Wheat Allelopathy Not a Constraint to Expanding Canola Production

Canola production is spreading to new regions of the U.S., often as a rotational crop in traditionally monocropped winter wheat systems. Wheat is known to have allelopathic properties, which are cultivar specific, and the effects on emergence and growth of canola are not fully understood.

In an article recently published in Agrosystems, Geosciences & Environment, researchers evaluated the risk of wheat residue allelopathy on canola. A laboratory study set a baseline for potential effects while a pot study mimicked field conditions in side-by-side comparisons of the effects of 15 wheat cultivars.

In the laboratory, the team found that canola germination was initially slowed and that radicle elongation rates were persistently set back by exposure to fresh wheat residue extracts. But in the pot study, where wheat residue weathered on the soil surface for the summer, residue did not affect canola emergence. Early canola growth increased by an average of 23% with residue.

The research suggests that allelopathic properties of wheat will not negatively influence canola under field conditions. Negative impacts, which have been reported, are likely physical in nature and may be addressed by mechanical removal of residue from planting rows.

Adapted from Wynne, K., C. Adams, C. Neely, P. DeLaune, E. Kimura, and S. Thapa. 2019. Canola emergence and early growth were not affected by allelopathic properties of wheat residue. Agrosystems, Geosciences & Environment 2:180058. View the open access article online at http://dx.doi.org/doi:10.2134/age2018.11.0058

Canola field. Source: Texas A&M AgriLife Communications photo by Kay Ledbetter.

doi:10.2134/csa2019.64.S002

CGIAR Operations under the Plant Treaty Framework

The International Treaty on Plant Genetic Resources for Food and Agriculture is one of the most important achievements of the international community in recent decades. It recognizes the crucial importance of plant genetic resources for ensuring food and nutrition security. There are 145 Contracting Parties to the Plant Treaty, and its multilateral system of access and benefit sharing includes most of the world’s largest collections of plant genetic resources for food and agriculture, including those hosted by CGIAR Centers.

Authors of a recent Crop Science article describe how CGIAR and the Plant Treaty evolved together and are inextricably intertwined. The genebanks and breeding programs of the CGIAR Centers are both influenced by, and help promote, the Plant Treaty’s objectives of conservation, sustainable use, and equitable sharing of benefits.

The multilateral system of the Plant Treaty has encountered some challenges during the first 10 years of operation, leading to a process to revise it to increase monetary benefit sharing and the scope of genetic resources that are included in it. Meanwhile, there are opportunities to increase non-monetary benefit sharing as well, including partnerships, technology transfer, information exchange, and capacity building. International collaboration in all of these areas is necessary for the Treaty to achieve its objectives.


From l to r: chickpea accession in ICRISAT genebank. Photo by Michael Major/Crop Trust. International Potato Center (CIP) genebank, Lima, Peru. Photo by Luis Salazar/Crop Trust. Seed regeneration plots at ICARDA’s Terbol station in Lebanon’s Beqaa Valley. Photo by Michael Major/Crop Trust.

doi:10.2134/csa2019.64.S005