research highlights

HERBICIDE RESISTANCE

Self-preservation

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For the long-term fitness of a population, it is important to reduce the level of inbreeding. However, when faced with extreme threats, there is an advantage for individuals who have genetic resistance to those conditions to mate with others who share that advantage, or even with themselves, to fix such traits in their offspring. Kuester *et al.* have shown that this is exactly what happens in populations of weeds that develop resistance to herbicides.

The researchers investigated 24 populations of the morning glory (*Ipomoea purpurea*) growing as weeds in the Southeastern and Midwest United States in fields where glyphosate herbicide had been applied over a number of years. By genotyping several thousand individuals from these populations, they were able to determine the level of outcrossing/self-fertilization of the wild populations, as well as test their resistance to herbicide. In populations with higher resistance, there was a noticeable increase in self-fertilization.

ZOONAR GMBH/ALAMY STOCK PHOTO

One of the factors that can affect the level of self-fertilization of a plant is its floral anatomy. If, for example, the flower has its anthers and stigmas close together, there is a higher chance of self-fertilization than if they are more distantly spaced. In the highly herbicide-resistant morning glory flowers, the anthers and stigmas were further apart than in only moderately resistant plants. However, the plants with low resistance also had more closely associated floral organs.

Furthermore, this relationship was more marked in plants collected in one year but not significant in plants from another, showing that there are probably multiple mechanisms controlling the mating systems of these plants; any or all of which were responding to the application of herbicide.

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