

THE **COGS**



QUARTERLY

VOL 5 no. 3

ORGANIC GROWING IN THE CANBERRA REGION

SPRING 1997



Joan Buckle

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REMINDER: Monthly meetings are held on the 4th Tuesday of each month (except December and January.) Our meetings are held at 7.30 pm, Room 4, Griffin Centre, Civic.

*****EVERYONE WELCOME*****

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Joan Buckie

**WHAT IS ORGANIC GROWING
ABOUT?**

The ORGANIC MOVEMENT
endeavours to provide an alternative
to the mass of toxic chemicals,
fertilisers, fungicides and
herbicides used in modern
agricultural methods by
utilising more natural means
of improving and preserving
our soils and to produce
nutritious, less
contaminated food.

**WHAT ARE THE ORGANIC
ALTERNATIVES?**

By enriching the soil with compost,
manure, green manure and mulches we
avoid disease and control pests
through non-chemical methods,
including encouraging the presence of
beneficial insects to feed on pests,
growing companion plants to discourage
pest attacks, by growing healthy plants
to resist pest attacks and disease and
by tuning into nature with love,
harmony and gratitude.

President's Report

by Michelle Johnson

We're coming to the last days of winter now, and already you can feel that Spring is on its way. At COGS Backyard our work is continuing. The perimeter edging with the sleepers is now complete, our archway is finished and the paving is underway. We have planted comfrey in one bed and green manure crops of wheat, oats and dun peas were sown in late June in three of the beds. These are now making some growth. We knew it was not the best time to put in a green manure crop, but the soil is so bereft of organic matter that any crop will help.

We have made the compost in our four bins from a potent combination of chook manure, food scraps and hay. Even if the compost is not ready to spread on the beds before planting, we should be able to side-dress the plants as they grow - particularly the sweet corn which benefits by a side-dressing of compost or some other fertiliser when the stalks produce secondary roots further up from the base.

The next jobs are to install the irrigation system, get signs made up and to plan, in detail, our Spring planting. That's the fun part! We will probably be having a working bee in late September to install the irrigation system (and other chores I'm sure). Look out for a notice in the September Flier. If you're thinking of installing a system in your own garden this would be a good opportunity to come along and see how its done. If you're new to organic gardening, it will also be an excellent opportunity to come along and talk to some experienced gardeners about what is happening at COGS Backyard so you can apply the knowledge to your own garden.

I was reminded recently of the value of observation in gardening and farming when I read Louis Bromfield's "Pleasant Valley", a book published in 1946. The book details Bromfield's return from France to Ohio at the beginning of World War 11, and his subsequent work restoring his farm, Malabar. Convinced that many of the current farming methods were destroying the land he knew he had to rethink the whole process of farming in Ohio. To this re-evaluation he brought his knowledge of farming practices in Europe, particularly France. But he needed also to look at his land with fresh eyes and find what would work there, rather than slavishly applying other models.

One example of this was growing alfalfa. Apparently most farmers in Ohio had all but given up trying to grow alfalfa as it was rarely successful and just did not seem suited to their soils. However Bromfield noted that alfalfa is a close relative of sweet clover which did grow well in Ohio, and, most importantly, he observed that along fence rows and the roadsides alfalfa often grew very well: it needed to be let alone.

From this observation, he concluded that the current methods of growing alfalfa were actually detrimental. In the West, in California, the growing methods were well suited to the crop, but not in Ohio. He then began experimenting with different methods - too detailed to spell out here - and finally developed practices that were very successful. Practices that were almost the reverse of what had been done before.

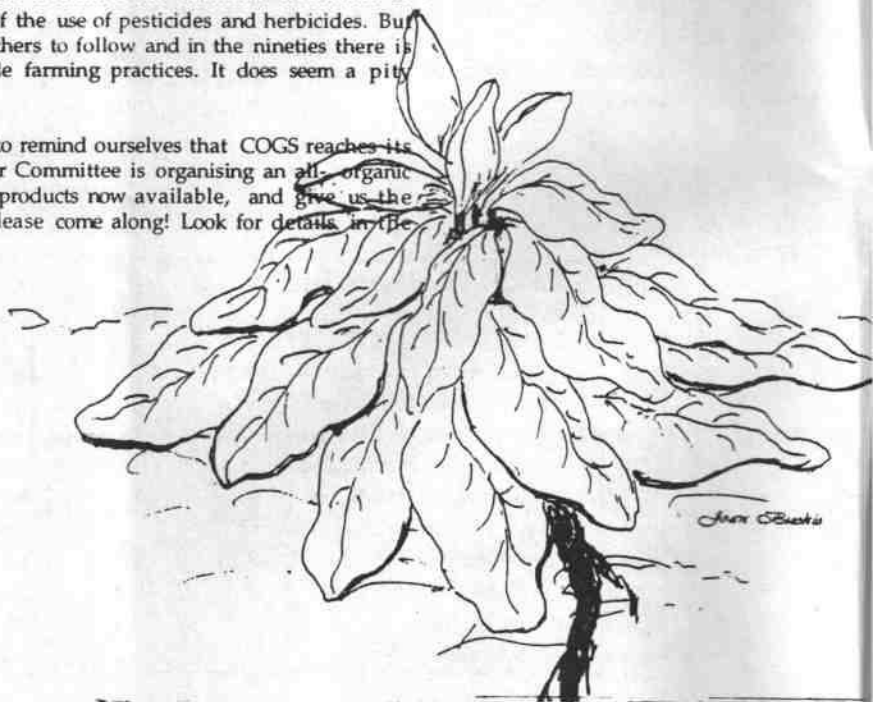
His book discusses many insights he gained while farming Malabar, as well as interweaving the human story of his observations about American society and the problems it faced. A riveting book, I recommend it highly. I would be very interested to hear if anyone knows where you can get hold of any of his later farming books, written also in the forties and fifties. I would like to follow up and find out what happened in later years at Malabar and his travels to other farming communities.

After finishing the book it was sad to reflect that many of the problems Bromfield saw looming up for American agriculture were exacerbated by the advent of the chemical revolution in farming in the fifties, with widespread acceptance of the use of pesticides and herbicides. But farmers such as Bromfield have given the lead for others to follow and in the nineties there is general recognition of the need for more sustainable farming practices. It does seem a pity however that humans are such slow learners!

While in a reflective frame of mind it is rewarding to remind ourselves that COGS reaches its 20th Anniversary this year. To celebrate this, your Committee is organising an all-organic dinner which will showcase the range of organic products now available, and give us the opportunity to look back over our achievements. Please come along! Look for details in the September Flier, but for now, write in your diary:

COGS ANNIVERSARY DINNER:

FRIDAY 21ST NOVEMBER

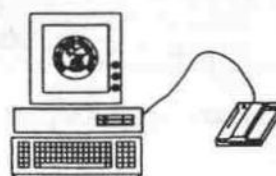


The Internet Column

By John Allen

Email: jallen@pcug.org.au

COGS WWW Home Page URL: <http://www.pcug.org.au/~jallen/cogs.htm>



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By John Allen

Email: jallen@pcug.org.au

COGS WWW Home Page URL:

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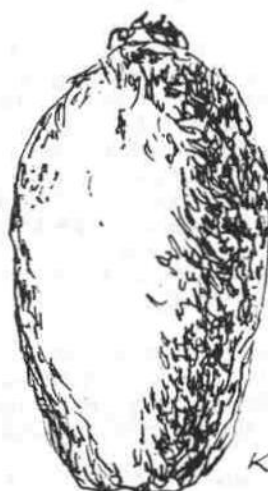
Let me know if you are on the Internet and if you would like me to forward organic E-mail received. It is a good opportunity to make some organic friends elsewhere in Australia and overseas.

Genetic Engineering

The latest information is available on the Internet at :

<http://www.pcug.org.au/~jallen/coggene.htm>

The ACT Greens plan to reintroduce a Bill that would provide for labelling of food containing genetically engineered and irradiated components. The outcome of this pressure could either be that the Bill is passed in the ACT or that the ACT Government representative to the national discussions will be forced to advocate compulsory labelling where the product contains any genetically engineered material as opposed to the 5% minimum being put forward in the national discussion.



Kiwi Fruit

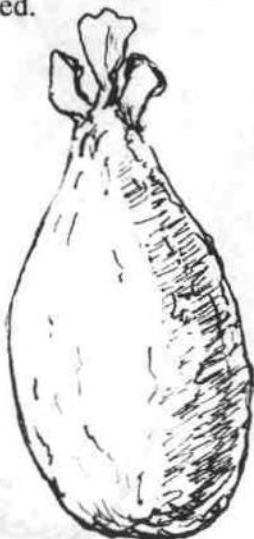
Membership Report

Financial Members - 222

Institutions - 31

Members on the Internet - 27

Please check the address labels on your COGS Newsletters and Quarterlies - they contain warnings when your membership fees are due and if you have overdue library books. These are the only warnings issued. You will only receive a reminder letter after your membership actually lapses - if this occurs then you will not receive Newsletters or Quarterlies until membership is renewed.



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ENGLAND

The Secretary's Diary

My recent experiences in the UK regarding attitudes of the masses towards food.

It seems to me that there is a great deal (rows and rows in the supermarkets) of pre-packaged food, this ranges from whole meals to vegetables being prepared in such a way that it seems most things are for quick and easy preparation in the home. Potatoes were packed in small plastic plates, washed and ready for popping in the pan or micro wave- no 10 kilo bags of potatoes or large bags of any vegies for that matter. Beans were top and tailed and all cut to a certain length and ready for microwave cooking on plastic plates, most of the vegetables were prepared for sale in this manner.

It is difficult to find anything on the supermarket shelf that is actually British grown or produced. Goods are from all over Europe and beyond. The news items that the main Supermarkets Tesco's and Sainsbury's are supposedly going organic with some of the produce was hard to believe as I searched for evidence along the shelves. My shopping docket at Tesco's only listed one organic item out of about thirty, and that was organic coffee. Maybe I just didn't look in the correct places, and I really didn't spend much time shopping as most of my time was spent with my relatives while I was in the UK.

I had warned folks ahead of time that I would not be eating certain foods while I was in Britain. British beef being one of the main items. I was to find out that the majority of my relatives in the UK do not eat British Beef. However, there seems to have been a general public acceptance that the problem regarding BSE has disappeared, nothing has been heard in the news lately (at least not while I was in the UK) and many people that I talked to seemed to have very short memories. One of my relatives told me how government officials had asked all veterinarians in a certain area to perform autopsies and report on all animals (pets) that died under their care. This made me wonder if there may be something of a problem regarding beef products in British pet food.

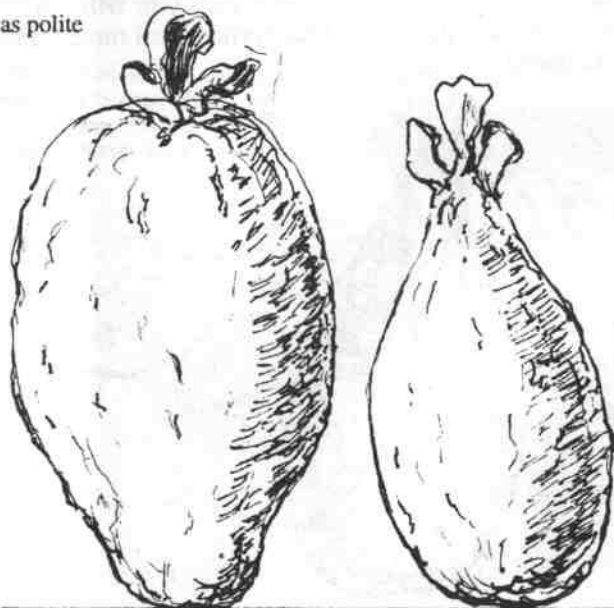
I found the organic movement to be more active in the south of England, where I was able to purchase boxes of organic fruit and vegies from the locals. There was also an organic butcher just out of Exeter, who was reputed to having good quality meat at a reasonable price.

Prices, as a whole I found to be much more exorbitant in restaurants. I don't know how the average Brit person could eat out on a regular basis. But, I was comparing the dollar to the pound, and the exchange rate is not at all in our favour at the moment. Bed and breakfast places (reasonable ones) were in the \$70 range per person per night, which I don't think is cheap compared to Aussie Motels where most charge approx \$45. In general I found everything there more expensive than here.

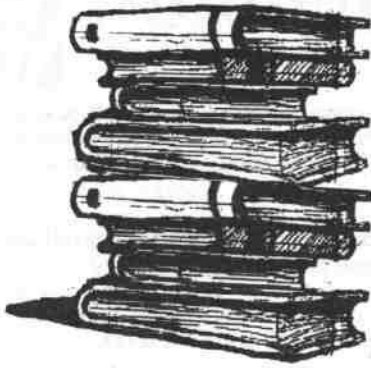
The average diet, didn't appear to be very healthy, and even though it was summer, there were very few salads on menus. Vegetables tended to be cooked to the point where there was little or no nutritional value left. There was much fried food and of course the English fish and chips are always very popular.

When I talked to people about the organic movement, there was polite interest, but no real enthusiasm to find out more.

Margaret Allen

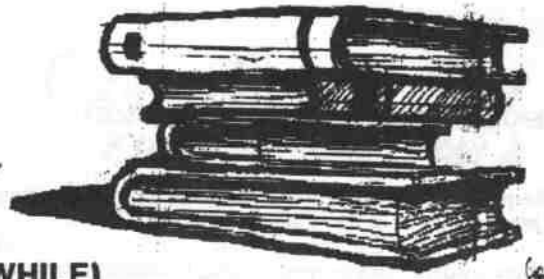


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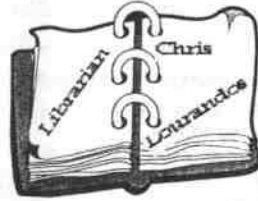
LIBRARY

(BROWSE FOR A WHILE)



Camy

When you have finished a good book,
it's like parting with a good friend.
(Voltaire)

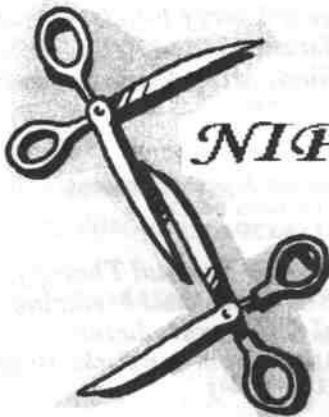


BOOK REVIEW by COGS Librarian Chris Lourandos

Bee Keeping in Australia for Pleasure and Profit

This book is highly recommended for all gardeners. With no previous experience in bee keeping, any gardener will feel confident in starting bee keeping after reading this book. It covers a history of bees, life cycles, the language of the honey bee, making of hives, tools, clothing, handling of bees, spring operations, swarm control, finding the Queen, marking and introduction of a Queen.

The rewards are many. It is an excellent hobby, improving pollination in your garden and hence productivity, and the honey is a good substitute for sugar in your diet. I have virtually eliminated sugar from my diet.



NIPPETS

Compiled by Joan Cordaux

Did you know that there is a "Grow Organic with Watties" program? Watties' organic frozen vegies are in most large supermarkets.

Did you know that an important aspect of health maintenance is 'active detoxification through flavonoids - amongst these are - beetroot, strawberries, blueberries, blackberries andred wine! (Pure pleasure)

Did you know that there is Healthy fare over the clouds
In Zurich, Swissair has become the first airline to introduce organically grown products in all classes of its inflight catering. 'Naturalgourmet' is the name of the new catering concept which was introduced in June 1997 on all Swissair flights departing Switzerland. Within three years, 'Naturalgourmet' should be expanded to cover Swissair's entire flight schedule.

HOMEMADE GARDEN PESTICIDES AND FUNGICIDE SPRAYS

Re-printed from the Summer 1996 edition of *Cognition*,
Quarterly voice of the Canadian Organic Growers

Many readers want recipes to make homemade garden pesticide and fungicide sprays from natural ingredients found in the home and garden. We turned to Mary Perlmutter, author of *How Does Your Garden Grow-Organically?* and gardener extraordinaire:

Gardeners were successfully deterring pests and diseases from their plants long before chemical companies came on the scene. Homemade insecticides, fungicides and tonics for the garden are still as effective to use as they are easy and inexpensive to make.

Here are some recipes for you to try in your organic garden this summer. Always strain these concoctions before putting them in your sprayer.

ALL-PURPOSE INSECT SPRAY

Chop or grind a garlic bulb, a small onion and 15 ml (1 tbsp) cayenne pepper, and mix with 1 litre of water. Let steep one hour, strain, then add 15 ml liquid hand soap. Store in a bottle in the refrigerator up to one week.

GARLIC & HOT PEPPER SPRAY

Use against chewing and sucking insects, mildew, leaf spot, rust, spore diseases.

Steep 3 cloves of garlic, 1 medium onion and 5 ml (1 tsp) very hot pepper (such as Jalapeno) in 1 litre of water for 10 minutes, then strain. Can be diluted 1:4 with water before spraying.

MANZJRE TEA

Use against potato blight, black spot, yellowing of tomato leaves.

Put a shovelful of manure in an onion bag, place it in a pail of water and let it sit for two or three days. Keep adding water to the same "teabag" as you use up the tea!

MULLEIN SPRAY

Use against white flies.

Steep 1 part mashed mullein leaves in 5 parts water.

PYRETHRUM SPRAY

Use against all chewing and sucking insects.

Steep 15 ml (1 tbsp) dry pyrethrum flowers in 2 litres of hot water. Pyrethrum (*Chrysanthemum cinerarifolium*) is an attractive perennial with marguerite-like flowers.

RHUBARB SPRAY

Use against aphids, Junebugs, black spot, fungus diseases.

Steep 5 rhubarb leaves in 2-3 litres of boiling water.

SALT SOLUTION

Use against spider mites, cabbage worms.

Dissolve 30 ml (1 oz) table salt in 4 litres of water.

SKIM MILK SPRAY

Use against mosaic disease on tomatoes & peppers.

No special preparation needed. Sour milk can be used against cabbage worms.

STINGING NETTLE SPRAY

Use against aphids and thrips.

Cover 1 litre of nettles (wear gloves to gather) with water and steep for 3 weeks. Dilute with 7 parts water.

TOMATO LEAVES

Use against aphids, asparagus larvae, black spot, scales
Steep 10 chopped tomato leaves and 1 chopped onion in 125 ml (1/2 cup) alcohol for a few minutes. Apply with a swab.

And here are some recipes for sprays to use on plants and yard areas where animal pests are a problem.

CATS: Add 2 parts cayenne powder, 3 parts dry mustard and 5 parts flour to sufficient water to make a spray.

DOGS: Add 1 clove of garlic, 1 medium onion and 5 ml (1 tsp) Tabasco sauce to 1 litre of water.

SQUIRRELS (may work with possums? ed): Add 15 ml (1 tbsp) Tabasco sauce, 5 ml (1 tsp) chilli powder and a dash of dish soap to 500 ml (1 pint) of water.



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Medicinal uses of Comfrey



Round the World Review

We are not going to every country by any means, but this is a review of opinions found in European, American and Australian herb books on the herb Comfrey.

"Comfrey (*Symphytum officinale*) is an ancient healing herb known to the Greeks and Romans. Its old name was knitbone; the leaves, made into poultices, were believed to help sprains, swellings and bruises. The term *officinale* denotes that this plant was cultivated in monastery gardens in the days when monks were the only physicians the common people had recourse to. Comfrey was reputed to suppress bleeding, and was used for bronchial and other inflammatory complaints. Old herbalists made an infusion to relieve colds and bronchitis: a pint of boiling water was poured on to an ounce of the dried leaves and left to stand for 30 minutes at least. It was then strained for use." *Health Plants of the World*, Newsweek Books, NY, U.S.A., 1977. A famous American herbalist, Edward E. Shook says: "Comfrey (*Boraginaceae*) is a native of Europe naturalized in America and grows in moist ground in many parts.

Constituents -- Mucilage, tannin, phosphates of sodium, potassium and calcium, allantoin, iron, and a little starch.

Uses -- Demulcent, nutrient, astringent, expectorant, hemostatic, cell proliferant, and vulnerary. Used internally for ulcers, cancers, hemorrhage, wounds, torn ligaments, rupture, broken bones. Also for coughs, bronchitis, etc.."

Advanced Treatise in Herbology p36, Trinity Center Press, Beaumont, CA 1978.

(A crash course in herbal terms:

Demulcent - soothes and protect the food canal. Nutrient - nourishing. Astringent - binding, causing contraction of the tissues. Expectorant - causing to 'cough it up', removing secretions from the bronchial tubes. Hemostatic - controls bleeding. Cell proliferant - causing cells to grow again quickly. Vulnerary - healing.)

Master Herbalist John R. Christopher, known as one of the greatest American herbalists, says a lot about the medicinal uses and preparation of Comfrey. Here is just a small review, from his book *School of Natural Healing*, p309 (Christopher Publications, Springville, Utah, 1976).

"Comfrey is one of the finest healers for the respiratory system, especially where there is hemorrhage of the lungs; it has saved thousands of lives. The root has been used reputedly as both a tonic and a vulnerary from very ancient times up to the present. The root and leaves are most beneficial as a poultice in healing any obstinate or ulcerous wound. Comfrey forms an ingredient in a large number of herbal preparations, and it may be given wherever a mucilaginous or demulcent medicine is required. The chief healing element in comfrey is allantoin, a cell proliferant (promotes granulation and formation of epithelial cells in the roots and leaves).

Medicinal uses: Cough, ulcerated and inflamed lung conditions, bronchitis, hemorrhage, asthma (excessive expectoration), tuberculosis, pleurisy, pneumonia, inflamed stomach or bowels, ulcerated kidneys, soothe gravel, bloody urine, diarrhea, dysentery, bruises, sprains, swellings, fractures, cancers, torn

ligaments, ruptures, broken bones, cuts, gout, gangrene, heart problems, ulcerous wounds, hemoptysis, catarrh, scrofula, anemia, leukorrhea, female debility, boils, gum boils, sinusitis, burns, and insect bites.

Preparation: Decoction, fluid extract, infusion, powder, and tincture. The root contains a large amount of mucilage that is best extracted by water."

That's quite a formidable list of the properties of Comfrey, and the variety of ailments for which Dr Christopher prescribed the herb (Another short guide to herbal terms: Decoction means you boil the root in water. Fluid Extract is made by pouring glycerine, alcohol or vegetable glycerine over the herb to extract its vital ingredients. Tincture is made in a similar manner.)

Let's go across the Atlantic now, from America to Europe, where we find the first mention of Comfrey. Nicholas Culpepper (1616-1654), published *The Family Herbal*, which is regarded as one of the classic works on herbalism. Culpepper was undoubtedly an accomplished herbalist. But he was also an astrologer, and believed plants were influenced by the planets, just as some people even today, believe their destiny is under the control of some astrological sign or planet. Culpepper's astrological insights have been discarded, but he is still quoted in most English herbal books.

One such is *A Modern Herbal* by Mrs. M. Grieve F.R.H.S., Penguin Books, Harmondsworth, England 1982. She quotes Culpepper as saying: "The great Comfrey ("great" to distinguish it from the "Middle

Comfrey" - another name for the Bugle) restrains spitting of blood. The root boiled in water or wine and the decoction, drank, heals inward hurts, bruises, wounds and ulcers of the lungs, and causes the phlegm that oppresses him to be easily spit forth. . . . A syrup made thereof is very effectual in inward hurts, and the distilled water for the same purpose also, and for outward wounds or sores in the fleshy or sinewy parts of the body, and to abate the fits of agues and to allay the sharpness of humours.' (p.218). Mrs Grieve also tells how the name was derived: "The very name, Comfrey, is a corruption of 'con firma', an allusion to the uniting of bones it was thought to effect, and the botanical name, *Symphytum*, is derived from the Greek *symphyo* (to unite)...

Cultivation. Comfrey thrives in almost any soil or situation, but does best under the shade of trees.

Propagation may be effected either by seed or by division of roots in the autumn: the roots are very brittle, and the least bit of root will start growing afresh. They should be planted about 2 and a half feet (750mm) apart each way, and will need no further care except to keep them clear from weeds. As a green crop they will yield largely if well-rotted manure be dug between the rows when dressing for winter. As an ornamental plant, Comfrey is often introduced into gardens, from which it is very difficult to eradicate it when it has once established itself, a new plant arising from any severed portion of the root.

Parts Used Medicinally. The root and leaves, generally collected

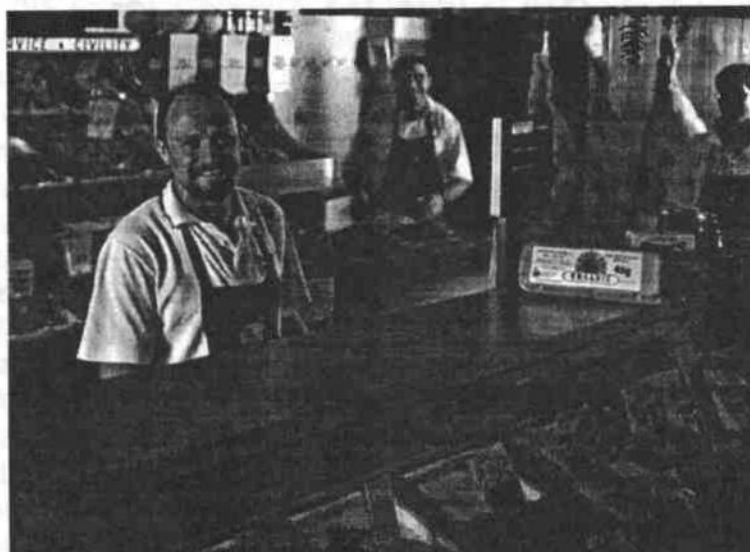
from wild plants. Comfrey leaves are sometimes found as an adulteration to Foxglove leaves, which they somewhat resemble, but may be distinguished by the smaller veins not extending into the wings of the leaf-stalk, and by having on their surface isolated stiff hairs. They are also more lanceolate than Foxglove leaves.

Constituents. The chief and most important constituent of Comfrey root is mucilage, which it contains in great abundance, more even than Marshmallow.

Medicinal Action and Uses. Demulcent, mildly astringent, and expectorant. As the plant abounds in mucilage, it is frequently given whenever a mucilaginous medicine is required and has been used like Marshmallow for intestinal troubles.... It forms a gentle remedy in cases of diarrhoea and dysentery. For its demulcent action it has long been employed domestically in lung troubles and also for quinsy and whooping-cough. The root is more effectual than the leaves and is the part usually used in cases of coughs. It is highly esteemed for all pulmonary complaints, consumption and bleeding of the lungs. A strong decoction, or, tea, is recommended in cases of internal haemorrhage, whether from the lungs, stomach, bowels or from bleeding piles - to be taken every two hours till the haemorrhage ceases. In severe cases, a teaspoonful of Witch Hazel extract being added to the Comfrey root tea" (Grieve p217).

From the various herb books we have looked into, it is obvious that Comfrey has been held in high esteem for many centuries in many countries. We could go on

to review reports in a lot of other books, but there is a remarkable uniformity of view in them all, which would mean we would be repeating much of what has been said several times already. Therefore we will end this review by coming closer to home, and referring to a book specifically written as "An Australian and New Zealand Guide". It is by Gregory Ah Ket and is named *Herbal Treatments for Common Ailments*. Lloyd O'Neil Pty Ltd, South Yarra, Victoria, 1983. It gives a summary of the action of Comfrey which agrees with what has already been quoted. It then gives the body systems affected (bones, muscles, lungs, digestive system, and the whole body), the preparation and dosage, which has also been mentioned. After a general discussion on the herb, the article closes with a cautionary note, made necessary by the CSIRO research on liver and other problems. We must close on this cautionary note also, pointing out that officially Comfrey in Australia is classed as an S1 poison. It is not so regarded in America or Europe - indeed the British Medical Journal, as we have previously stated (Vol. 1 No. 3), came out with the statement that "no examples of (human) liver poisoning have been reported. People who in the past have taken or used products containing comfrey have, therefore, no cause for alarm."



DELICATESSEN WITH A TWIST

Richard Odell, a regular guest speaker and supporter of COGS for many years has recently restyled the whole of his bio-dynamic butcher's shop at Griffith. The extensive changes have enlarged the shop into what has become a 'delicatessen with a twist'. Cooked foods, pies etc., are prepared on the premises in the baker's oven and demonstrations and cooking classes for speciality products will be a thing to watch out for. An extensive range of organically grown meats and all such lovely things can be had and well worthwhile a visit at lovely Griffith.

COGS would also like to thank Richard for his support, earlier this year, in providing a variety of meats at the Canberra Show for our food and wine tasting sessions which were much appreciated by many visitors from all over Australia to our lovely organic produce stall.

Best wishes to Richard and all his staff from COGS.

(Joan Cordeaux, Editor)

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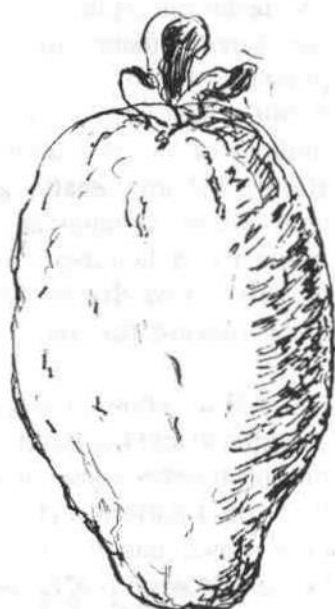
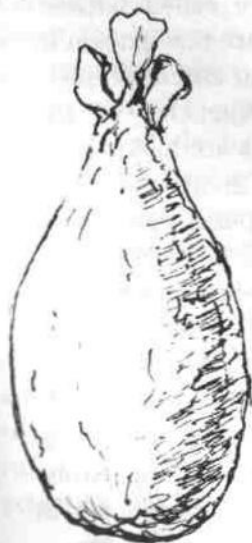
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Paramagnetism For Healthy Soil



by Dr Don Gray

In the last issue Jim Bell outlined the need for soil testing. In this issue Howard Garrett also puts soil testing high on the list of priorities for starting a successful organic (or any other) programme. This article is not meant to replace the ideas of either of these two. It does, however, introduce a new factor which should have a very high priority on anyone's list of essentials for good healthy plant growth.

That new factor is called *paramagnetism*, and we present the ideas of the man who has really done more than anyone else to outline the importance of this force. In fact, he says that if you have not got paramagnetism present, even having the right proportions of chemicals in the soil will not necessarily mean healthy growth.

My dictionary defines paramagnetism as: "an induced magnetic field which is parallel and proportional to the intensity of the magnetising field, but is much weaker than in ferromagnetic materials." That sounds quite a mouthful, but don't give up! What follows is a non-technical explanation of how this force affects the soil and plant life.

It is the fascinating story of the findings of Dr Phil Callahan, who started his investigations in Ireland while serving as a low-frequency radio-range technician in the United States Army Air Corps during the second world war.

You will all know of Stonehenge, in England, and the strange collection of massive stones that stand there in a pattern and for a purpose which has yet to be fully explained. Some readers may also have seen a video several years

ago called "Land Lines", in which the narrator showed mysterious links between some of the great cathedrals in England, with their lofty spires, and lines of force which appear to criss-cross the country.

An electronics expert I was talking to a few weeks ago, on these tall spires and massive rocks, reminded me that there was a documentary on TV several years ago which showed the round towers of Ireland which have also been surrounded in mystery as to their true purpose. There are about 65 of these round towers still standing, and the Irish Government cleaned them up after World War 2, and placed them on the protected list. Some have been restored to good condition, and they serve as tourist attractions and centres for speculation as to their purpose. Each round tower measures about 17 metres tall by 3 metres wide, and they are made of paramagnetic material (mica-schist and granite).

One of their most curious features is that the entrance door is, in every case except one, situated at from 3 to 7 metres above ground level. This feature has been the subject of many guesses, not the least amusing of which is that the doors were placed at that height so that the towers could serve as a hiding place when the Vikings and other invaders descended on the country. It would be a pretty poor Viking who couldn't get people out of places like that!

George L. Barrow wrote a book entitled *The Round Towers of Ireland*, and we can be fairly certain that they were built by monks many centuries ago. The

towers are mentioned in other books, such as *The Blue Guide to Ireland*, and we have drawings of them going back to the 18th century showing them covered in ivy and plant life right up to the top "windows", so we can be sure they go much further back in history than the 1700's, perhaps even to about 800A.D. However, nowhere can we find an account of how or why these towers were built.

In case you are wondering just what all this has to do with the health of the soil, we are coming to that, but first we have to look at some of the work of Dr Callahan in connection with various radio signals and paramagnetic rock.

When he saw the round towers of Ireland the question he asked was: "Could the towers be some form of dielectric radio antenna for focussing some type of radio wave?" A dielectric is a substance that weakly conducts electric current, and of course, we all know that an antenna picks up an electric signal and amplifies it.

In the years following the war, Paul Callahan did scientific observations on insect antennae, particularly looking at their waxy spines, which are called *sensilla*. Insect antennae are now known to be dielectric radio antennae, picking up the frequencies of the scents the insects are looking for. When studying them under the microscope he found them to be microscopic models of the great religious spires he had seen.

He reasoned that, if paramagnetic insect antennae react, or resonate, to various radio frequencies, why couldn't those religious spires, the round towers, and the huge stone rings such as Stonehenge act in the same way?

He went back to the round towers

in Ireland in the 1970's to test his theories, taking with him electrical measuring instruments. His instruments showed that signals began to be recorded at about 15cms above the ground, and increased in strength until he reached the bottom of the doorway, some 3 metres above the ground.

Dr Callahan was the first man to discover that the round towers of Ireland are in fact Extra Low Frequency (ELF) radio antennae paramagnetic amplifiers. He then went to other sites and got similar results there, which showed an astonishing knowledge among very ancient civilisations about the electrical currents and frequencies which permeate everywhere. These exert a vital influence upon our lives and on the soil we use to grow our food.

What I've written so far is just a little of the background to Dr Callahan's work. Not being electrically minded I really have not done it justice, but I hope I've conveyed enough of the facts to let you see where we are heading, and that is, to the way these phenomena affect the health of the soil.

So, what *have* these findings got to do with our "healthy soil, healthy plants, healthy people" motto? A great deal, as you will see before you come to the end of this page!

Callahan noticed that the grass about the towers was far greener and healthier than grass further away, and the small island of Devinish, on which is situated the tower which first aroused his curiosity, is well known to the Irish for its lush greenery. Farmers ferry their cattle there to take advantage of the better fodder. He records that the Irish also are aware that cattle and sheep seem to gravitate to ancient stone structures. Of course today, in this scientific world of ours, we need

more evidence than the movement of sheep and cows, or even of the traditions and beliefs of the Irish! The fact is that we do have that scientific evidence, in the form of an electric meter called the CGS meter. CGS means Centimetre, Grams, Seconds. The instrument measures what weight of a paramagnetic material will move one centimetre to a magnet in one second. Any substance, including soil and rock, which is drawn to a magnet is a paramagnetic substance, and will help plants to grow. All volcanic soil and rock are highly paramagnetic, giving a CGS of between 200 and 2,000.

Callahan has designed a hand-held meter which will measure CGS readings from 0 to 2,000. It is called the P.C. Soil Meter (PCSM), and it has been tested in Japan, Australia, and America. Using it, he has demonstrated that good healthy crops grow only on highly paramagnetic soils. Of course, you will say, I don't have a PCSM.

Neither do I; however, there is a simple experiment which anyone can perform to test the truth or otherwise of what has been said. Here is the simple test which Paul Callahan asks anyone to do: Get some radish seeds, and three round, or square, plastic flower pots, each the same size. It's important to have plastic pots, because plastic is not paramagnetic.

Fill each with potting soil from the same bag. In pot number one, plant four or five lots of seeds in a circle (3 or 4 seeds per hole, 6mm to 13mm deep). Do exactly the same in the other two pots.

Now get a sheet of sandpaper, and make a model of an Irish round tower (see the photo by Dr Callahan, below.)

The one in the photo was a stu-

dent project, and is actually made from sandstone, but I have found that sandpaper does very well. If you have a lump of sandstone about, you may want to copy the way the students conducted the experiment, and make a model from that.



The diameter of the tower should be one quarter the height, so if you have a model 16cms tall you will want a width of 4cms. Place this model in the centre of pot number two. In the centre of the third pot place a sharp-cornered basalt or granite stone. Give each pot the same amount of water each day for eight days. The growing temperature should be between 21 and 26 degrees if possible.

At the end of the eight days pull up the plants and weigh the root's "held in place" soil for each pot. If the results are the same as I got in my experiment, the "round tower" pot will have the biggest growth to the west, the next largest at the south, then the north, and the least growth is on the east side. The growth in this pot, and in the pot containing the granite or basalt rock, is far better than the growth in the first pot, which had no rock or "tower". This demonstrates that what Paul Callahan says about the paramagnetic forces acting favourably on the soil is true.

Try it for yourself, and let us know what you find! In the next issue I'll print photos of the results of the test I did.

On days of old

MRS. BEETON'S
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(1902)

RHUBARB JAM.

RHUBARB JAM.

INGREDIENTS.—To each lb. of rhubarb allow 1 lb. of preserving sugar, $\frac{1}{2}$ a teaspoonful of ground ginger, and the finely-grated rind of $\frac{1}{2}$ a lemon.

METHOD.—Remove the outer stringy part of the rhubarb, cut it into short lengths, and weigh it. Put it into a preserving-pan with sugar, ginger, and lemon-rind in the above proportions, place the pan by the side of the fire, and let the contents come very slowly to boiling point, stirring occasionally meanwhile. Boil until the jam sets quickly, when tested on a cold plate. Pour it into pots, cover closely, and store in a cool, dry place.

TIME.—From 1 to $1\frac{1}{2}$ hours, according to the age of the rhubarb. **AVERAGE COST,** 4d. per lb.

RHUBARB JELLY.

INGREDIENTS.—1 small bundle of rhubarb, 4 ozs. of castor sugar, or to taste, $\frac{3}{4}$ oz. of leaf gelatine, the finely-cut rind of 1 lemon, $\frac{1}{2}$ pint of water.

METHOD.—Wipe the rhubarb with a cloth, trim it, and cut it into short lengths, put it into a stewpan with the water, sugar, and lemon-rind, simmer until tender, and rub through a hair sieve. Dissolve the gelatine in 2 tablespoonfuls of water, and strain into the rest of the ingredients. Turn into a wetted mould, and keep on ice or in a cold place until set.

TIME.—About 1 hour. **AVERAGE COST,** 6d. to 7d. **SUFFICIENT FOR** 1 medium-sized mould. **SEASONABLE** from February to May.

RHUBARB WINE.

RHUBARB MARMALADE.

INGREDIENTS.—Rhubarb. To each lb. allow 2 tablespoonfuls of sugar and $\frac{1}{2}$ teaspoonful of ground ginger.

METHOD.—Wipe, string, and cut the rhubarb into short lengths. Put the rhubarb, sugar, and ginger in a jar, place the jar in a rather cool oven, or in a saucepan containing boiling water, and cook until soft. Pass through a fine sieve, and use for filling turnovers and similar kinds of pastry.

TIME.— $1\frac{1}{2}$ hours. **AVERAGE COST,** 1d. to 2d. per lb. **SEASONABLE,** January to July.

RHUBARB PUDDING (See Apple Pudding and Damson Pudding).

RHUBARB WINE.

INGREDIENTS.—25 lbs. of rhubarb, 5 gallons of cold water; to each gallon of liquid thus obtained add 3 lbs. of either loaf or good preserving sugar, and the juice and very thinly-pared rind of 1 lemon. To the whole add 1 oz. of isinglass.

METHOD.—Wipe the rhubarb with a damp cloth, and cut it into short lengths, leaving on the peel. Put it into an earthenware or wooden vessel, crush it thoroughly with a wooden mallet or heavy potato masher, and pour over it the water. Let it remain covered for 10 days, stirring it daily; then strain the liquor into another vessel, add the sugar, lemon-juice and rind, and stir occasionally until the sugar is dissolved. Now put it into a cask, and add the isinglass previously dissolved in a little warm water; cover the bung-hole with a folded cloth for 10 days, then bung securely, and allow it to remain undisturbed for 12 months. At the end of this time rack off into bottles, and use.

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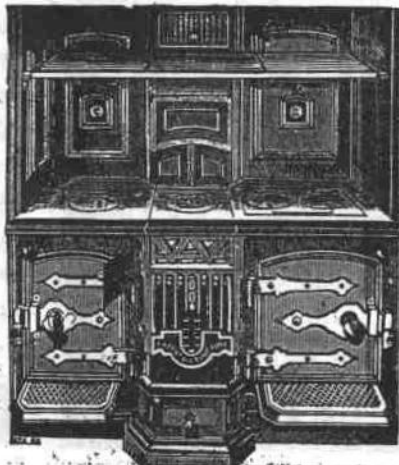
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My possum: a few years ago, I potted up about fifty plants of the cabbage family to take to a COGS meeting. Imagine my disgust when all were eaten off entirely. Some pots were tipped over, so I knew it wasn't snails, and I knew it wasn't birds, for this happened over one night.

I knew there was a possum in my garden, but what I didn't know was that he was living under my house, and I had put all the pots under the fig tree for shade, right in front of the door under the house, which had been open for years. I closed the door, locking the stable door after the horse had been stolen, but after a few days I saw a little possum face behind the wire door.

Now I knew who the culprit was, so I telephoned the Wildlife Section to ask them to remove the possum, and put him out in the nature park nearby.

"I can't do that." was the reply.

"Why not?" I asked.

"Because the law says that a possum cannot be moved out of its territory, it would be too much stress to the possum!"

"What about the stress to me having all my plants eaten?"

I said, "He's under my house, and he's knocking everything down, and making a terrible mess.

"Well I can come and catch him and bring him out from under the house, but then you must shut the door, because I will have to release him in your garden. That is his territory."

I had mistakenly thought it was mine!

Now he and his mate occupy a shelf in my garage, behind a large paint tin. One sleeps there during the day, while the other sleeps in my neighbour's shed. When I come home in the evening, I climb up on the tool box and have a chat with him (or her). I have to leave the window open, as they make a terrible mess if they can't get out, knocking over tins, jars, and sometimes I find broken glass on the floor.

If you can't fight 'em join 'em. So I clear up the mess, try not to leave the chook food bin open, and certainly don't leave any fruit or vegetables in the garage overnight. I'm resigned to losing most of my figs to currawongs and possums, but this year I have lost most of my grapes and figs to tiny little birds, which come in flocks. I have yet to find out their name, but I can think of one to call them!

There are many more pests I can think of. **Rosellas.** They are so beautiful and so destructive. My roses are dotted about my garden. Rosemary Rose is in shade most of the day, yet grows well. and has a lovely perfume.

It was bred by Gregory, a famous English Rose Breeder, who named it after his daughter Rosemary. Now she has her own rose business, Rosemary's Roses just off the motorway near Nottingham.

I have found that the only way to have roses is to cover them in early spring with bird netting lifted clear of the plant with 4 stakes, otherwise the rosellas will break off the new shoots, and eventually the plant will die. They killed my Queen Elizabeth rose in this way. It had grown 12 ft high, so that I could see the clump of flowers while sitting on my bed, but unfortunately the rosellas broke all the new shoots the following year and killed it.

Ladybirds. These are no pest, but a delight for the gardener. They seem to thrive in parsley, even through the winter, coming out when you pick the parsley, and crawling everywhere, to be played with by gentle little girls and boys. In New Zealand they are bought from breeders in the form of eggs to be carefully placed in greenhouses on plants specially grown for this purpose, and when they hatch out they eat thousands of aphids, stopping damage to the cucumber vines.

It is not only the adults which eat aphids, it is also the fierce little larvae.

Green Shield Bugs. These are indeed baddies. They ruined the fruit of a whole group of tomatoes that had been damaged by the shocking late frost we had had in November 96. They did not touch the later planted tomatoes.

This is a good example of what happens in nature. Plants and humans are attacked by insects or bacteria or viruses after their resistance has been impaired by stress of some kind.

Continued stress in humans produces the disease that that person is genetically prone to. Thus a person whose father died from a heart attack is prone to a heart attack if he comes under stress for too long. Stress can be anything from too much heat or cold, or too much junk food, or lack of vitamin C or other vitamins, or too much worry or too much work.



SPINACH AND RICOTTA LASAGNE

(Serves 8 - 10 as a first course or 6 - 8 as a main)

by Mary George



Filling:

2 lb (1kg) spinach - cooked, squeezed dry and chopped
2 oz (60gms) butter
1/2 lb (1/4 kg) Ricotta cheese
nutmeg, salt and pepper
1 3/4 pts (1L) medium Béchamel sauce
6 oz (180g) Parmesan cheese (freshly grated if possible)
1 oz (30gms) butter

Method:

Saute cooked spinach in butter, cool slightly and mix with ricotta cheese, nutmeg, salt and pepper to taste.

In a 9"x13" dish layer filling, pasta, filling, pasta, thin layer Béchamel sauce, sprinkle parmesan cheese continue, finishing with filling topped with sauce and cheese.

Dot with butter. Dish should be thoroughly moistened with sauce. More or less may be required depending on whether you are using fresh or dried pasta.

Bake 175°C until very hot and top is golden brown - 30 to 40 minutes. Stand for 5 minutes before serving.

Pasta: Lasagne strips

375 gms fresh pasta verde - egg
or dried if preferred

Place in boiling salted water until barely al dente.

If using fresh pasta test as soon as the water boils after adding the pasta.

Transfer to bowl of cold water and drain.



Sauce:

Béchamel sauce is a classic white coating sauce made by the roux method but unlike a simple white sauce the milk is infused with several vegetables and spices. This is where you can "customise" the dish to suit your family's tastes. My daughter adds ingredients like minced chilli, English mustard and tomato paste etc depending on whether she is cooking for adults or children. Sauce may be made ahead or keep some in the freezer ready for the Spinach crop flush.

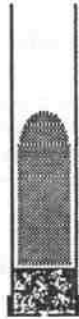
Traditional ingredients for this sauce are: 1/2 pint milk (1/4 L): small onion, small carrot, 1/2 small celery stalk, 1 blade of mace, 1 sprig parsley, 2 cloves, 4 white peppercorns, 1 oz (tbsp) butter, 1 oz flour (heaped tbsp), salt and pepper to taste.

Peel and chop vegies and add to cold milk with the spices. Heat slowly to boiling point, stirring, then take off heat, cover and allow to infuse for approx 45 mins.

Slowly add to cooked roux stirring, stirring. Above quantities would need to be doubled for the Lasagne dish.

My daughter makes this dish for a family of three and uses it over two main meals to save cooking.

The Comfrey Press



Comfrey is an important plant for the organic gardener, its leaves can be used to deter slugs and it is a useful mulching material. There are also many recipes for making comfrey tea to use as a liquid feed but the best way to use comfrey as a fertiliser is to press the leaves to produce a concentrated liquid. There are many ways of doing this but perhaps the best is to use common plastic sewage downpipe and a bottle full of water.

Left, schematic of the completed comfrey press.

Construction Details

Construction of the comfrey press is quite simple and few tools or skills are required. Start with a short length of pipe and attach a blanking plate to one end using the PVC glue supplied for these fittings. Drill a small hole in the plate, approx. 10mm in diameter, to allow the liquid to drain through. Attach the pipe to a post or other support, using the fixing clamps available for the pipe. Fill a plastic drinks bottle with water, replace the cap and attach a piece of plastic string to the cap end. Place a container to catch the liquid, fill with some comfrey leaves, lower the bottle into the pipe and wait. Cover the top of the pipe to prevent rainwater entering.

To use the concentrated comfrey liquid dilute 1:10 to 1:20 with water depending on the plants. It makes an excellent tomato feed.

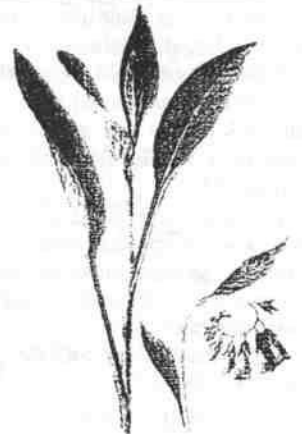
Materials list

1m length of xx dia plastic
End cap
2. fixing brackets
Plastic drinks bottle to fit pipe
Length of plastic string
Small container to catch liquid

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<http://www.midnet.com/midnet/organic/>
(Colin Shaw)

COMFREY SYMPHYTUM *by Mary Flowers*



Comfrey Symphytum

For Liquid Manure

Half fill drum (44 gallon) with comfrey, some nettles, a few leaves of yarrow plus some good cow pats. Now fill the drum with water, leave for 2-3 weeks to mature. Dilute to the colour of weak tea with water and put around vegetable plants. The soil should be lightly watered before adding the liquid manure.

To use with Green Manure

Make a metre width trench 4" to 6" deep, pull and chop green oats or wheat and fill the trench, add as much chopped comfrey as you can spare, also some nettles, 1 or 2 small snipped leaves of yarrow. Sprinkle with some Blood and Bone, cover with the soil and water. Cover trench with lucerne, or some old straw, keep moist.

Comfrey is the compost enricher. Its chemical composition is almost the same as farm yard manure and it's high natural calcium and nitrogen content, and its quick decomposition make it a very necessary addition to each bin of compost (well chopped).

The role of Landcare in sustainable farming

by
Richard Swinton.



Hi! I'm Richard Swinton, Irrigation Advisory officer with NSW Agriculture in Southern NSW. Over the next few issues I'd like to present a few ideas I've put together on the role of Landcare in the development of truly sustainable systems of farming.

At the recent Landcare/TCM forum held in Richmond, I suggested that the Landcare movement is now strong and mature enough to look beyond the treatment of symptoms and start exploring the base causes of the problems.

Through our recent history we have developed a strong tendency to break problems down to their component parts, examine these, fix them, and then hope that we've fixed the original problem.

This is the basis of the modern scientific approach, but, as every farmer knows, the "parts" don't operate in isolation - they are part of a much more complex "whole" which, in all probability, is part of an even larger whole, etc.

Rather like the old doggerel: "Every flea has smaller fleas upon his back to bite 'em, and all those fleas have smaller fleas, and so ad infinitum!"

This is Systems thinking, where we acknowledge that every thing fits into a larger context, and that to remove it from its context makes it meaningless.

"The whole is greater than the sum of its parts."

An animal is a system for converting one form of product to another. The animal fits into the farm system which nests inside the regional and then the national, and finally, the planetary systems. We must always be careful to keep the bigger picture in mind when we plan changes to our system.

For example, I was once told that: "sustainability is just a question of where we draw the boundaries."

petrie dish which inevitably dies because it runs out of nutrients or because it poisons itself in its own waste!

So it is obvious that the farm system can only be sustainable in the long term if the inputs and outputs can eventually recycle...and we're a long way from achieving that goal!

The ultimate system for us is the whole planet. We can't ignore the fact that things we do in one location are effected by, and effect things in very distant locations.

Think of acid rain and nuclear accidents or, on a different level, change in prices for grains.

In landcare we can easily fall into the trap of thinking that planting a few trees along an eroding creek will lead to a sustainable farm. There is no question that tree planting has an important role to play, but we need to start exploring the deeper questions about what a really sustainable food system would be like.

What population can the world support?

Why do we find ourselves working longer for less to provide what would appear to be an essential commodity - food?

As "living standards" rise, is quality of life really improving?

Can we still feel comfortable knowing that we are largely squandering the nonrenewable resources that might be needed by our grandchildren and their grandchildren?

You see, there aren't just environmental systems. There are economic, political and social systems within which we operate and we must bear these in mind too.

There are many studies that demonstrate that our constant demand for economic growth is the root cause of most of our environmental problems.

The speaker was trying to say that a farm was sustainable as long as the inputs to the farm system balanced the outputs.

He didn't acknowledge that there might be a question about where those inputs were coming from, or where the outputs ultimately end up.

In western agriculture we depend to a large extent on mined and highly processed inputs, usually from non-renewable sources.

For example, fuel and chemicals come mostly from fossil oil deposits laid down over millions of years, now being rapidly depleted over less than a century or so and obviously (despite economists attitudes) finite.

The outputs from our farms end up largely on the tables of the world and the waste from both the eating process as well as all the processes on the way to the table (harvest, transport, processing, packaging, marketing, distributing, etc) all contribute to the pollution slowly strangling the planet.

Rather like an expanding population of bacteria growing on a

I'll explore this and other aspects in later articles, but in the meantime, just ask yourself: "Do I make my most important farming decisions because they feel 'right' for me, or because financial pressure requires it?"

It all sounds a bit pessimistic, but remember that a journey of a thousand miles starts with one small step, as long as that step is in the right direction!

And I think we need to check our sense of direction NOW! We have the power to make drastic and irreversible changes to our life support system so we must break free of our flawed compartmentalised thinking.

I believe that: "Our future lies NOT in competition and consumerism, BUT in cooperation, community and conservation".

I intend to explore each of these aspects in future issues and demonstrate how they effect the attempts we make to achieve sustainability.

Please let me know your reactions since it is only through discussion and different points of view that we can move forward.

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Department of Horticulture, University of
Missouri-Columbia

The success or failure of the organic approach depends on how gardeners use and prepare organic matter. Organic matter improves soil tilth and prevents soil compaction and crusting. It increases the water holding ability of the soil and provides a more favorable soil environment for earthworms and beneficial microorganisms. It slows erosion, and in later stages of decay, organic matter releases nitrogen and other nutrients to growing crops. Carbon dioxide from decaying organic matter brings minerals of the soil into solution, making them available to growing plants. Many soils of the world have been ruined, mainly because they have been depleted of organic matter from prolonged cultivation without proper soil management.

Sources of organic matter

Animal manures. Where available, animal manures are excellent sources of organic matter and nutrients for the soil. It is best to apply manures after they have been composted and partially broken down. Fresh manure may be applied directly to the soil, but this should be done in fall and plowed down so that there is adequate time for sufficient breakdown and ammonia release before crops are planted.

Those who do not have access to fresh or composted animal manures may find packaged dried manures for sale in nurseries and garden stores. Because fresh, composted manure contains high amounts of water, an equal weight contains fewer nutrients than dried manure. Also, the fertility of manures from different sources varies widely. Table 1 gives some average figures.

Table 1. Major constituents of animal manures (percent).

| | Nitrogen | Potassium | Phosphorus | Calcium | Magnesium | Water- Organic | content |
|----------------|----------|-----------|------------|---------|-----------|-------------------|---------|
| Undried | | | | | | | |
| Cattle | 0.5 | 0.3 | 0.5 | 0.3 | 0.1 | 16.7 | 81.3 |
| Sheep | 0.9 | 0.5 | 0.8 | 0.2 | 0.3 | 30.7 | 64.8 |
| Poultry | 0.9 | 0.5 | 0.8 | 0.4 | 0.2 | 30.7 | 64.8 |
| Horse | 0.5 | 0.3 | 0.6 | 0.3 | 0.12 | 7.0 | 68.8 |
| Swine | 0.6 | 0.5 | 0.4 | 0.2 | 0.03 | 15.5 | 77.6 |
| Dried | | | | | | | |
| Cattle | 2.0 | 1.5 | 2.2 | 2.9 | 0.7 | 69.9 | 7.9 |
| Sheep | 1.9 | 1.4 | 2.9 | 3.3 | 0.8 | 53.9 | 11.4 |
| Poultry | 4.5 | 2.7 | 1.4 | 2.9 | 0.6 | 58.6 | 9.2 |

To interpret the table, note that each 100 pounds of fresh cattle manure contains about one-half pound of available nitrogen, while 100 pounds of dried cattle manure contains about 2 pounds. Compare these amounts to a common commercial fertilizer such as 10-10-10, which contains 10 pounds of nitrogen per 100 pounds. By observing the nutrient content of the major constituents of a fertilizer, a guide to the appropriate rate of application can be developed (see Table 2).

Table 2. Manure application rates.

To apply from 1/4 to 1/2 pound actual nitrogen, add one of the following:

- 50 to 100 lbs. undried cattle manure
- 20 to 50 lbs. undried poultry manure
- 12 to 25 lbs. dried cattle manure
- 5 to 10 lbs. dried poultry manure
- 2.5 to 5 lbs. 10-10-10 fertilizer

Fresh manure should not be used directly among plants or mixed into soil immediately before seeds or plants are placed in the garden. Fresh manure produces ammonia as it decomposes. Ammonia in direct contact with plant roots can cause damage and must be avoided. Another disadvantage of uncomposted manure is the introduction of weed seeds into the garden.

Compost. Where manures are not readily available, you can make compost from lawn clippings, leaves and other plant materials. Compost is not only convenient, it is also inexpensive. Nutrient content of compost is relatively low, but its main benefit is the organic matter it adds to improve soil tilth.

Green manure and fall cover crops. Where the garden area to be improved is large, or where other forms of organic matter are not readily available, green manuring is often the most economical means for soil improvement. Green manuring means growing a cover crop in your garden and plowing it under, thus adding organic matter to the soil. The greatest response from green manuring comes from not using the garden for one season, while growing a grass or other green manure crop and plowing it under in early fall.

Another method is to seed a green manure crop in the fall and turn it under with a plow or large tiller in early spring. With this method, you can continue to use your garden normally, while gradually building up the soil.

In general, you should seed a cover crop in September, not later than October 1. The cover crop protects the garden from erosion during the winter. Plow under the cover crop when it is 6 to 8 inches tall. If it grows taller, mow it down before plowing.

Annual ryegrass is one of the most satisfactory plants for green manuring or covering. Seed it at 1 to 2 pounds per 1,000 square feet of garden space. Seed rye or wheat at 3 to 4 pounds per 1,000 square feet. Thorough incorporation into the soil is important in early spring to prevent regrowth and weediness from these grasses. Wait at least two weeks before planting.

Sawdust. In some areas where sawdust is readily available, it provides an excellent source of organic matter for the soil. You can use sawdust as compost, as mulch or for direct incorporation into the soil. A normal addition of sawdust would be about 3 to 4 bushels per 100 square feet of garden area. You should use only aged sawdust. Sawdust has no appreciable effect on soil acidity.

The major problem with adding sawdust is the greater likelihood of developing nitrogen deficiency. As sawdust breaks down in the soil, it uses nitrogen, making it unavailable to plants. Therefore, along with sawdust you need to add materials that supply nitrogen to keep plants from starving. Apply the additional nitrogen needed at the time the sawdust is added and repeat as a side dressing during the growing season. For each bushel of dry sawdust, apply about 3 pounds dried blood or 1 pound of potassium nitrate or 1/2 pound of ammonium nitrate. You can also use other materials at rates determined by the percentage of nitrogen contained. The garden may need later applications also if plant growth is poor due to lack of nitrogen.

Sewage sludge. In some areas, sewage sludge may be available as a source of organic matter. Two types may be available: digested sludge and dried, activated sludge.

Digested sludge is relatively low quality as a fertilizer in comparison to the other type. Apply and plow in digested sludge in the early fall. Do not apply digested sludge directly where you plan to grow a crop the same season, unless it has been composted. It generally contains from 1 to 3 percent nitrogen. Sewage sludge can

be a highly variable product. Some sources may contain heavy metal ions and are best not used in the vegetable garden.

Dried, activated sludge is made from sewage that has been separated from coarse solids, inoculated with microorganisms and aerated. It is filtered, dried in kilns, ground and screened. It is useful as a fertilizer on lawns and is heat treated, making it sanitary for garden use. This type of sludge may contain from 5 to 6 percent nitrogen. Apply dried, activated sludge at about 5 to 7 pounds per 100 square feet; apply digested sludge at about 7 to 10 pounds per 100 square feet.

Never apply untreated or raw sewage to garden soil for any purpose.

Organic vs. inorganic or man-made fertilizers

One of the greatest arguments among gardeners comes in the area of fertilization. Some prefer totally natural materials; others are content with man-made materials; many use a combination of both. In some cases, the selection is based on economics. Often, the availability of organic materials is limited when large quantities are needed.

For plant growth, both forms of fertilizer can be equally effective. Organisms in the soil break down organic materials to form inorganic, water-soluble materials identical to those formed by people. Plants are unable to determine a difference in the original source of the compounds they absorb. Extra growth often is a response to better root environments and action of soil organisms working on the organic matter.

While some materials, such as manure, add organic matter as well as fertility, other organic fertilizers are not suppliers of organic matter. One of the major benefits of organic fertilizers is that they break down slowly and are less likely to release nutrients rapidly enough to burn plant roots if used in large amounts.

Many inorganic fertilizers are more soluble and can burn plants if used improperly. Since many organic materials break down slowly, they supply nutrients to plants for a much longer period of time without frequent applications. Because they are not quickly soluble, they are not leached from the soil during heavy rains and, therefore, are more continuously effective. Some organic fertilizers also contain micronutrients.

The availability of nutrients from organic fertilizers depends on their breakdown by soil organisms, which in turn depends on weather and soil conditions. Release of nutrients is much slower when the soil is cool or heavily saturated with water. Also, breakdown slows during

drought unless soil is irrigated or heavily mulched to keep in soil moisture and keep temperature more constant. Where you need a quick fertilizer response, inorganic fertilizers tend to provide it. Many of the organics have a fertilization lag. Their nutrients are not available to plants until the organic matter has decomposed.

Sources of organic fertilizers

Following are some organic fertilizers that supply nutrients but add little or no organic matter.

Sources of nitrogen (N). Dried blood contains about 12 to 14 percent nitrogen, and therefore can be considered a nitrogen fertilizer, although it also contains about 2 percent phosphorus and 0.5 percent potassium. It may appear either red or black, depending on the process used to remove water during drying. Dried blood releases nitrogen relatively fast. General application is about 2 to 4 pounds dried blood per 100 square feet of garden area. It leaves an acid reaction in the soil. Dried blood is sometimes used as a rabbit repellent.

Hoof and horn meal contains 12 to 14 percent nitrogen as processed, dried hoofs and horns. Although once commonly used as a fertilizer, it is now nearly unavailable in most areas.

Tankage is derived from the dried and ground by-products of animal slaughter. While often available as a livestock feed, this same material can be used as a fertilizer. It averages about 6 to 11 percent nitrogen and may contain about 10 percent phosphorus. Garbage tankage, made from the dried, ground products of household waste, may also be used, although it is not readily available.

Fish meal is the dried, ground, processed material derived from non-edible fish or fish scraps. As a fertilizer it may contain from 8 to 10 percent nitrogen, 4 to 9 percent phosphorus and 2 to 3 percent potassium. As it breaks down, this material gradually becomes available to plants as a fertilizer. Fish fertilizers also benefit plants by the addition of many minor and micronutrients. Fish emulsion is a liquid form often used for house plants.

Sources of phosphorus (P₂O₅). Bone products, one of the earliest sources of phosphorus for fertilizing plants, are available in three forms:

- * bone meal (ground bone softened by steam under pressure)
- * acidulated bone (ground bone treated with sulfuric acid)
- * ground bone (bones cooked but not steamed).

Bone meal is the form most often used as a plant food. The meal from unsteamed bones may contain 20 to 22 percent phosphorus, while that from steamed bones will contain from 23 to 30 percent P₂O₅. Rate of use for soils low in phosphorus is about 2 pounds per 100 square feet. Bone meal is commonly used as a source of phosphorus in livestock feeds and is generally available from livestock feed suppliers.

Rock phosphate is made by grinding a natural rock containing one or more calcium phosphate minerals. It is used either directly after grinding or after concentration as a phosphorus fertilizer. Rock phosphate normally contains between 25 and 30 percent phosphorus. Rock phosphate is more effective in acid soils and relatively ineffective on alkaline soils due to its low solubility. It is most useful as an addition in composting manure and organic materials. Soils low in phosphorus may require ground rock phosphate at about 2 to 4 pounds per 100 square feet of garden soil. When applying with manure or compost, use about 2-1/2 pounds per 25 pounds of manure or compost.

Sources of potassium (potash, K₂O). Wood ashes may contain from 4 to 10 percent potassium. In general, they average about 5 percent potassium with as much as 23 percent calcium. Because of this, they produce an alkaline reaction on the soil. Since they go quickly into solution, you should use them with care. Continued use may raise the pH of the soil, making it too alkaline unless adjustments are made. Use wood ashes at a rate of about 2-1/2 pounds per 100 square feet of garden area. Do not soak ashes in water before application or the potassium will be lost. Do not apply wood ashes if the soil pH is over 6.5. Apply ashes at least 3 weeks before planting seeds. Coal ashes are not beneficial to plant growth.

Greensand is sometimes recommended as a source of potassium but is not readily available in many areas. It is a hydrated salt of iron and potassium silicate and contains about 6 percent potassium, which is very slowly available to plants.

larger amounts are required, split applications between spring and fall to create a gradual increase or decrease. Work the materials thoroughly to a depth of 6 or 7 inches.

If you use wood ashes to reduce acidity, use about two-thirds the amount recommended for limestone.

Disease control methods

Plant diseases may seriously stunt or even kill plants. They may appear as leaf spots, wilts, stunts, rusts or a variety of other symptoms. Plant diseases may be caused by fungi, bacteria, viruses, nematodes, or may be a response to environmental conditions that produce disease-like symptoms. The key to good disease control is prevention.

Some, but not all, diseases may require frequent spraying with traditional chemicals to provide adequate control. Use cultural procedures to prevent disease infection with or without spraying to help reduce the seriousness of some diseases.

Genetic resistance. Whenever available, the use of resistant varieties is the best way to prevent disease problems. Response to disease attack may vary, as indicated by the terms immune, resistant and tolerant. Disease immunity indicates that a plant will not get a disease even though the disease is present. Disease resistance implies that although a plant may occasionally contact the disease, it is much less likely to get it, and if attacked, may not be seriously affected. Tolerance to a disease implies that the plant usually contacts the disease when present but is able to survive in spite of being infected.

Resistant varieties are becoming more readily available in many crops. Look for disease resistance in variety descriptions.

Crop rotation. Crop rotation is as old as agriculture. Continued cropping in one area allows for buildup of disease organisms. Rotating crops each year to help prevent buildup of organisms in one place can reduce some disease problems. Diseases such as clubroot and some vascular wilts may persist in the soil for five or more years without the presence of a susceptible plant. For these and similar problems, very long rotation times are necessary.

Sanitation. Sanitation is important to the control of plant disease. Destruction of weeds or other plants that may serve as overwintering host plants, along with elimination of crop plants that have been diseased, is important. Careful selection of new plants, seeds or cuttings is important to avoid introduction of diseases into the garden or landscape.

Protection. In some cases, careful selection of disease-free seed and propagating material helps disease control by avoiding introduction. Certified seed potatoes are a good example of a case where the use of disease-free seed pieces keeps the soil clean and protects against inoculating the field with soil diseases.

Following are practices that can help control plant diseases:

1. Use disease-resistant varieties whenever they are available, as well as varieties suited to the local growing conditions.
2. Select garden locations with good soil drainage, adequate sunlight, and good soil.
3. Improve the soil with organic matter and fertilizers to develop the best soil tilth for growing seeds and plants.

4. Rotate the garden locations. If the garden space is too limited for garden rotation, rotate crops within the space available.

5. Use disease-free transplants and seeds from reputable suppliers. Do not plant more than you can take care of properly.

6. Eliminate weeds around the garden area that may serve to harbor diseases throughout the year.

7. Control insect pests that serve as disease carriers.

8. Pull up and destroy any plants showing diseases, as those caused by viruses, which can not be controlled. Pull off diseased leaves as soon as you notice them to help slow the spread of leaf spots and other fungus diseases.

9. Spade under or remove and destroy crop residue as soon as harvest is completed if disease was a problem during the season.

10. Do not overcrowd plants. Overcrowding prevents good air movement and exposure to adequate sunlight. High humidity and too much shade caused by these conditions can increase the development of some diseases.

Controlling insects

At one time, gardens had few insect problems. The current movement of people over long distances has helped move pests to areas where they were once unknown or uncommon. Many more problems that need control face the modern gardener.

Many common insect pests can be controlled with modern chemicals. In avoiding their use, however, you must be willing to work a little harder and accept some insect damage in your garden. Following are a few techniques that can help control insect attack and spread. Some of these are the same as those used to control disease:

- * Since you will not be able to avoid all insect damage, plant more of a crop for adequate harvest.
- * Check crops often and hand pick any insects present before they become too numerous.
- * Encourage natural insect predators when possible.
- * Although not common, some plants have insect resistance. Select them when available.
- * Do not plant crops in large blocks. Mixing different types of plants helps slow the spread of insects that are present.
- * The concept of trap crops may also help. These are less desirable crops planted near the garden. The hope is that insects will be attracted to and consume these crops more than the desirable ones.
- * Supplement mechanical controls with biological and natural pesticides. These include dormant oils, lime-sulfur, elemental sulfur, pyrethrins, rotenone and nicotine. Use these materials carefully, according to directions of the manufacturer.
- * Fertilize, cultivate and water to promote vigorous growth. Healthy plants seem less attractive to insects, and those that are attacked are better able to survive and still produce a crop.
- * Rotate the crop. Some insects may overwinter in the soil or other debris. Moving the crop may delay their attack in spring.

* Use transplants when possible. These develop more quickly than seeds in the garden. The quicker you can grow and harvest the crop, the less chance of insect pests seriously damaging the plants.

* Destroy any garden debris or nearby weeds that may serve as breeding or overwintering places for insects.

* Fall cultivate the garden. This buries deeply or exposes some insects and insect eggs to birds or to desiccation during winter freezing and thawing.

* Keep the garden free of weeds that may harbor pests.

Biological control of insect pests. The biological control of insect pests refers to the use of disease organisms, predacious or parasitic insects, insect-feeding birds, toads and other animals.

When these are used, a certain amount of damage must also be expected, as these predators are not always present at the time the insects are numerous, and their increase in numbers usually follows an increase in the pests. Releasing pests (such as ladybugs) and predators has been successful in some areas. One of the most successful biological controls has been the use of a bacteria, *Bacillus thuriensis*, for control of cabbage loopers and cabbage worms in cole crops.

Remember that when any kind of insect predator is released in the garden, the pests must already be present to serve for food. If insects are not present, the predators will move elsewhere looking for food.

Soap as an insecticide. Some people suggest that soap is effective as an insecticide. This recommendation dates back to the 1700s. Modern soaps vary widely, and their effectiveness as an insecticide also varies and is sometimes questionable. It seems that the most effective soap for an insecticide is the old-fashioned homemade soap prepared from waste lard, tallow, lye and water. If there is any benefit from these materials, remember that it comes from some of the more caustic soaps, not detergents.

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- * In many cases are cheaper and more effective than chemical equivalents
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FARMERS NOTE - N.P.K. Blends Available

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Good companions

Asparagus: tomato, basil, parsley

Beans: carrots, cabbage, cucumber, cauliflower

Broad beans: potatoes, lettuce

Bush beans: strawberries, grapes

Dwarf beans: beetroot, kohlrabi

Beetroot: kohlrabi, dwarf beans, onions, chives,

Broccoli: dill, celery, chamomile, sage, rosemary,

Brussels sprouts: potatoes, sage, hyssop, thyme,

Cabbage: beetroot, potatoes, beans, onions, sage,

Capsicum: basil

Carrots: leeks, lettuce, onions, peas, tomato,

Cauliflower: celery, celeriac, beans, oregano

Celery: leeks, beans, cabbage, tomatoes

Corn: melons, squash, pumpkins, cucumbers,
potatoes, parsnip, artichokes, Jerusalem artichokes

Cucumber: beans, peas, radish, celery, carrots,

Chives: carrots, tomatoes, parsley, parsnips, fruit trees

Eggplant (aubergine): beans, potato, marjoram

Horseradish: potatoes, fruit trees

Kohlrabi: beetroot, onion, dwarf beans,

Leeks: carrots, celery, celeriac, strawberries,

Lettuce: strawberries, cabbage, carrot, onions,

Nasturtium: cabbage, cauliflower, cucumber,

Onions: cabbage, carrots, beetroot, lettuce,

Potato: beans, corn, cabbage, horseradish,

Peas: carrot, corn, cucumber, beans, radish

Pumpkin: sweetcorn, marjoram

Radish: cucumber, lettuce, kohlrabi, melon

Spinach: broad beans, strawberries, fruit trees

Tomato: asparagus, basil, lima beans, cabbage

Zucchini: corn, marjoram, nasturtium

Bad companions

Potatoes

Leeks, chives, garlic, onions

Fennel

Garlic, onions

-

Runner or climbing beans, lettuce,
silverbeet, cabbage, leaf mustard

Tomatoes, strawberries

oregano

Strawberries, rosemary

Tomatoes, garlic, strawberries

celery, dill, mint, thyme, oregano

-

Dill, parsnip, chives, sage, rosemary, radish

Strawberries, rue

peas, potato, nasturtium

Parsnip, potato, wheat

-

Potatoes, sage, sweetcorn, cauliflower, basil

-

-

-

Pole beans, tomatoes

cucumber

-

onions, parsnip

Parsley

beans, beetroot, parsnip

-

broccoli, Brussels sprouts, potato,
radish, squash, zucchini, fruit trees

Beans, peas

parsnip, parsley, leeks

Pumpkin, squash, cucumber, dill, eggplant

(aubergine), tomatoes, raspberries

Onions, garlic, shallot

turnip

Potato

Hyssop

squash, peas, nasturtium

-

Beetroot, fennel, kohlrabi, broccoli,

Brussels sprout, cauliflower, potato,

rosemary, carrots, chives, dill, onions,

parsley, parsnip, nasturtium

Artwork and text by Lydia Waldron

Reprinted from COGS QUARTERLY August 1994

The Lounge Lizard

The Day of the Disappearing Cow

I worry about my wetlands.

Back in my grubby pre-politically correct days, I used to call them useless bloody swamps.

But, then again, back then I used to have a heap of scrub filled with all manner of useless plants that wouldn't run enough sheep to earn me a slab of beer an acre.

(Mind you, nowadays the best country still won't earn me a slab of beer an acre, despite having a lot more than a slab of beer's worth of herbicide and super down its greedy little throat.)

Anyway, the country's improved to billy-O in the past few years - now I've got wetlands and remnant vegetation filled with something called biodiversity. Still won't buy me a slab of beer, but it impresses the greenies no end.

It is rather pleasant to have people say what a wonderful job you're doing preserving this biodiversity for the greater community's enjoyment and benefit.

Well, certainly more pleasant than having the government bods and your neighbours telling you what a lazy useless so-and-so you are for not getting off your tail, firing up the old Tordon axe and wailing into the stuff.

And that was happening not so long ago to many people.

But despite all this new awareness for all things bush-like, and striving madly to get in touch with my feminine side, I still can't really take to my wetlands.

Could it be the pain of shovelling 35 cents worth of Fasinex down each recalcitrant sheep in a vain attempt to beat liver fluke which frolicks unwholesomely somewhere in those pristine wetlands?

Equally probable is that the distaste stems from the episode the family still shudderingly recalls as 'The Day of the Disappearing Cow'.

It was a pleasant enough day to start with; us kids and the parents rounding up the few of our cattle the neighbours hadn't rustled out in the back country.

Mother rode up to the aforementioned pristine wetland, hopped off the horse and walked across a fairly dry spot to check if it was too boggy to run a cow over.

It appeared OK, so she rode the horse over before coming back to push a nice type of Hereford cow across to join the mob.

All fine at this stage.

The cow wandered reasonably contentedly across, stopping only to munch on the odd rare and endangered species before an odd look crossed its bovine features.

It began to sink...

And sink.

Mother was emitting startling noises whilst running around in small, ever decreasing circles, and us kids were just horrified as a few hundred kilos of prime beef slowly but inexorably disappeared below the surface of the water.

No doubt those wetlands do wondrous things for water quality.

But they haven't done too many wondrous things for me since The Day Of The Disappearing Cow.

And they've done even less for the cow.

TOOLS--Gardeners have long recognized that tools have a distinct life cycle just like anything else in the garden: active phase (1-12 weeks), marked by the appearance of telltale blisters on the hands and/or bruises on the legs of the user; metamorphosis phase (12-14 weeks) during which the handle suddenly breaks at the point where it is joined to the metal working end; and dormant phase (14-20 years), spent by the two halves of the tool resulting from metamorphosis, usually in a dark corner of a shed.

Cathy Morison



* When direct planting with small seeds, eg carrots, bulk out first by mixing the seeds with sand. You can help the plants pre-germinate by keeping them in moist sand for about 4 days (no longer - don't let them actually germinate!) before planting out.

* When planting out large seeds, eg pea or corn, soak overnight in a weak seaweed solution prior to planting; alternatively, keep seeds moist between 2 pieces of moist kitchen paper for 3 or 4 days until seeds germinate, then plant out carefully. This is particularly useful if you are not sure of the seed's viability.

* A seed should be planted at a depth 2-3 times its diameter, although it is better to plant too shallow rather than too deep.

* Check your seed packets for their 'use-by' date as poor germination may result from planting after that time, or plants may show a lack of vigour when the seedlings come up.

SPRING VEGETABLE PLANTING GUIDE

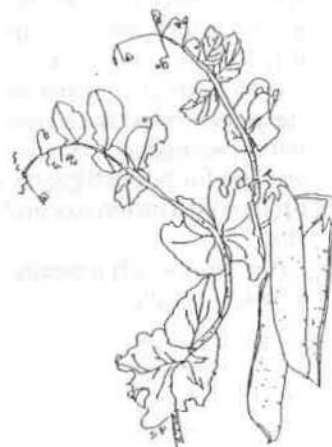
| | SEPT | OCT | NOV |
|-----------------|------|-----|-----|
| Globe Art | T | | |
| Jerus. Art | T | | |
| Asparagus | S | | |
| French Beans | S | S | S |
| Beetroot | S | S | S |
| Broccoli | | | S |
| Brussel Sprouts | | S | |
| Cabbage | ST | ST | ST |
| Capsicum | | S | |
| Carrot | S | S | S |
| Cauliflower | | | S |
| Celery | S | ST | ST |
| Cucumber | S | S | ST |
| Eggplant | S | T | T |
| Endive | | | S |
| Leeks | ST | ST | T |
| Lettuce | ST | ST | S |
| Marrows | S | S | ST |
| Melons | S | S | ST |
| Onions | ST | T | |
| Parsnips | S | S | S |
| Peas | S | S | S |
| Potatoes | S | S | S |
| Pumpkins | S | S | ST |
| Radish | S | S | S |
| Rhubarb | T | T | |
| Salsify | S | S | S |
| Silverbeet | S | S | ST |
| Spinach | S | S | |
| Squash | S | S | ST |
| Sweet corn | | S | ST |
| Tomatoes | S | ST | ST |
| Turnips white | S | | |

S = seed sowing

T = transplant

* Be prepared to protect your frost-tender seedlings, as Canberra can experience harsh frosts right through Spring. Make your own cloches from plastic bottles with the bottoms cut out, or row covers for larger plantings.

CROP ROTATION:
Remember to rotate the crops you grow in a particular garden bed. Crop rotation is a most important practice for organic gardeners. Successive crops should not make the same demand on nutrients i.e. follow heavy feeders with light feeders, and should not share the same diseases or attract the same pests (this prevents a build up of disease problems, and losses from pests). There are numerous crop rotation schemes used, but try to keep to at least a 4 year rotation period and do not grow the same members of a plant family in the same bed in consecutive years. eg the solanum family - tomatoes, capsicums, eggplants, potatoes



PLANT VARIETIES:

It is important with crops such as cabbage and lettuce to choose the appropriate variety for the time of year. Lettuce varieties best suited to early Spring are Cos, Salad Bowl, Butterhead varieties, Mignonette.

NO SPRAY TODAY

I never use the spray `cos it scares wildlife away
And even friendly sprays can kill the fish
I allow the insects theirs, we negotiate fair shares
Yes a balance in the garden's what I wish

And bees around the flowers may soon be dead in hours
You might smile but I don't think it's funny
Although you won't get stung, believe me it's no fun
If upon your toast there isn't any honey

I companion plant all day to keep the bugs away
Nature does her job while I watch with glee
The daisies do their toil down there in my soil
And eelworms in my soil you'll never see.

Dragon flies eat pests, Kookaburras build their nests
And keep most of my garden free from snakes
Tomatoes roam around, they're much happier on the ground
So I never ever tie them up on stakes

Lady birds eat aphids, this benefits my roses
And citrus trees are glad when they're around
The ones that they don't get I spray off with a jet
And blast the little suckers to the ground.

So if you reject those sprays, throw those chemicals away
Allow the insects back into your ground
For a little while they'll fight, but once they get it right
They'll harmonize, then you'll be friends all round.

(By John Lewis - contributed by John Woodford, BOG member)

COGS NOTICEBOARD

NEXT MEETING: Tuesday, 26th August 1997 at 7.30 pm, Room 4,
Griffin Centre, Civic.

JOIN US FOR THE COGS QUIZ NIGHT

Come along in a team, or come as an individual to join a team on the night.
Come and enjoy a fun night and maybe win some prizes, along with
THE GOLDEN FORK award!
LOTS OF PRIZES, LOTS OF FUN!!!



SEPTEMBER DIARY DATE
*****GUEST SPEAKER*****
GEOFF BUTLER of the
CONSERVATION COUNCIL OF THE
SOUTH EAST REGION & CANBERRA
Geoff will talk about
"The importance of knowing your ACT weeds
and horticultural weeds management"

At all our meetings the Library will be open, there will be books for sale, a
produce stall and the sale of COGS OWN SEEDS.
Herbal refreshments are served at all meetings - come and join us.

Next Committee Meeting: Tuesday, 19th August 1997 at
the Environmental Centre, Civic.

****Write a letter to the Editor and WIN****
The best letter chosen
will win \$10!

COGS ANNIVERSARY DINNER:
FRIDAY 21ST NOVEMBER