



## PARTNERS IN PROGRESS

# 2020 WHEAT RESEARCH

Supported by the Oklahoma Wheat Commission and Oklahoma Wheat Research Foundation

The [2020 Partners in Progress Wheat Research Report](#) is a collaborative effort among scientists in the Division of Agricultural Sciences and Natural Resources who specialize in biochemistry, entomology, molecular biology, plant pathology and plant and soil science. These interdisciplinary scientists also serve as members of OSU's Wheat Improvement Team (WIT) who support the Oklahoma wheat industry through genetic research of winter wheat.

## 2020 WHEAT RESEARCH SUMMARY

- The latest research on [wheat variety development](#) found six of the top eight varieties planted for Oklahoma's 2020 crop were developed by OSU WIT.
- [Wheat pathology](#) studies over the past year involved searching for reliable sources of resistance against multiple diseases such as leaf rust, tan spot and barley yellow dwarf.
- [Gene discovery and genomic applications](#) included research on leaf rust resistance native to the Duster genome.
- [Adaptive introgression](#) work focused on foliar disease and insect resistance of wheat germplasm collections across the globe.
- In the area of [Bird Cherry-Oat Aphid \(BCOA\) tolerance](#), scientists developed a model to identify the best method for measuring tolerance levels while advancing six elite lines previously identified with worthy BCOA tolerance.
- [Genome-wide analysis](#) revealed the Duster genome is present throughout the WIT breeding stock; studying Duster's structurally dynamic DNA provided insight into its toleration of drought stress.
- [Information exchange](#) of 25 scientific field trials indicated the highest grain yields ever reported in Oklahoma wheat variety trials. For the first time, wheat protein concentration was reported alongside the yield data.
- [Herbicide tolerance and weed management](#) research featured implementation of the Clearfield Plus production system in field trials, and the CoAxiom production system was field tested for the first time using Axigen-traited WIT germplasm.
- [Nitrogen-use efficiency](#) studies identified that delaying fertilizer application until immediately before or after the first-hollow stem stage produces higher wheat yields.
- Oklahoma's Unmanned Aerial Vehicle (UAV) Platform continues to improve for phenotyping under varied climatic conditions; flight time and battery life were investigated under different environmental conditions.



For the full report, visit [agresearch.okstate.edu/research/wheat-report](https://agresearch.okstate.edu/research/wheat-report)