

MSU Ag Alert

Yellow small grains likely caused by drought stress

The Schutter Diagnostic Laboratory has been receiving numerous samples of wheat plants that have yellow, or yellow and brown spotted, lower leaves (see pics to right). Fungi have been ruled out and bacteria or viruses don't seem likely. This suggests "abiotic" causes including frost damage, drought stress and/or nutrient deficiencies. Nutrient deficiencies may seem unlikely for those who used starter fertilizer, but plants need water to take up nutrients, and many areas of the state have received well below normal precipitation in the last 30 days (see map).

Note that much of the state has received less than 75% of normal precipitation, and parts of western Montana are below 10% of normal. Immobile nutrients, such as phosphorus, potassium, and zinc, are especially reliant on water to help them move toward plant roots.

Another possible cause of some of the deficiencies may be an event that happened 9 months ago: the record August rains which dumped between 4 and 10 inches in much of the state. This would have leached mobile nutrients,

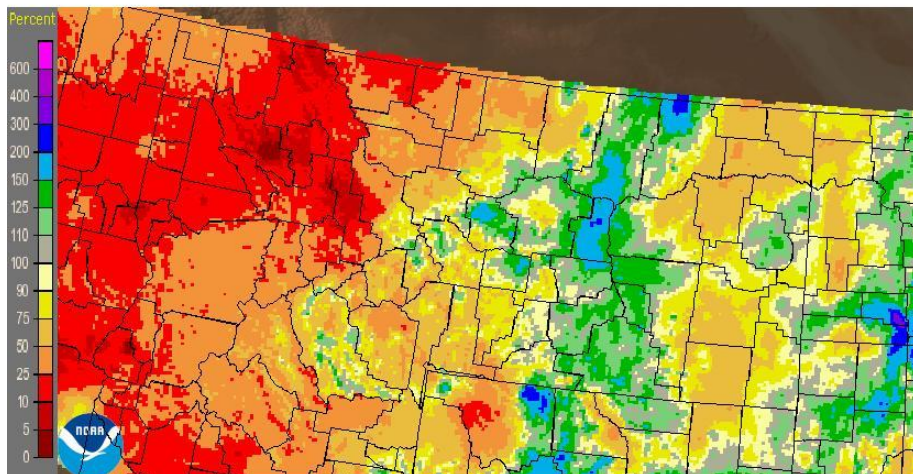
such as chloride, nitrate, and sulfate, out of the upper root zone.

Small grain roots will eventually catch up to these nutrients, but winter wheat that is stressed due to drought and frost, will take longer than normal to reach those nutrients. In addition, urea broadcast in the last 30 days may not have received enough moisture to convert to available nitrogen forms or be pushed down into the root zone.

There are a couple strategies that producers can use at this time. The first is to wait for moisture and warmth. Applying nutrients that may already be in the soil but aren't being taken up because of the



Montana: Current 30-Day Percent of Normal Precipitation
Valid at 5/7/2015 1200 UTC- Created 5/7/15 18:31 UTC



dryness, would be waste. If you've fertilized with nitrogen this winter or spring, and applied both potassium and sulfur with your seed, that's likely the case. Potash, the major form of potassium, contains chloride. However, if you did not apply potassium or sulfur, then a chloride or sulfur 'rescue' treatment may be warranted. Soil testing and tissue testing for suspected limiting nutrients, focusing on the mobile nutrients, would provide the information to know if a rescue treatment would be useful. If a nutrient is low in both soil and tissue, then contact your county Extension Agent or crop adviser about fertilizer options. Make sure to use a lab that can deliver a fast turnaround AND provide nutrient sufficiency ranges for your current crop's growth stage. See [Interpretation of Soil Test Reports for Agriculture \(Montguide MT200702AG\)](#) for a list of laboratories in the region.

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