Herbicide Discovery: The Search for New Modes of Action. Olena Castello, Cliff Gerwick, Tim Johnson, Paul R. LePlae Jr., William Lo, and Joshua J. Roth, Discovery Research, Dow AgroSciences LLC, Indianapolis, IN

Herbicide-resistant weeds were first reported in the 1950s and the number of weeds resistant to existing herbicides has grown over time. At the same time, Global food demand continues to increase and the regulatory requirements for new agricultural products shift and expand. To address these challenges, one approach Dow AgroSciences is pursuing is the discovery of herbicides with novel modes of action. Using an imidazole carboxylic acid herbicide hit as a case study, the process of herbicide discovery, addressing mode of action concerns, and the optimization of chemical structures will be presented.