Winds can hurt winter yields

Just one day of hot, dry winds can reduce winter wheat yields by 30% if the winds occur while the plants are in the milk stage, reports USDA soil scientist Darryl Smika. Wheat plants in the flowering stage or soft dough stage also suffer from hot winds, and subsequent yields can be reduced by 25%.

Most of the yield reduction, 80%, was a result of the first two to four hours exposure to the winds. These winds did not reduce yields when they occurred before the flowering stage or after the soft dough stage.

Smika, along with fellow Agricultural Research Service soil scientist R. Wayne Shawcroft, measured hot winds damage so that economic planners could better predict wheat supplies both domestically and worldwide. The data will also enable other researchers to recalculate after harvest the effects of various experimental treatments on plots hit by hot, drying winds.

These scientists at the USDA Central Great Plains Research Station at Akron, Colo., used a portable wind tunnel to subject wheat plants to either 20 or 40 mile-per-hour winds that were 10 degrees Fahrenheit warmer than the surrounding air. Both wind speeds damaged crop yields equally.

"The winds we applied to the test plots were comparable to weather conditions we experience about one out of every eight years here in eastern Colorado. Other areas of the Central Great Plains probably have damaging hot winds more often because of their geographical landscape. Also, large areas in other parts of the world, especially the Soviet Union, are vulnerable to wind damage," says Smika.

Hot winds during the flowering stage reduce yields mainly because more wheat heads failed to produce any grain. During the milk stage, most of the resulting yield reductions were because of fewer kernels per head. During the soft dough stage, most of the reduction was because of reduced weight per kernel.

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