resulting in HCN toxicity. Animal shows the symptoms of short of breath, convulsion, salivation, mydriasis and ultimate death if not attended in-time. An adult animal (500 Kg BW) can be given 200 ml solution (i/v) containing 2.5 g Sodium Nitrite + 30 g Sodium Thiosulphate dissolved in 200 ml water. Dose may be doubled if condition is severe. If required, 30 to 60 g Sodium Thiosulphate can be offered orally to adult animal. Animal must be kept under medical care.
- **Urea Toxicity:** 2% Acetic acid [vinegar] under medical care is suggested.
- **Organophosphate Toxicity:** Animal shows symptoms of salivation, watery eyes, dyspnea, perspiration etc. Atropine sulphate @ 0.25 mg / Kg body weight is recommended, divided equally into intravenous and intramuscular / subcutaneous administration. Same dose can be repeated 3-4 hours later.