Messages from SAFFIE - modified weed control strategies to enhance biodiversity

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Aim: To increase abundance and availability of 'beneficial' weed species in winter wheat to benefit birds and insects, without impairing profitability.

Weeds as a food source for insects and birds can increase biodiversity. Certain weeds can be tolerated in winter wheat.

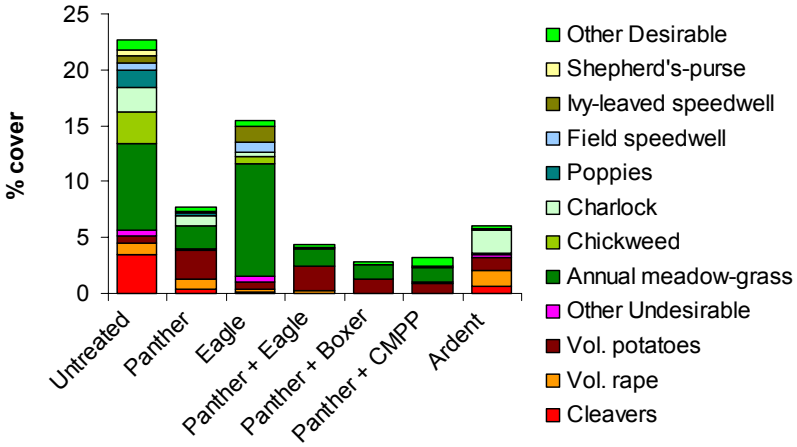
Method: By altering herbicide programmes – varying product selection to allow beneficial weed species to remain below a yield-threatening threshold. However, choosing appropriate herbicides is a challenge in the presence of resistant black-grass or pernicious weeds like cleavers. Although, later-sowing has incidentally reduced black-grass numbers.

Weeds can be put in to these Groups: beneficials, and undesirable with most other species not listed below considered neutral.

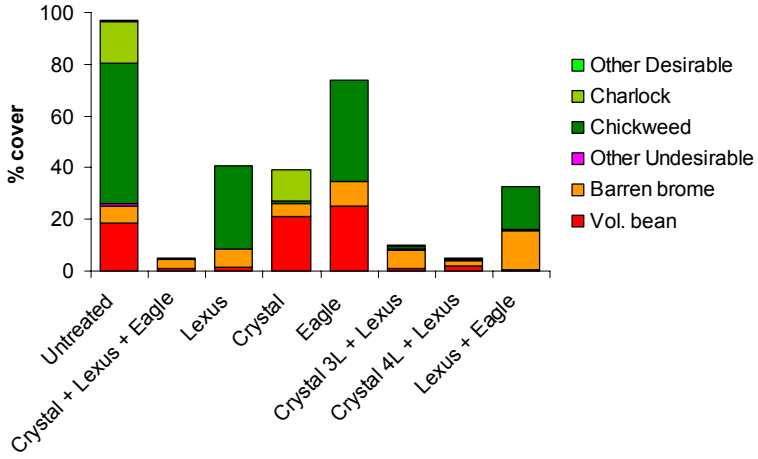
Very desirable	Desirable	Undesirable
Annual meadow-grass	**Fumitory**	Black-grass
Black bindweed	**Groundsel**	Broad-leaved dock
Charlock	**Mayweeds**	Bromes
Chickweed	**Mouse-ear chickweed**	Cleavers
Fat hen	**Pansies**	Couch
Polygonums	**Sowthistles**	Creeping thistle
Wild radish		Rye-grasses
		Crop Volunteers
		Wild-oats

Some early results and interim findings:

- You can leave desirable weeds with different herbicide programmes. However results will vary between fields and years.
- Topik, Lexus and 30 g/ha (¾ rate) Eagle have left chickweed, but Lexus controlled volunteer beans.
- Single herbicide programmes left more beneficial weeds than sequences.Of those chemicals tested, 30 g/ha Eagle left the greatest variety of beneficial species including polygonums, meadow grasses and chickweed, but controlled cleavers, charlock and volunteer rape.
- Leaving desirable weeds often leaves undesirable species also, and so is at the expense of overall weed control. So see what weeds exist or are expected and tailor your herbicide programme accordingly.
- Some species are less competitive and so less likely to affect yields if not controlled.
- Finally beware weed resistance, particularly in black-grass. A good weed resistance strategy may lead to a reduction in desirable weeds, e.g. by the use of Crystal.



The above is an example of what different herbicides left in wheat at High Mowthorpe site in 2003.



The above is a good illustration of using different herbicides at Boxworth in 2004 resulting in different weeds being left in the crop.

Weeds Impact on Yield

Yield is not always linked to weed cover – some species are less competitive as can be seen from these results from Boxworth in 2004: