



Vegan-Organic Information Sheet #3 (60p)

Growing on Clay Soils

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.

A sticky problem

When you are trying to dig your heavy soil on a wet October day and your wellies stick fast in the ground, thoughts of abandoning your task can be forgiven, but take heart for clay soils can be very rewarding.

Heavy soils are often classified as difficult, however, when worked with care they can be as productive as any other, with no more effort involved. In fact, clay retains moisture and nutrients better than any other soil type and is well suited to cultivation by vegan-organic methods. Of course, not all clay soils are the same, some being more open while others are really solid, seeming only fit to make bricks out of; nearly all clays will, however, respond to the following techniques. It is possible to estimate the amount of sand, clay and loam present in a given soil sample by mixing a little in water in a bottle and allowing it to settle, the three elements will separate into layers, however, the improvement methods are generally the same whatever the make-up of the particular soil.

Improving the soil

The standard recommendations for improving clay soils are: try to improve drainage, add as much organic stuff as possible, judiciously add lime or calcium, and dig in autumn. All these ideas are worthwhile.

The following suggestions are based on the experience of VON members around the UK, and generally assume that the growers will dig the land. No-digging methods are certainly possible on clay but will probably be found more difficult than

on lighter soils. It is always best to cultivate with as little deep digging as possible. Standard rotations including potatoes mean that deep digging of sections need be done only about every three or four years at most. Harvesting crops and deep loosening of the top six inches or so with a fork will keep the soil aerated and the organic material at the top, without the excessive disturbance of deep digging.

An excellent way of improving the ground is to use the bed system: create long beds 4 to 5 feet wide with narrow paths in-between. Make the width of the beds narrow enough so that you can reach to the middle from each side. Digging and the addition of organic material will raise the beds so that drainage will improve. Once the beds have been made, do all cultivation except perhaps for digging, from the paths to avoid compaction. Vegetables can be sown rather closer than with open cultivation.

The drain game

With drainage schemes, careful evaluation of the land and its surroundings is needed before expending a lot of effort, so consult a handbook first: making a soakaway pit is often recommended but you must first ensure that the ground and water table will allow the water to drain out of the pit. It may be best to just wait for the land to drain itself in spring and

be prepared to lose some winter crops if the land becomes very wet.

Vital organic material

If we are not using animal waste in our cultivation, then it is simply necessary to add as much plant stuff as possible to the soil; this can be compost, grass clippings, spent hops, comfrey or whatever and the more the better.

The use of green manures can be a great help, preferably those that fix nitrogen in the soil. Clovers do not seem to thrive in heavy soils, which is a pity because they are amongst the most useful green manure crops. Try mustard, alfalfa, phacelia, field beans or winter tares; the last two will fix nitrogen in the soil. Alfalfa in particular is deep-rooted and will bring up nutrients from the subsoil.

One of the best ways of improving all soils is the addition of chipped branch-wood (ramial chips) which are the shredded young growth of trees and shrubs; this is a longer-term method which works very well indeed - see Information Sheet No. 9 for details.

Time for lime?

Clay soils are sticky because they consist of very fine particles made up of plate-like crystalline minerals which bond closely together; adding lime or

some form of calcium can make these particles bond more loosely, improving the texture and drainage, but this depends on the existing mineral mixture of the soil. Fertility can also be improved by rotational liming.



**Green manure lucerne (alfalfa)
grows well in heavy soils.
Drawing by Jenny Hall.**

Lime and calcium may not necessarily make a noticeable improvement, however, and must not be overdone; they are not a substitute for ample organic material in the soil. Lime is mainly a remedy for acid soils. Carry out a Ph test with one of the cheap kits available at garden stores to find the acid/alkaline balance of your soil and to see if lime is needed; even clay can be alkaline. Ground limestone or dolomite can be added as advised on the packaging, but err on the cautious basis. It is possible to add a little limestone even where the soil is more or less neutral, or where the Ph is not known. To add calcium without changing the Ph,

spread about half a pound of gypsum per square yard. Generally these additions should not be made more than every three or four years.

Not all organic growers favour the use of limestones, as they are not a renewable source.

Adding sand or grit will open up the soil but this is not usually practical because of the amount needed; a layer at least 2 inches deep must be

dug in over the whole area.

Choose your moment

Timing is all-important for working the soil. Dig in autumn but before the land becomes too wet; do not try to break down the clods, as the winter weather will do this for you. The time to prepare seed beds is even more critical: clay is easy to break up in spring when it has dried hard and then

been drenched by plenty of rain, but before it has dried again. So keep a careful eye on your soil and be ready to leap in with your rake. It is not much of a problem if you cannot prepare seedbeds very early in spring as clay is slow to warm up and you should sow most seeds rather later than average to ensure germination - the plants usually catch up.

What should we grow?

Some types of crop are theoretically more suitable than



Digging in clay soils can be backbreaking work

others on clay, but all the usual varieties can and should be tried. For example, the parsnip variety Tender and True is not recommended for heavy soils but we find that growing them at 4-inch spacings produces a good crop; a proportion turn out forked or stumpy but plenty of good roots come up.

Leeks and potatoes usually do well; you can try a variety of potato which is recommended for clay, such as Sharpes Express (early) or Kerr's Pink (maincrop). We have found Desiree to be an excellent tasty maincrop variety; it is prone to powdery scab in wet soils so harvest in early September. Early harvesting of maincrop potatoes can also avoid the ravages of blight, slugs, and wireworm. Brassicas generally like heavy soils and we have found kale to be easy to grow; try the varieties Pentland Brig or Dwarf. The dreaded club root, which attacks all brassicas, is worse in acid soils so check the Ph and adjust if need be.

With courgettes, marrows, pumpkins and outdoor tomatoes, avoid the clay problem by digging out a cubic foot of soil for each plant and refilling the hole with compost or a mixture such as half soil, half compost.

Some other points...

Of course, sound cultivation methods must be employed; growing ve-

gan-organically means building up the fertility of the soil. Use liquid nettle feed to boost plants and remember to ensure plenty of moisture, for even clay soon becomes thirsty in dry weather. Mulches will also prove beneficial.

If you are unlucky enough to have land that is very wet as well as heavy, then you have an extra problem as winter rains compact and de-aerate the soil and wash out nutrients. However, such soils can still be productive; try the following:

- Not treading on the growing area is especially important and using the bed system described above is a great help.
- Fork over the ground lightly in spring, loosening the top 6 inches or so. Do this as soon as the land is dry enough, even if you have dug in autumn.
- Check the Ph of the soil and add a little lime if necessary. Use Dolomite if you wish.
- Select the varieties which you will overwinter: some plants such as brassicas hate wet winters, leeks on the other hand will survive almost anything the winter can do; likewise, autumn-sown onions will usually survive in wet soil.
- Manage your compost: assuming you don't have an enormous supply, where possible, put compost on plants as summer mulch instead of an

autumn dressing. This way the nutrients benefit the plants while they are growing, instead of being washed out in winter rains. Dig or fork in the compost when the crop is cleared.

Finally

Whatever effort you put in, luck and the weather will play a large part; what fails one year may succeed in the next

and any problems may not necessarily be due to the soil type. In order to allow for failures, it's always a good plan to sow extra of your favourite crop, and to grow a variety of different crops if you can. This way there should usually be a reasonable harvest! Remember to use appropriate protective clothing, by the way; lime for example, can irritate eyes and skin.

Books

Readily available handbooks, which are not wholly vegan but provide good vegan alternatives are: *The Organic Bible* by Bob Flowerdew (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, Molsey 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.

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 5DE. 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.



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:

VON, 58 High Lane, Chorlton, Manchester M21 9DZ
Email: info@veganorganic.net

General enquiries and advice on growing:
Phone: 0845 223 5232
Email: advice@veganorganic.net
Website: www.veganorganic.net

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!

