Protecting Yields with Superior Weed Control Solutions

Based on Dr. Swanton’s research, any weed present in the field when the corn plant emerges has potential to cause significant, permanent yield damage. Therefore, early-season weed control with an effective pre-emergent herbicide is a vital part of yield protection.

As the number of growers choosing glyphosate-tolerant corn hybrids increases, it is important to remember glyphosate alone does not protect yield. The highest-yielding, most agronomically sound herbicide program for glyphosate-tolerant corn is either a two-pass program of:

- Lexar® EZ or Lumax® EZ herbicide followed by Halex® GT herbicide tank mixed with atrazine (AAtrex® 4L or AAtrex Nine® GT herbicides). If atrazine cannot be used, add a dicamba product (e.g. NorthStar® herbicide).
- Lexar® EZ or Lumax® EZ followed by Touchdown Total® herbicide tank mixed with Callisto® GT herbicide
- Lexar® EZ or Lumax® EZ followed by Calibra® GT plus atrazine

*This combination can be applied up to 12-inch corn.

A pre-emergence application of Lumax EZ or Lexar EZ will significantly reduce weed populations throughout the growing season because of the highly effective residual control they deliver. A post-emergence application of Halex GT, Touchdown Total or a Calibra brand herbicide is necessary. Lumax EZ or Lexar EZ widens the window for the application, allowing growers greater flexibility.

About the Researcher

Clarence J. Swanton, Ph.D.
Professor of Weed Science, Department of Plant Agriculture
University of Guelph, Ontario, Canada

Since 1985, Dr. Clarence Swanton has been a distinguished member of the faculty at the University of Guelph in Ontario. He first joined the university as an assistant professor of weed science and then was promoted to professor in 1996. His achievements at the university have included serving as the first chair of the Department of Plant Agriculture from 1998 to 2004, publishing 144 papers and three book chapters, and co-authoring Weed Ecology in Natural and Agricultural Systems.

His latest research focuses on the development of integrated weed management systems for field and horticultural crops. Selected areas of study have included weed and crop modeling, weed biology and ecology, economics of weed management, and managing weeds with herbicides.

The Weed Science Society of America (WSSA) has recognized his work through such prestigious awards as the 2006 Paper of the Year, the 2005 Fellow Award and the 2003 Outstanding Researcher Award. He also was elected a Fellow of the Canadian Society of Agronomy in 2002.

Dr. Swanton obtained his bachelor’s degree in botany from the University of Toronto, his master’s degree in agronomy from the University of Guelph, and his doctorate in plant ecology from the University of Western Ontario.
of Early-Season Weed Management

As the demand for corn continues to rise, growers and others in the agricultural industry are constantly looking for ways to address these growing needs. One important way to meet this demand is to optimize corn yields through effective herbicides treatments. The performance of a corn hybrid is heavily determined by the early-season weed management systems, Dr. Swanton is unlocking the mystery of yield protection in corn and providing the explanation for early-season yield loss.

Can these yield losses be attributed solely to the traditional theory of weed-related yield losses? Most research in the past has focused on the impact of weed competition, but Dr. Swanton began his research by observing and testing the true mechanism of competition had to be something else, and this something else was causing irreversible damage if weeds were present at corn emergence – an even earlier timeframe than previous studies indicated.

Dr. Clancy Swanton, professor in the Department of Plant Agriculture at the University of Guelph in Ontario, has conducted cutting-edge research that addresses the impact of early-season weeds on yield. As one of the world’s foremost authorities on integrated weed management systems, Dr. Swanton is unlocking the mystery of yield protection in corn and providing the agricultural industry a revolutionary way to examine early-season weed management.

Dr. Swanton noted that when compared to weed-free seedlings, corn plants grown in weedy conditions demonstrated the following shade-avoidance characteristics:

• 17 percent taller
• 45 percent greater leaf area
• 40 percent more dry leaf weight

As a result of his innovative early-season weed research, Swanton has drawn the following conclusions:

• Damage from weeds occurs earlier in the life of the corn plant than previously thought.
• Complaints can detect the presence of weeds as soon as corn plants are growing in weedy conditions. The first set of seedlings was surrounded by flats filled with vermiculite to simulate light reflection from bare, weed-free soil. The second set was placed next to flats containing grass and to simulate light reflection from a weedy area. All other conditions, including adequate nutrients for ideal growth, were consistent for both sets so the only variable was light reflection.

Effects on Plant Growth

Shading Light on Corn Growth

To test the effect of reflected light on corn growth, Dr. Swanton and his research team planted two sets of corn seedings in individual pots and measured the impact of weed competition from a change in light reflection and to produce more leaves that grew parallel to the row, resulting in a slower canopy closure and reduced ability to shade out weeds.

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