Climate Change Poses Challenges For Weed Management

URBANA, ILL.

As temperature and carbon dioxide levels in the atmosphere increase, growers may see things pop up on their farms that they haven't seen before, said Lewis Ziska, a USDA-ARS specialist in crop systems and global change in Beltsville, Md. Unfortunately, they won't all be good.

In a session on climate, carbon dioxide and invasive weed species at the 2010 University of Illinois AGMasters Conference, Ziska discussed how rising carbon dioxide levels and rising temperatures may cause invasive weed populations to change.

"Carbon dioxide provides the raw material needed for plants to grow, and as it increases, plant growth will be stimulated," he said. "Carbon dioxide is not a smart molecule – it can't distinguish between crops and weeds. So with increased growth of crops comes increased growth of weeds as well."

Ziska is studying how rising carbon dioxide and warmer temperatures alter the establishment and success of invasive and noxious weed species such as kudzu and Canada thistle. These weeds can result in widespread environmental or species degradation.

"In general, as temperature and carbon dioxide levels change, weeds may be more likely to adapt to these changes given their greater genetic variability relative to crops," he said.

And as winter temperatures warm, kudzu, often referred to as "the vine that ate the South," is migrating northward. This could become problematic for the Midwest because kudzu is a carrier for Asian Soybean Rust and can serve as an alternative host for this pathogen.

On the positive side, Ziska said plant breeders could start selecting among crop lines for a greater yield response to carbon dioxide in order to meet the needs of a future global population of 9 billion. Δ