Weed-Control Additive (or Adjuvant): North Dakota State University

Farmers can have all the weed control for half the price, thanks to Quad 7™, an additive that increases the pH of spray solutions in order to increase solubility and efficacy of certain herbicides, especially those used on corn, soybean, and sugarbeet crops. That means farmers can use less herbicide still achieve the same weed-free crop results—a feat that cuts weed-control expenditures in half and releases far fewer chemicals into the environment.

Quad 7™ is the culmination of 36 years of agronomy research, led by John Nalewaja, Ph.D., at North Dakota State University. Nalewaja's specialty was weed control, and he became interested in the use of additives, or adjuvants, designed to increase the effectiveness of existing herbicides. Because herbicides must stick to weeds in order to kill them, previous methods of enhancing sticking included mixing petroleum-based oils with herbicides. One of Nalewaja's first discoveries was that oils from the seeds of plants, such as flax and sunflower, were superior to petroleum oils when mixed with certain herbicides. He then discovered that methylated seed oils performed even better.

The patented invention on which the product Quad 7™ is based, however, does not require the use of any oils. A nonionic surfactant, such as an alcohol, keeps the herbicide on weeds; and adjusting the pH of the herbicide spray to be more basic, or alkaline, increases its solubility so that it is chemically more effective. An additional benefit of the alkaline pH is that the herbicide does not precipitate out of solution, a particular problem when using a nozzle to produce a fine spray. The patent, issued in 1997, was exclusively licensed to AGSCO, which introduced Quad 7™ into the marketplace in the spring of 1998. ■

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