Beetles you can bank on

Beetle banks on agricultural holdings have been around since the '80s. Primarily the preserve of large-scale cereal growers, they have recently become more common since agri-environment schemes have paid for them. It is unfortunate that they are so rare on organic holdings especially those that grow vegetables, but growers tend to be wary of the complication factor and the loss of cropping space. This is a pity as the use of beetle banks can pay back handsomely in pest control benefits, adding significantly to wildlife populations and can look extremely attractive too. We have been using them at Hardwick for almost 20 years and have seen the number of wildlife species grow steadily over that time, in particular birds, serving as a great indicator of increased biodiversity.

The beetle banks at Hardwick are placed strategically at the junctions of the rotational plots, marking the boundaries of the areas and ensuring no overlap of same-family groups. In general, they are 2m wide and typically around 150m long, in accordance with the length of the field rows. They are around 50m apart for our rotational plots of 0.7 ha each. This is an ideal distance, as it encourages the beneficial insects to move out to the crops when they are needed. We also use them as field margins, which have become very diverse and popular with wildlife. Beetle banks are able to connect your cropping area directly to hedges and any wild area surrounding your field and also have the effect of creating smaller field sizes without the disadvantage of reducing your working area considerably. The loss of land allowing for the 2m of beetle bank and a weed free strip each side amounts to less than 10% of cropped area. I consider this a price well worth paying due to the reduced pest problems we have encountered. There is an additional benefit in that BBs accumulate a large reserve of permanent carbon that will offset some of your carbon footprint.

Photo: Phil Sumption

Beetle bank at Tolhurst Organic

Traditionally, beetle banks were created by ploughing the land in opposite directions, using two passes to create a definite raised bank. However, I've not found this to be appropriate in small fields, as it could result in a ploughed trench either side of the bank possibly complicating tractor operations. We do all ours on the flat.

There are two ways to establish them:

1. Natural regeneration

Do nothing apart from leaving a strip of land uncultivated and see what grows. Initially this may look like a weedy strip of bad husbandry but give it a year or two and you may be surprised at what materialises. A lot depends on your soil's inherent weed seed bank. In time some of the annual weeds will disappear as more resilient perennial plants become established along with some annuals that need the presence of the taller species. After several seasons, the strip will reach a natural equilibrium and become rich with floral diversity. Our land is calcareous and contains a broad spectrum of flora; this may not be the case on heavier, more acidic soils.

2. Sowing in situ

Sow a specific mix of wild flowers and grasses. These must be of indigenous types, so you will need to find out more about the natural flora of your soil type and area. Wild flower books are good for ideas. Chances are that if your land has been under intense cultivation for a long period of time you will have lost a lot of the original seed bank, so natural regeneration may not be effective.

I have tried using a Cotswold Seeds wild flower mix suitable for my soil type, containing around 20 different species; however, I have never been able to identify more than around 10 survivors so clearly some species may not be suitable. Do not include strong growing legumes as they will over-shadow the annuals unless in very small proportions. Dwarf white clover and trefoils are suitable. I have avoided grasses as we seem to already have a wide range of species within the soil seed bank. I have on occasion used Cocksfoot which produces very tough tussocks, and I suggest this is a good type to include if your site is suitable. Several seed companies do specific beetle bank mixes and that may be the easiest option for some growers, who just want to see how it will work out on a first attempt. However, most of them are grasses only and you still need to add some wild flowers for full effect. Some perennials are

essential, and try to ensure a range of plant heights too. Chicory is wonderful when it is in full flower and keeps finches stuffed to the bill with seeds almost all winter.

The method of establishment is the same as for natural regeneration; create the seedbed and sow at the rate of around 1g/m2. For a 100m long strip you will need 200g. This seems like a very small amount of seed, but many flowers are small seeded and they need space if they are not to choke each other. I have found that the best time to sow is late summer as this would be the natural time that the plants shed their seed, and even up to mid-September is OK, as germination will take place before winter. However, sowing can take place at anytime from mid-spring, and it may be useful to have a variety of beetle banks at different stages of flowering for maximum effect. You may initially be disappointed with how it looks by the end of autumn. Many wild flowers are not easy to identify at the seedling stage. We have less experience of them compared to 'normal weeds' so it may not look as if much is happening apart from a mass of chickweed and whatever else your soil delivers. Some species may need a period of frost to vernalise. You will need to wait at least until mid-April to see what is really happening with your seedlings. By then they will be growing strongly and leaving the chickweed and other weeds behind. Flowers will begin to appear from the end of April and should, depending on your choice of species, continue to the end of summer.

Maintenance

Maintenance of beetle banks is negligible, but make sure that you rogue for docks if they are a problem on your land. We try to cut them down before they set seed. Other than that the banks will look after themselves for many years. The longevity of the beetle banks will vary depending on your site and what has managed to grow from your initial sowing. Gradually, as time goes by, most of the annuals will die out to be replaced by stronger growing perennials. In my experience, this begins to happen from the third year onwards. This is the natural evolution of the floral opportunity that you have created, and it is very interesting to see how nature exploits the situation. In our case, the governing factor as to how long a beetle bank will last seems to be how long we can manage to keep it from reverting to forest. Trees become established, cunningly they creep in when the perennials are tall, and you tend not to notice them until they begin to wave at you in the wind. We have several beetle banks over 15 years old that are still producing masses of wild flowers, and in some ways they are far more effective than newly sown ones as they have flowers for the whole of the summer. They become quite coarse and rampant, especially if some nettles get into the mix. The latter are particularly good at attracting beneficial insects. So providing that you can maintain a diverse mix of species, just leave them alone.

I have never found it necessary to mow off beetle banks. There is a theory that you mow in the spring and remove the mowings to allow new seedlings to develop. This may well be true but at some point, we may wish to return a beetle bank to active crop production and removing fertility would not be in our interest.

A black ground beetle - Pterostichus melanarius.

Photo: Sarah https://www.flickr.com/photos/dlwogs/ (CC 2.0)

I have only needed to destroy two beetle banks and they can take a bit of getting rid of. The best way is to mow tight, power-harrow about 70mm deep and repeat several times at bi-weekly intervals going a little deeper each time. You will have a wonderfully fertile strip of land and several years of interesting weed seedlings coming up, different than anywhere else on the farm. You can either re-sow on the same site or create a new strip next to the old one while you are cleaning it up.

So give it a go. It's really not that much effort and you will be rewarded by their beauty, function and birds all winter long! Just make sure you take time out to have a close look at them occasionally and you will be amazed at what goes on beneath the understory of a beetle bank. Heaps better than any hedge fund!

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