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## Fighting drought with science, education, and outreach

*CSU Extension is committed to providing agricultural producers with practical growing strategies they can successfully apply to their fields, helping them stay one step ahead of drought conditions in Colorado.*

### Situation

In 2012, the state of Colorado experienced one of the most severe droughts in its history. Soaring temperatures persisted throughout the entire state, leaving rivers dry, fields cracked, and crops scorched. As agricultural producers prepare for future growing seasons, most meteorologists fully expect drought conditions to continue. With reservoirs depleted, low mountain snowpack, and looming water restrictions, producers want new ways to utilize every drop of water that is available to them.

### Extension's Response

Recognizing the need to address pressing water issues with Colorado agricultural producers, Extension Water Resources Specialist Joel Schneekloth began organizing community meetings across the Eastern Plains during the winter months.

The aim of these meetings was to prepare producers for the upcoming growing season and provide information on up-to-date, cutting edge agricultural practices, designed to maximize water use without compromising yields. Schneekloth's efforts are mirrored by other educational workshops organized by Extension agents and specialists around the state.

Producers are informed about meetings through online venues, advertisements in local newspapers, and over local radio stations. Schneekloth has appeared as a guest on several talk shows, speaking about the benefits of water conservation practices.

Weather and regulation change, however, remain much more persuasive. During times of water shortage or restriction, the community buildings that host these meetings overflow with participants, sometimes packing in upwards of 500 people.



### The Bottom Line

- The 2012 drought was one of the most severe in modern Colorado history.
- Water-conservation practices are helping agricultural producers mitigate the effects of drought.

### By the Numbers

- Total Colorado wheat yields 2012: 34.3 bushels per acre
- Total Colorado corn yields 2012: 133 bushels per acre
- Percent of Colorado in extreme drought July 2012: 74

## Results

Schneekloth has seen widespread adoption of all five water-conservation practices throughout Colorado, especially in the wake of the 2012 drought, but he does not push producers to use these water-saving techniques. “It comes down to economics for the producer. It comes down to time, management, and labor; that makes their choice for them.” When most producers see the economic benefits these practices can bring to their farms, their decision becomes an easy one to make:

Well-designed **pivot systems** can achieve a 90 percent or higher efficiency range and will use 50 percent less water over furrow irrigation systems. However, Schneekloth stresses that a pivot system will only be as effective as the person controlling it. Typically, if a producer leaves a pivot system running, any kind of rain will just seep right back down through the soil profile and back to the ground water. “What we try to help them adopt is to split the pivots, do better water management, turn the pivot on only when you need it. If you do get rain, you want to be able to use that.”

**Crop splitting** entails the rotation of different crops according to seasonal and moisture tolerances. Wheat and corn are an effective combination for crop splitting because they do not overlap too much in their water use. This allows producers to strategically distribute the water they have access to throughout an extended growing season. “With crop splitting that utilizes 50 percent corn and 50 percent wheat, a 300 gallon a minute well can look more like a 600 gallon a minute well,” says Schneekloth.

For producers with junior water rights, or those with low-priority claims for water resources, **no-till practices** can be an attractive alternative. Every time a field is tilled, soil moisture is lost to the atmosphere. No-till is a practice that leaves as much harvest residue on top of the surface as possible without disrupting the soil. Leaving harvest residue can save a producer 3-8 inches of water from evaporation savings and snow capture. “Out here, when we typically get our snow, it comes sideways,” says Schneekloth. “So if you have residue out there standing in the field, the snow stays in the field, so you’re holding that moisture there as well.”

In cooperation with the Natural Resources Conservation Service (NRCS), Extension provides producers with low cost **moisture monitoring units**, which allow producers to monitor the soil conditions in every level of soil that they are placed in. Electrical resistance blocks show how the crop’s plant roots have progressed and how much water is being stored in the soil. Schneekloth has seen widespread use of moisture monitoring units throughout the Eastern Plains.

**Limited irrigation practices** are designed to allow the plants the greatest advantages when water is available for use. For example, producers with reduced water allocations understand the importance of limiting water during the vegetative growth periods to maximize the water usage during the reproductive time periods. If a corn crop is irrigated heavily during the early growth stages, a producer develops a much bigger corn plant that has greater water need during its reproductive stage, which could translate into a lack of water when the plant really needs it.

Despite historic drought conditions in 2012, agricultural producers in Colorado achieved the 25th most productive corn harvest in state history as well as the 14th most productive wheat harvest. All the strategies combine to help agricultural producers stay ahead of the drought.

*“During dry years, people look and listen, adopt changes, but then when we get these wet years and high corn prices, like we’ve had for the last several, they go back to planting all corn. This year, we’re seeing changes back to what they were doing several years ago: splitting fields with a winter wheat crop or something else. Looking at the possibility that there’s going to be shorter water.”*

– Joel Schneekloth  
Water resources specialist

*“Currently, the Colorado River is running at 20 percent below its normal flow rate. We need to reduce our demand through conservation. We also need to augment supply with practical measures.”*

– Ken Salazar  
Secretary of the Interior

## Sidebar

Five water conservation techniques have a proven track record of mitigating the effects of drought.

These include:

- Utilizing pivot irrigation systems;
- Leaving harvest residue on fields;
- Diversifying production with crop splitting;
- Monitoring soil moisture levels;
- Strategically irrigating crops when they need it the most.

## Contact Information

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