Cross resistance of diflufenican-resistant wild radish to picolinafen

Aik Cheam and Siew Lee
Department of Agriculture, Locked Bag 4, Bentley DC, Western Australia 6983, Australia

Summary The herbicides diflufenican (active constituent of Brodal®) and picolinafen (active constituent of Sniper®) both have the same mode of action, targeting the enzyme phytoene desaturase. Following our confirmation of diflufenican resistance in wild radish, we have been asked whether cross resistance to picolinafen exists. Dose-response experiments were, therefore, established to test for cross resistance.

Cross resistance to picolinafen in a population of diflufenican-resistant wild radish was confirmed. Picolinafen at the highest recommended label rate of 50 g ha^{-1}, readily killed the known susceptible population, resulting in few survivors. There were no survivors at the rate of 150 g ha^{-1} which is three times the highest recommended rate. In contrast, at the label rate of 50 g ha^{-1}, 82% of the resistant population survived. At 150 g ha^{-1}, the highest rate of picolinafen used in this study, there was still 27% survival in the resistant population. Based on the LD_{50} ratio, the resistant population was 3.4-fold more resistant to picolinafen than the susceptible population.

This study has clearly demonstrated the first case of cross resistance of diflufenican-resistant wild radish to picolinafen. It is, therefore, important for all farmers and advisers to test for cross resistance to picolinafen in all confirmed cases of diflufenican-resistant wild radish so as to avoid unnecessary control failures.

Keywords Diflufenican, picolinafen, wild radish, cross resistance.