



Beetle Banks

Beetle Bank Evaluation

- Soil samples can be taken each season, in mid-winter, from the root zone of the beetle bank grasses to demonstrate the presence of predatory species. Numbers of species and individuals grow over 2-3 years.
- Simple pitfall traps can be laid in the spring, to determine the timing of beetle emergence, and the distance they penetrate into the field.
- Evaluation of plant composition on and off the bank, will let you know if cutting is needed to manage bank grasses, or if bank species are escaping into the field.
- Comparisons of records of pest outbreaks and numbers over time, with fields that do not have beetle banks, may help to determine effectiveness, but *total* impact is difficult to quantify without detailed research. We can say that for high beetle populations to persist, they must be consuming large amounts of prey.



Pitfall traps can be as simple as a plastic drinking cup, sunk into to the ground. The lip must be flush with the soil surface to catch and insects, and the sides must be shiny and clean to prevent escape. Make small drainage holes in the bottom, and add some leaves and stones as shelter, and as refuges from hungry predators!

What Researchers Do!



Construct cages and barriers over and alongside beetle banks, to compare pest numbers in the crop with and without access to the bank, and to different groups of predators.

These experiments quantify the separate roles of plant climbing and soil active generalist predators, and compare these with the contributions made by better-understood predators and parasites, including ladybugs and parasitoid wasps.



The left-hand cage includes wheat plants only, the right-hand cage also includes a section of beetle bank. This permits comparison of pest populations when they are exposed to soil surface predators only (left), or to the soil surface species, and the species that over-wintered in the beetle bank (right). Both cages exclude aerially-active predators and parasites.

Plastic barriers permit access to the plants by flying predators and parasites, while also allowing researchers to manipulate numbers of ground-active, non-flying species.



Beetle banks now extend to tens of thousands of kilometers in European farmland, and growers receive financial rewards for including them within their farm conservation plans. The benefits of beetle banks to predatory invertebrate populations have been repeatedly demonstrated, but (as you can see from these techniques) it is very difficult to precisely quantify the contribution that they make to pest suppression on your farm.

All photo's from Mauremootoo, Jepson, Wratten and Joyce (in prep.). The results will be analyzed in winter 2003.