

How will predicted climate change affect weed biocontrol in New Zealand?

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By 2090, New Zealand (NZ) is predicted to be around 2°C warmer, on average, than in 1990. Rainfall is expected to increase in the west and decline in the east, and extreme weather events may be more common. We report on a recent assessment of the potential effects of these predicted climate changes on weed biocontrol systems in NZ. We conclude that “sleeper weeds” are likely to become problems under future climate change scenarios, and pre-emptive action could be taken, particularly if biocontrol has already been successful overseas. Existing weeds are likely to expand or shrink their geographic ranges under predicted climate change, but we consider that existing biocontrol agents will mostly track the changing distributions of their host plants. Exceptions could occur with existing weed biocontrol systems being affected positively or negatively. For example, the released biocontrol agents for *Pilosella officinarum* do not do well in summer droughts in NZ, so the increased rainfall predicted for inland South Island areas might improve biocontrol of this weed. Conversely, increases in flooding may decrease the effectiveness of biocontrol of alligator weed. Other issues of potential concern include losses of synchrony between weeds and their biocontrol agents, changes in host plant nutrition, and possible increases in non-target effects, but almost all are speculative as we lack data. However, recent studies show that suppression of ragwort by flea beetle, *Longitarsus jacobaeae*, is likely to fail when mean annual rainfall exceeds 1670mm. A preliminary GIS analysis showed increased annual rainfall could cause ragwort biocontrol to fail in some western regions, while suppression of ragwort through biocontrol could be attained in parts of North Island as rainfall decreases.

