

Conserving rainfall is challenge

Many people who have spent more than half a century in the southern High Plains say that they have not seen a year like this before. This year is unique.

Rainfall stopped after a wet summer in 2010 and less than three inches has been received in the last nine months. Distribution is also erratic. A record low temperature in the winter killed some of the experimental winter crops (such as safflower), being tried at New Mexico State University's Agricultural Science Center at Clovis. Winter canola survived and was doing better than winter wheat in an unusually dry spring.

But late spring frost put a break to winter canola. Varieties that were either blooming or in an early pod stage lost seed yield completely, while later flowered varieties did quite well.

Since then, the season is hot, dry and windy. Only irrigated crops have been planted so far. Due to hot and dry conditions, sorghums are excessively tillering and legumes are creeping along the ground. Farmers are not able to keep-up with the water requirements of crops.

Now, we are seeing a few clouds around and rainfall forecast is improving (better than zero, at least).

The first challenge is to conserve

most of the rainfall. When dry, soils in the region get hard due to low organic matter. Therefore, standing stubble and flat residue are important for rainfall conservation.

Dense stubble, like that of wheat, is good for reducing runoff and improving infiltration. Sorghum stubble can be taller to offer some benefits. But, it is not dense enough to reduce runoff and increase infiltration.

Strip tillage improves vertical movement of water into the soil, but the effect will be more pronounced with residue on the surface. Microclimate benefit of standing stubble seems to improve with the height and stubble density. Reduced wind speed within the standing stubble reduces evaporation. Lower wind speed also protects seedlings from physical injury by sand blasting. Tall stubble also keeps soil surface wet little longer, which is important for dry land crop establishment. Tall standing stubble traps heat for better

seedling growth, which is not an issue this year.

Now, what are the best crops for the situation? We work with very few crop options in the region and have not explored more drought tolerant crops. Often, we hear that oilseed crops, like sunflower, are more drought tolerant crop due to its deeper rooting.

Rooting depth is the most important drought tolerance trait in crop plants. However, we do not have deep moisture this year and as a result deep rooting will not help. Some of the legumes like dry pea and lentils are shallow rooted and offer many benefits to the soil. They also produce higher protein forage. They are often used as cover crops. They do not exhaust soil profile completely, especially at deeper depth.

If more biomass is the goal, then short season cereal, including millets, will be a better option. The stubble from these crops is dense and will last longer in the field.

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