

Weather challenges crop research

Written by Elizabeth Barrett
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Monsanto agronomist tells of tests during 2012

Talk about topsy-turvy weather for research at the Monsanto Water Utilization and Learning Center.

“The climate was everything but average,” said Monsanto agronomist Mark Reiman who spoke at the Nebraska Water Balance Alliance winter summit last Thursday at the learning center.

One of the wettest years, with 37 inches of rain, occurred in 2010 followed by an average year in 2011, Reiman said.

Soil moisture looked good during planting on May 1 of 2012 but precipitation had shut off by July 10.

By July 24, Reiman said the drought—coupled with high temperatures—was one of the worst since the 1950s.

For example, he said the central Nebraska area usually averages about 22 inches of rain in a year.

During 2012, a paltry 7.8 inches was recorded compared to another bad precipitation year in 1952 that saw 12.8 inches of rain.

Monsanto tested different corn hybrids, amounts of precipitation, planting levels and herbicide application in a drought study during such a challenging year.

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“We wanted to make the most of what we had in irrigated and dryland situations,” Reiman said. “Because you can choose hybrids, traits and agronomics to grow a good crop.”

For example, heavy residue left after harvest can conserve two inches of rain in the soil by curtailing evaporation.

Sap flow collars, that monitor the movement of water through corn stems, and capacitance probes are helpful in studying corn water use.

Reiman explained that capacitance probes measure how much water moves in and out of soil.

Because different hybrids respond to different environments, he said it’s important to know how hybrids perform in a drought environment.

“For example, this much rain can get you this many bushels,” he explained.

Interestingly, Reiman said studies have revealed that corn stressed by limiting application of water helps prepare the crop to withstand stress during pollination.

“They show that corn performed better if it was stressed early than if stressed during pollination,” he said.

Reiman said some hybrids do well with less water and others do not.

Some research has shown that over watering corn results in lower yields.

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In such cases, producers are wasting water and incurring higher energy costs while irrigating.

Monsanto is setting up protocol to do more testing of the over watering of crops.