



The Vegan-Organic Network

The Vegan Organic Network is a registered charity (registered charity number 1080847), providing education and research in vegan-organic principles and has an international network of supporters. VON supporters enjoy a wide variety of contacts and can obtain advice on cultivation techniques. The magazine *Growing Green International* is sent to supporters twice a year. For more information and details of how to join, please contact:

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Vegan-Organic information sheets

This is one of several sheets produced on various topics by the Vegan-Organic Network. These are aimed mainly at those with allotments, kitchen gardens or other small growing areas, although many of the techniques will also apply to larger-scale situations. We welcome feedback on this information sheet and any other related topics. The information sheets currently available are: #1 Propagation and Fertilisers; #2 Growing Beans for Drying; #3 Growing on Clay Soils; #4 Vegan-Organic Growing - The Basics; #5 Fungi - FAQ; #6 Gardening for Wildlife; #7 Growers' Guide to Beetles; #8 Green Manures; #9 Chipped Branch-Wood; #10 Composting.

These are available on request. Please send £5.00 per set, or 60p each (£6 and 75p respectively if outside the UK). The sheets are also available free on our website.

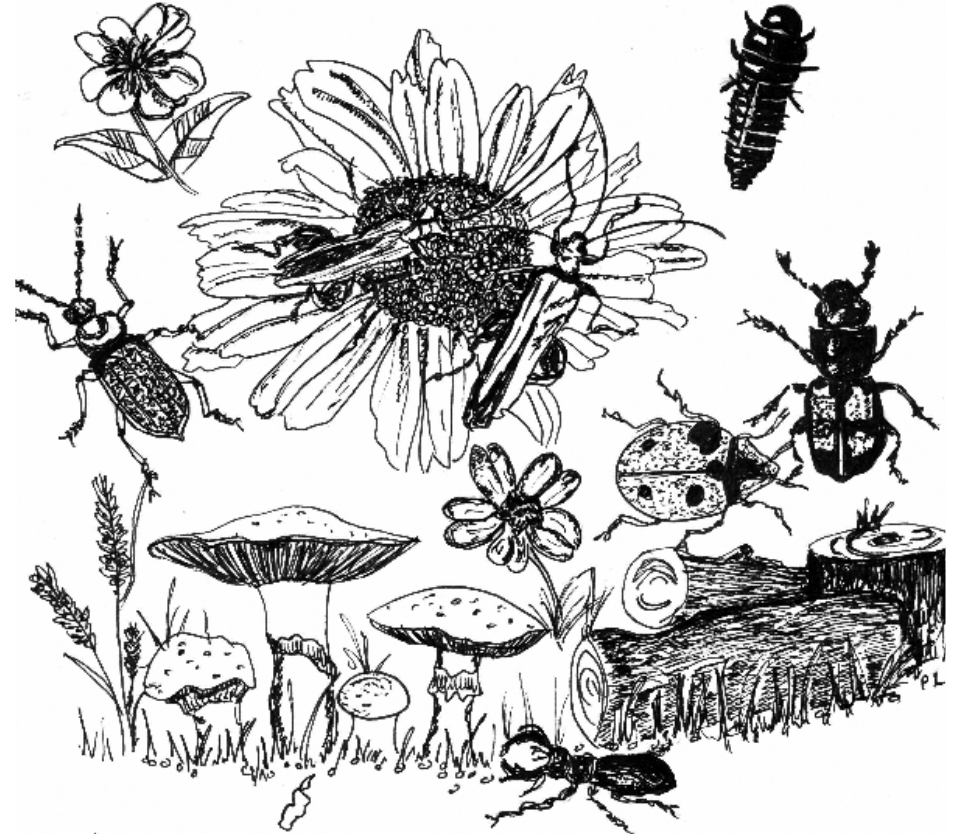
Issued March 2005. This advice is given as guidance only, with no responsibility for any results, due to the nature of the processes involved!



Vegan-Organic Information Sheet #7 (60p)

Growers' Guide to Beetles

By Pauline Lloyd



*How we can benefit
from beetles!*

Growing with concern for people, animals and the environment

Organic growing involves treating the soil, the growing environment and the world environment as a resource to be preserved for future generations, rather than exploited in the short term. Vegan-organics means doing this without any animal products at all, which is not difficult when you know how. *All soil fertility ultimately depends on plants and minerals - these do not have to be passed through an animal in order to work.* Fertility can be maintained by plant-based composts, green manures, mulches, chipped branch wood, crop rotations and any other method that is sustainable, ecologically benign and not dependent upon animal exploitation.

The guidelines below do not attempt to be fully comprehensive. *The extent to which you adhere to any system really depends on you, your conscience and circumstances.* We can only do our best with our available time and money. The Vegan-Organic Network has now published comprehensive Stockfree Organic Standards, which are available to commercial growers and can also be used as a reference for home growers. Of course, no one person or organisation knows everything about the subject, so constant co-operation and updating of ideas and information is needed.

Whilst conventional cultivation relies on synthetic chemicals and animal products, traditional organic production also generally relies on animal wastes and by-

products. Both involve the exploitation of living creatures, and the inefficient use of land, water and energy resources. Vegan-organic methods minimise these drawbacks. Many people who are not themselves vegan or vegetarian are coming to appreciate that animal-free growing is the most sustainable system: it is the future of organics.

Beetles have existed on our planet for over 200 million years. They live in virtually every type of ecosystem: on sandy heaths, on marshy or wet ground, on trees and shrubs and even on decomposing plant or animal material. Beetles can be very useful to the vegan-organic grower, consuming slugs, snails or caterpillars. But they can also compete for resources, attack crops and cause much damage to plants, furniture and buildings. In this information sheet I am going to describe the main groups of beetles found in the British Isles and mention some simple things that you can do to encourage more beetles to come onto your land.

Ladybirds (Family *Coccinellidae*)

Ladybirds are of great benefit to the vegan-organic gardener, forester and farmer alike, consuming vast numbers of plant-sucking bugs that might otherwise damage crops. Adult ladybirds and their larvae feed mainly on aphids, but some species will eat red spider mites, scale insects, mildew or plant lice instead. The two-spot ladybird often overwinters in

Books

Readily available handbooks, which are not wholly vegan but provide good vegan alternatives are: *The Organic Bible* by Bob Flowerdeew (ISBN 1856265951) and *The New Organic Grower* by Elliot Coleman (ISBN 093003175X).

Weeds by John Walker is an earth-friendly guide to tackling weeds and making good use of them. Published by Cassel (ISBN 1 84403 061 X).

The following books are available from The Vegan Society, Donald Watson House, 7 Battle Rd. St Leonards-on-Sea, East Sussex TN37 7AA. Tel: 01424 427393. www.vegansociety.com/shop:

Abundant Living in the Coming Age of the Tree by Kathleen Jannaway (ISBN 0951732803) – towards a vegan, self-sustaining tree-based culture.

Forest Gardening by Robert A de J Hart (ISBN 1900322021) – turn your garden or allotment into a vegan-organic, permaculture-based mini-forest.

Permaculture: A Beginner's Guide by Graham Burnett – apply the principles of sustainability and working with nature to your land, your community and your life.

Plants for a Future by Ken Fern (ISBN 1856230112) – pioneering book that takes gardening, conservation and ecology into a new dimension. Information about growing edible and other useful plants.

The Animal Free Shopper (ISBN 0907337252) – The Vegan Society's guide to all things vegan includes a section on garden products.

Seeds and Supplies

The Organic Gardening Catalogue, Riverdene Business Park, Molesey Rd, Hersham, Surrey KT12 4RG, UK. Tel: 01932 25366. www.organiccatalog.com. Seeds and products such as fertilisers and compost listed as organic and animal-free.

Suffolk Herbs, Monks Farm, Coggeshall Rd, Kelvedon, Essex CO5 9PG. Tel: 01376 572456. www.suffolkherbs.com

Chiltern Seeds, Bortree Stile, Ulverston, Cumbria LA12 7PB. Tel: 01229 581137. www.edirectory.co.uk/chilternseeds. Wide range of seeds including uncommon and unusual vegetable varieties.

Tamar Organics, Unit 5A, Westbridge Trading Estate, Tavistock, Devon PL19 8DE. Tel: 01822 834887. www.tamarorganics.co.uk. Excellent organic seed supplier.

all insects, so it is far better to rely on the usual suggestions if you can.

The Colorado beetle is one to avoid! It is a serious gobbler of potato foliage and came to Europe from America, becoming well established by the 1920s. Its stripy body is easy to recognize; you are

unlikely to find it in gardens or allotments in the UK and Ireland, but if you do then notify the Ministry of Agriculture. It is a serious problem in much of mainland Europe.

The traditional remedy for an attack is to simply pick off the beetles by hand.

Sources

Field Guide in Colour to Beetles by K W Harde (Blitz, 1998).

Arable Stewardship Agronomy Note, Beetle Banks (Option 4B). Contact Will Foss (the FRCA Project Officer for Anglia) for further information. Tel: 01223 455800.

Integrated Pest Management: Beetle Banks - Helping Nature to Control Pests. N W Sotherton (Pesticide Outlook, December 1995).

Beetle Banks – Farming matters – The Practical Biodiversity Project in association with The Hampshire and Isle of Wight Wildlife Trust.

Organisations

HDRA, Ryton Organic Gardens, Coventry CV8 3LG. Tel: 024 7630 3517. www.hdra.org.uk Demonstration gardens and education centre at Ryton, which is presently being expanded. Some of their advice is based on animal products but this can be adapted. Members receive a quarterly magazine, *Organic Way*.

Movement for Compassionate Living, 105 Cyfyng Rd, Ystalyfera, Swansea SA9 2BT. Tel: 0845 4584717. www.mclveganway.org.uk. MCL produces a quarterly magazine, information and books on cultivation, cooking, etc., emphasising locally grown food and cruelty-free sustainable methods, especially the growing and use of trees.

Plants for a Future, Blagdon Cross, Ashwater, Beaworthy, Devon EX21 5DF. Tel: 01208 872963. www.pfaf.org. Researching ecologically sustainable vegan-organic horticulture; an excellent resource and information centre. The website contains much useful information.

Spiral Seed, 35 Rayleigh Avenue, Westcliff-on-Sea, Essex SS0 7DS. www.spiralseed.co.uk. Have publications, vegan-organic information and ideas including lots on vegan permaculture, very useful as most 'permaculture' involves animal exploitation. The website is a mine of information.

houses so do look out for it in the corners of your window frames, underneath your windowsills etc. A single two-spot ladybird larva is thought to consume 350-400 aphids throughout its larval development, which gives you some idea of just how useful ladybirds can be as predators! You may also come across thirteen-spot, ten-spot, seven-spot and four-spot ladybirds.

Ground Beetles (Family *Carabidae*)

Purple ground beetles eat lots of slugs here are 364 species of ground beetle living in the British Isles. On the whole gardeners tend to welcome ground beetles because they feed chiefly on slugs, snails, caterpillars, grubs and other insects that can be harmful to garden flowers and vegetables. Despite their name though, not all species of ground beetle live entirely on the ground. Some species can climb up trees where they feed on the caterpillars and pupae of certain moths. In North America *Calosoma Sycophanta* has been deliberately introduced in order to control such moths, whereas in the British Isles the closely related species, *Calosoma Inquisitor*, inhabits oak woods where it performs a similar function. Carabids are another important group of ground beetles, often being eaten by birds of prey and owls.

But not all types of ground beetle are good news for the vegan-organic grower and two species of ground beetles that you should certainly watch out for are *Harpalus Rufipes* (the Strawberry Seed

Beetle) and *Pterostichus Melanarius*. Both are carnivorous, the latter consuming caterpillars, but they also like to eat seeds and can seriously damage strawberry crops by feeding on the little seeds (acini) on the surface of ripe strawberries. Another rare ground beetle that can cause problems for growers is *Zabrus Tenebrioides*, which can be a serious pest of cereal crops such as wheat and rye.

Soldier Beetles (Family *Cantharidae*)

These rather thin beetles have a soft cuticle and are often found on bushes and flowers (e.g. thistle flowers or cow parsley) in large numbers in the summer, seeking out small insects to eat, or mating on the flower heads. They prey on insects but can also damage young oak shoots by gnawing them. Their larvae are of especial value because they feed mainly on slugs and snails and can be found living under stones and in fallen leaves and moss.

Carrion Beetles (Family *Silphidae*)

Twenty species of these rather large, flattened beetles live in the British Isles. They often live on carrion, but some are predators and others live on decaying plants. *Dendroxena Quadripunctata*, for example, hunts caterpillars on trees and bushes whereas the Black Carrion Beetle, *Silpha Atrata*, eats snails.

Rove Beetles (Family *Staphylinidae*)

There are 994 species of this large family of beetles living in the Britain. They are

mostly able to fly and have well-developed membranous wings. Most rove beetles are predators, although some feed on decaying plant matter, or are parasites on other insects. Quite a few species of rove beetle live in compost heaps and others live in damp ground litter, or in mushrooms. The brightly-coloured beetle, *Lordithon Thoracicus*, is often found in large numbers on mushrooms and on tree fungi and you may also come across the large black beetle, *Ocypus Olens*, hiding under wood or other objects in your garden. Its bite can be quite painful, so do watch out for those jaws! The Devil's Coach Horse is the largest British rove beetle and is usually found near dung or anthills, but it is common

in gardens where it will hide amongst leaf litter or under logs during the day. When threatened, this long thin beetle curls its abdomen over its body in a scorpion-like posture and emits a horrible smell! It's a nocturnal scavenger, feeding on insects such as spiders, caterpillars and earwigs and dead animals and its larvae are also carnivorous, making it an important predator.

Click Beetles (Family *Elateridae*)

These beetles have a characteristic spring device between their first and middle thoracic segments. Their larvae are known as wireworms and they can do serious damage to root crops such as potatoes, riddling them with tunnels.



Beetle bank: a strip of wild grass and flowers between crops

taking over and to encourage a dense, tussocky sward to form. Use hand-held equipment or a tractor-mounted mower (you will need to use offset equipment or straddle the beetle bank to avoid damaging it) with the cutting height set at 20cm. In the first year cut once before the end of March and once or twice more between mid-July and September after birds have finished nesting. In subsequent years, only cut to prevent suckering or woody species encroaching, perhaps every 2-3 years and avoid cutting during the bird-nesting season (mid-March - mid-July).

- If possible leave a 1m strip of bare earth between your beetle bank and your crop. This will prevent the crop from encroaching onto the beetle bank and also prevent weeds from spreading from the beetle bank into the crop.

Other Benefits of Beetles

Beetles are thus important predators, helping to control many garden competitors such as slugs, snails, caterpillars and aphids. But in addition, beetles and their larvae are an important source of food for many of our larger birds and mammals. They are eaten by badgers, foxes, hedgehogs and toads and by many birds such as tree pipits, redstarts, wrens, green woodpeckers, jackdaws, nuthatches, tits and tree creepers. You will also often see rooks, magpies and black-headed gulls searching for cockchafer grubs in fields. Beetles are also useful because they help to break down larger organic matter, aer-

ate the soil and some even act as pollinators in much the same way as bees.

When the beetles compete

So what do we do when the beetles compete with us for our precious crops and plants?

First of all it is important not to over-react! Conventional gardeners and even organic gardeners reach for some sort of spray or repellent at the first sign of damage, but beetle damage is often minimal and confined to the early stages of growth, plants that are growing in reasonable soil generally grow through any problems.

Apart from the suggestions mentioned above under individual types of beetle, the steps to take are mainly preventive:

- Ensure good fertility in the soil; healthy plants will grow quickly and strongly and will be much more resistant to attack. Water in dry weather.
- Sow in succession; flea beetle attacks diminish as the season progresses.
- Sow extra of your chosen crops; this will allow for losses due to all pests and diseases if they do take hold, and the effects of unsuitable weather.
- Rotate crops, especially members of the brassica family.

Organic repellents and treatments are available from organic suppliers if you choose to use them; substances such as soft soap are not specific and can harm

7. Planting a hedge will provide beetles with shelter. At the base of the hedge sow grasses such as Cocksfoot and Yorkshire Fog, as these will provide somewhere for beetles, spiders and other beneficial insects to spend the winter.

8. Your compost heap could be the ideal home for beetles, what with the warmth and all that decaying vegetable matter what more could they wish for? So, if you are not doing so already, then get composting. It won't just be the beetles that benefit from all the home-produced compost - your crops will love it too!

9. Finally, on bigger plots of land you could make one or more beetle banks. Beetle banks provide many predatory insects and spiders with somewhere to spend the winter and in the spring they can move out into the crop and feed on any pests. Such beetle banks can contain up to 1,500 predators/square metre and in addition they may be used by grey partridges and skylarks for nesting and are the perfect habitat for field mice. You may even be able to obtain payment for constructing your beetle banks under the Countryside Stewardship Scheme.

Constructing a Beetle Bank

What is a beetle bank? A beetle bank is essentially a large ridge that runs the length of a field. It has most of the benefits that would be provided by a hedge and provides dense grass cover. Bear in mind that if your field is large in size, or

if tussock forming grasses and hedges are absent around the perimeter, then you may need to construct more than one beetle bank. As a rough guide a 20-hectare (50-acre) field will need one or two beetle banks and fields of over 30-50 ha (75-125 acre) three or four. When constructing beetle banks the aim is to make sure that no part of the field is more than 200m away from a grassy boundary or beetle bank.

- The best time of the year to construct a beetle bank is during autumn cultivation. Use two-directional ploughing to create a ridge of earth 2-3m wide and about 40cm high (it may need to be of a lower height on lighter soils, but as long as the ridge is free-draining, then this is acceptable). Leave a gap of about 25m at each end of the field so that farm machinery can pass by without damaging the ridge.

- Sow the ridge with grass seed mixture, either just after creating it or in the following spring. (Avoid sowing in spring if moisture will be lost through the winter as this could affect germination.) The mixture should include both tussock and mat-forming grasses. A suitable grass seed mixture for autumn sowing would be 7 kg/ha of Cocksfoot (*Dactylis glomerata*), 5 kg/ha of Chewings Fescue (*Festuca rubra*) and 4 kg/ha of Timothy (*Phleum pratense*). If sowing in the spring increase the seed-sowing rate to 10, 6 and 5 kg/ha respectively.

- In the first year you will need to mow your beetle bank to prevent annuals from

They can also attack the roots of lettuce and cereal crops, causing the plants to wither and die. Spring wheat, oats and sugar beet are the most likely crops to be affected. The adults lay their eggs on the surface of the soil in May and June, but egg-laying can be reduced by keeping the ground free of grass and weeds in mid-summer. If wireworms start attacking your crops, then try this simple solution: make a small pile of cut grass or clover and examine it 3-4 days later. You will probably find that it contains a large number of wireworms and these can be collected up and disposed of elsewhere.

Flea Beetles (Family *Chrysomelidae*)

Flea beetles are a type of leaf beetle and farmers and growers fight a constant war against these beetles, which can very quickly destroy a crop. They like to attack brassicas such as oil seed rape, cabbages, turnips and swedes and these can be badly damaged between April and August. The leaves of seedlings are especially vulnerable to attack by hungry beetles just emerging from hibernation, whereas, the larvae eat the insides of cabbage stems as well as the roots and the leaves of the plants. Flea beetles have enlarged hind legs and can jump great distances just like fleas.

Weevils (Families *Bruchidae* and *Curculionidae*)

This group includes the bean weevils which lay their eggs on ripening bean and pea pods. After the eggs hatch the larvae

penetrate the pod and bore into the seed where they complete their larval development. The adult beetles usually emerge from the peas and beans after they have been harvested and stored.

The Apple Blossom Weevil (*Anthonomus Pomorum*) is a true weevil or snout beetle. The female lays her eggs on the buds of apple trees in spring, causing the buds to go brown and look like they have been touched by frost. Fruit is not usually formed and this weevil can devastate orchards, attacking pear as well as apple trees, as can *Anthonomus Cinctus*. The related Strawberry Blossom Weevil (*Anthonomus Rubi*) lives chiefly on raspberries, blackberries and strawberries. But don't confuse this beetle with the brownish-grey Raspberry Beetle whose larvae also live in ripe raspberries and gorge themselves on the ripening fruit.

Other weevils that may be of interest to the vegan-organic grower include *Apoderus Coryli* and *Curculio Nucum*, both of which can damage hazels.

Stag (Family *Lucanidae*) and Longhorn (Family *Cerambycidae*) Beetles

Stag beetles (*Lucanus Cervus*) are commonly found in, or on, rotting timber and often lay their eggs on logs or tree stumps, oak being especially popular. The larvae spend about three to five years eating the rotting wood, then when they are full-sized they pupate in a small chamber in the wood. Stag beetles are commonly seen flying around at dusk in southern England. The male stag beetle

is Britain's largest beetle, but despite its ferocious appearance it is quite harmless, although the female of this species is quite capable of giving you a nip! The Lesser Stag Beetle (*Dorcus Parallelipedus*) has a similar lifestyle, but prefers decaying tree stumps of beech, elm or ash. The larvae of Longhorn beetles such as the Variable Longhorn also live and pupate in wood, but the female of this species prefers to lay her eggs on the rotting tree stumps of sour cherry, ash and sallow.

Dung Beetles and Cockchafer (Family *Scarabaeidae*)

Cockchafer: Feeding on crop roots, the larvae of the cockchafer (commonly known as the Maybug) can be serious pests of farm and garden crops, especially of cereals and soft fruits. These white grubs can cause great damage in years where females lay large numbers of eggs and can destroy whole meadows, cornfields or potato crops. The adult beetles feed on the leaves of deciduous trees and when many cockchafers are in flight then trees can be stripped bare. This nocturnal beetle is rarely seen during the day, but will sometimes fly into a lighted room at night through an open window, announcing its presence with an angry buzzing noise.

Dung Beetles: As their name suggests dung beetles eat dung - cow dung, sheep dung, rabbit dung and horse dung. In fact almost any sort of dung that you can think of and the fresher the better! Indeed without these important beetles we

would soon be completely taken over by the stuff. This group of beetles may not be of too much interest to the stockfree grower. But, I'll mention them briefly here because some kinds of dung beetle will eat human dung and others live in compost heaps, on decomposing vegetation and on decaying fungi and so you may well come across them in your veganic garden. Common British dung beetles include the Dor beetle (*Geotrupes Stercorarius*) which has a strong preference for cow and horse dung. And the Horned Dung Beetle (*Copris Lunaris*) which is easy to recognize with its long, sharp horn and is most commonly found living under fresh cow dung in the south-east of England.

The Beetle-Friendly Plot

There are many simple things that you can do to encourage beetles to live in your garden:

1. First of all don't keep your garden too tidy! For example, when the leaves start to fall off the trees in the autumn, don't rush out and sweep them all up - leave a few piles of fallen leaves for beetles to hide in, but keep the area around your tender plants clean, otherwise you may encourage slugs! Hedgehogs may decide to hibernate here, too.
2. Create a woodland area in your garden and mulch the ground beneath the trees, with leaf mould, vegetable compost, fallen leaves or wood chips. If pos-

sible include some decaying wood to encourage woodland floor species of beetle such as Longhorn and Stag beetles to lay their eggs here. Both their larvae and the larvae of solitary bees will use this dead wood as a source of food throughout their development. Provide a mixture of decaying wood in various sizes as this will attract a wider range of beetle species - beech, oak, ash, elm and pine are all suitable for this purpose. Place your pile of decaying wood in a reasonably shady place, as many deadwood species don't like full sun.

3. If you have to cut down old trees, another possibility is to leave the old tree stump intact in the ground. You may find that female Stag and Longhorn beetles lay their eggs on it.

4. If you haven't got room for a woodland area in your garden, then you could try building a log pile instead. Beetles will soon make it their home and underneath

a log pile is a good place to put your hedgehog house. Hibernating Small Tortoiseshell butterflies and queen bumblebees may also use it and if it is not too damp, then ladybirds may hibernate in the crevices.



Stephane Groiseau

Beetle bank - a strip of calabrese left growing after the end of the harvest

5. Install a pond in your garden. Water beetles such as the Great Diving Beetle and the Great Silver Water Beetle will soon colonize it. Remember to add some water plants to your pond, as adult water beetles are often vegetarian even though their larvae feed on aquatic insects. A marshy area next to the pond may attract beetles that like to live in damp conditions.
6. Ever thought of growing mushrooms on logs? Many kinds of mushrooms (e.g. shiitake) can be grown in this way and both the logs themselves and any decaying mushrooms could attract more beetles into your garden. See information sheet #5 - Garden fungi.