SOIL PREPARATION, PLANTING, WEED CONTROL AND GROWING AT THE FIELD

This is how the field works! We have learned, often the hard way over the last fifteen years and these are the tried and tested methods which enable us to manage our growing area in the least labour intensive manner. This means that everything we do is intended to minimise digging, hoeing, weeding and otherwise micromanaging crops. Most folk who say they don't mind hoeing and weeding change their mind when they can't see the end of the row and there are 20 rows in each plot! Weed control is always a priority it is highlighted throughout and summarised at the end.

Appendices:The Monthly Tasks at the Field shows the average numbered week of the year when all the tasks described below need to be done. The Record of planting and crop Rotation shows the history of the field and current year planting plan.

Whatever you do

Think it through x3

Plan and measure carefully x2

Do it thoroughly x1

Ploughing and cultivation

For the last fifteen years we have been fortunate to have the ground ploughed and sometimes harrowed in the Spring. We have avoided ploughing in Autumn or winter to avoid the loss of nutrients and carbon over the winter months.

This process inverts the topsoil and rootmass about 6-8 inches and leaves ridges of loose sandy soil and decomposed material, including dung which we have spread prior to ploughing.
In the absence of frost breaking up the clods left by ploughing, we rake it to a fine tilth for those crops which need that. This can take about 15-18 man/woman hours per plot. Alternatively the job can be done in an hour with the rotovator on a higher setting. If this is done once a year, when the ground is still cool no worms will be harmed; also because the root mass is inverted little damage is done to the soil consistency.

Sowing Seeds

Most small seeds need to be stored in a cool, dry dark place. Germination rates are better when seed is fresh and they are planted in the optimum conditions , warmth, long periods of daylight, and moisture.

Most of our small seeds (brassica,leeks,beans and courgette) are sown in fish boxes in the small polytunnel between February and April, Accordingly we layer the seed boxes as follows : On the bottom we make a mix of our own compost loam and sand, followed by a layer of bought in potting compost and top with a shallow layer of sowing compost.Carrot,parsnip and beetroot are sown directly into the ground in May/June as are later crops of beans and peas

Seeds need to be sown in a moist gritty, well drained medium to absorb the waste products they generate. Smaller seeds need to be sown extremely shallow to access maximum light. Larger seeds must never be sown>2x their size below the surface. Also they should be planted on their long edge.

Cold wet soil kills seeds! Sow thinly and firm in once planted. Later sown seed often outperforms early sowings so don't be too hasty.
For planting directly into the soil, we can use a simple belt driven seed drill which plants various sizes of seed at consistent depth and spacing very quickly. We use an Earthways seeder however It is not any use for flat or irregular shaped seed like parsnip, beetroot or spinach but can plant peas and beans very quickly..

In order for the seed drill to work efficiently the seed bed needs to be flat,dry,well prepared and de-stoned beneath the planting line.

Watering

Sunlight creates photosynthesis whereby the plant produces carbohydrates from CO2 and water. This process creates a moisture pump so plants need to find water. This water also acts as the solvent to carry dissolved nutrients from the soil to the plant. However too much water can cause plants to rot and mould, especially if applied to the plant rather than the soil.

When to water:

Recent plantings in dry weather. A dry spring may necessitate frequent watering to ensure germination of seeds. Morning or evening, there are good arguments for both, or whenever you can!

In the field we can use leaky hoses laid alongside seedbeds in dry weather to promote germination but generally it is not a good idea to water plants out doors as this leads to shallow root formation

however sometimes we need to water to establish transplants in dry weather. We try to avoid watering field crops as in early season the soil is always moist a few cm beneath the surface and we want the plants to send roots down rather than out along the surface which can dry out. Sometimes we may have to water small seed to get it to germinate but it is better to hold off sowing in a drought till rain is forecast.(or soak the seed prior to planting). We also try to avoid wasting mains water which has to be pumped 14 miles back upstream from Perth! Our soil is rich in organic material which holds water through the summer even in long dry spells.

For seeds planted in the small polytunel ,the bigger the container the plant is in ,the less it will need to be watered. Water before the plant wilts if possible.

With all vegetables, a good watering as soon as they have flowered will increase the yield dramatically.

Seeds need tap water at ambient temperature initially but, when they become plants, stored rainwater from the four water barrels provides inoculation in the form of organic compounds, bacteria and oxygen.

Currently we have a rota sheet for watering the small polytunnel but there are some possible alternative watering systems for poly tunnel and greenhouse

Automated , watering system connected to nearest stand pipe as we have in the large Polytunel.
Seep hose: Perforated pipe in soil at max root depth, water supplied under gentle pressure.
Capillary matting (for containers) a thick absorbent material under pots or trays and overlapping into a tub of water which is replenished from a higher tank. Alternatively a rope of material wicking water from a tank, laid on top of the soil. The higher the supply tub the quicker water is transpired. If you use a watering can, turn the rose to direct the spray upwards rather than directly at the soil or plant.

The whole polytunnel can be watered very quickly by directing a fine mist spray with the hoze above the seed boxes and allowing it to “rain” lightly down on them.(being careful to avoid the flower seeds and basil plants which may need watering from below)

Sowing Medium

Drainage is crucial and is achieved by well aerated gritty soil and drainage holes in containers .The best medium is a mix of loam (rotted grass turfs) humus or peat, and gritty soil or sand. It does not need any extra nutrients as the seed contains all the fertility they need to germinate. Once germinated it can put its roots down to seek nutrients so as we make your own compost we use it to half fill the containers then sprinkle sterile (weed free) shop bought compost on top to sow of the seeds in.

At the field we use compost from the bins marked to be used in the current year, this has been prepared from a mixture of layers of green, brown material and dung and left to decompose for 1-2 years. (See good practice composting) It may need to be riddled or thrown through a wire net screen to remove coarse bits of bark or stems.

The compost is mixed with loam. This is well rotted down divots of grass and soil which has also been rotting down under carpet or black plastic. We also like to add sharp sand, either from a builder's merchant or from flood deposition on the riverbanks. The mixing is best done outdoors near the polytunnel. In recent years sterile bought compost has proven better for bringing on seedlings in the polytunnel and we have been layering it more thickly over our loam potting mixture.

At the polytunnel, we fill fish boxes which have holes punched in the bottom with a fork. Fill to about two thirds depth, firm down and sow the seeds on the surface, spacing them as follows: Leeks 20mm all round, Brassica 75mm, Beans and peas 60mm all round. Cover the seed lightly with sterile bought in compost and firm down again. We aim to plant around 6-7000 leeks, 80-90 courgettes and 100 brassica. Plus early sowings of Broad Beans , We also sow herbs and flowers in smaller containers. Boxes and containers are placed on or beneath staging and moved as they germinate.

Light is essential for germination (so if you want to minimise weeds germinating plough, hoe or harrow in the evening) Water seeds with sun warmed clean tap water at first but once established water plants with stored rainwater which has organic compounds in it is preferable. If this is not practicable supplement tap water with feeds from the tubs of comfrey and nettle "tea" behind the polytunnel.

Some of us propagate seeds, like tomato, cucumber and chillies herbs and flowers at home .We have 2 electric propagators for this purpose. Propagators need to be well ventilated and only warm till the plants germinate, thereafter cool off and provide plenty light and air. Warm, gloomy conditions produce lanky plants. Harden off in same containers before planting out, protect from draughts and frost.

Soil Preparation

We cover the soil with manure or compost in mid to late winter at least a couple of months before ploughing and 3-4 months before planting. We do not dung the carrot /parsnip plot.

Plough and harrow the soil to incorporate the manure.

Go over plots removing large divots, stones and any pernicious weed roots which have been brought to the surface by ploughing e.g. couch grass, dock, nettle, creeping buttercup.

Cover divots and leave for a year to create Loam. Bag stones for use later or remove to wet areas by water supply to improve drainage . Compost anything else but remove pernicious weeds.

Lightly rotovate plots for crops which will require a finer tilth. This will break up dung and sods and incorporate more compost.

Rake and rake again to produce a fine tilth where necessary, prioritise areas where small seed will be planted for example roots and green manure. If you can leave a “stale seed bed” for a week or so and rake again just before planting this will kill any germinated weed seeds. Use the wide field rakes if possible as this makes the job quicker and easier.

Areas of couch grass should be covered with black plastic and left for at least a year preferably two as it is well nigh impossible to dig out and digging disperses the rhizomes.

A fine tilth is not necessary on potato, courgette or bean and where brassica are to be planted out but if the soil is left for long after ploughing, it is a good idea to give it a quick rake or rotovate to kill off any weed seeds which may have germinated in the interim. Also rake in lime before planting brassica in the rotation but never lime before potatoes!

Cover onion, leek and brassica plots with membrane ASAP. This warms the soil and saves weeding. Plant green manure in any empty areas immediately to maintain soil condition and avoid weeding. Protect seeds and young plants from birds, insects and molluscs with physical barriers, nets, fleece, and carpet, cardboard.

Crop protection barriers

Brassica needs protection from pigeons, cabbage white butterfly and pheasants,beans and onion sets from crows and carrots from root fly.

We have a variety of fleece and nets which we use to protect crops from pests and birds, these can be laid directly on top of seedlings as a temporary measure or made into more permanent “tunnels”. These are made by suspending netting or fleece from hoops of different lengths supported by 60cm lengths of strong cane driven into the ground.

1’We push the canes in at 3m intervals 1.5m apart for about 25-30 meters,
2.then hoops made from 20mm alcathene water pipe are pushed over the canes and into the soil
3.bailer twine is clove hitched to each hoop and guyed tightly down at each end
4.the net or fleece is draped over the hoops and twine and secured with stone bags (NOT pegs)

As soon as possible after the ground has been prepared, we lay the thick green membrane held down with staples every few metersIn our experience 6-7000 leeks take two 70 yard runs of membrane. Brassica plants can be accommodated by one 70 yard run of membrane.

This may seem like a lot of work and expense especially when we used membrane which biodegraded and we couldn't use it again , however the sales of leek and onion crops more than pay for the material and NO Weeding is required for the duration of the growing season! Now we use durable membrane with holes of appropriate sizes which can be reused many times and staples to hold it down with.

The only problem with this approach is that ground keeper tatties from previous years love the dark! They push up the material, tearing it and depriving the young allium plants of light. To mitigate this problem we try to clear the ground of old tatties and plant allium in plots where no tatties have been for at least 3 years.

Green Manure

Geen manure is a cover crop of mustard, rye grass ,clover ,vetch or any combination , sown on exposed soil to supress weeds,prevent loss of nutrients and create bulky organic matter which can be ploughed in to improve soil structure and nurture plants. We use this as much as possible after harvesting crops or to leave a whole plot fallow for a couple of years to restore its fertility and structure.

Lining out

After the soil has been prepared for each crop and before planting, lines made from binder twine are run the length of the plots, (All planting in the main crop areas of the field is North South or down the length of each plot which is 60 yards.) There are lots of small stakes with binder twine wrapped round them so drive in a new stake , tie the end of the twine on and unroll the twine, you may have to join up a couple of rolls. If the twine starts to break, renew it with fresh stuff from the big rolls in the shed. Spaces between the lines are determined by each plant's requirements and remember the edge of the plots may not be straight or parallel so ask someone to help you and set the first line by eye from both ends. They may also need to be pegged to keep them straight as they blow around or get shoved off line as you work. Peg them at 15-25 yard intervals by twisting on a short piece of bamboo cane and sticking it in the ground, keep checking you are straight (enough) it's not an exact science!

If crops are planted in rows 12 to 15"wide they can be weeded at walking pace by using the Hoss hoe or small rototiller.

Crops such as Carrot, Parsnip, Beetroot, Turnip and Swede, Spinach and Lettuce ,Runner, French Broad beans and climbing peas need to be sown in straight lines and generally need to be lined out,.

Courgette, Brassica, Onion, leeks, shallots can be sown in a matrices pattern through membranes and do not need lines.

Lines left on the ground can become a trip hazard and get tangled up with leaves so best lift them once crop shows and is established. Unfortunately this is a statement of intent rather than practice as in the frantic business of June, lifting lines can get overlooked, leading to trips and curses later....!

Planting out

Plant outside when temperatures are consistently warm, in soil which has been ploughed and harrowed to a fine texture, rarely earlier than May. Soil can be warmed by covering with black membrane or plastic for 2 weeks.

Potatoes

We are fortunate in having the services of a tractor and driver who expertly ploughs dreels 28" apart for the tatties. We then have to plant the seed tatties in the dreels 12inches apart for earlies and 14 inches apart main crop(we cut measuring sticks for this job and you can use the end of the stick to make an egg cup sized recess to place the tattie in **with the sprouting chits uppermost**.

Scuff with your foot ,hoe or rake soil from the side of the dreel to cover the tattie. When the shaws of adjacent rows touch, the tractor will come back and reverse plough the dreels to earth up the shaws of the tatties and kill the weeds. It helps the plough if you can pull out any large weedy plants before earthing up.

Blight is a serious hazard for main crop tatties as it destroys them in storage and seems to regularly appear around the 27th July regardless of weather! To prevent the blight on the leaves spreading to the tubers remove all shaws as soon as flowers appear on the plants. Also remove any of the green "tomatoes" as they contain hundreds of seeds which if left in the ground will become rogue tatties next year.

Allium

Onions, leeks and shallots are planted 6-9 inches apart all round through membrane to avoid weeding. We now have a number of foot driven dibbers which we use to dib 6 inch deep holes for leeks, Holes are burnt through the membrane with a customised gas burner and the membrane can

be reused many times.. Shake soil off bare root plants, like leeks, and gently insert into pre watered planting holes 6inches deep, don't water in afterwards as the roots will float up.

Avoid damaging onion bulbs by pushing them into soil, dib a wee hole with the tip of your finger or a small stick and place root down, plant as shallow as possible with most of the bulb showing if you can protect it from birds. If not, compromise but don't bury them as this will cause bull neck and poor storage.

Using a seed Drill

We use an Earthways seed drill to plant small seeds , beans and peas. This will plant a 70 yard row at the right depth and spacing in the time it takes to walk 70 yards! Simply put the disc with the appropriately sized holes in the hopper, fill with seed, set the depth of the mini plough and walk the row. Unfortunately it does not work for irregularly shaped seed like parsnip or beetroot. For everything else from lettuce, carrot to beans and peas ,it works well enough **if** the ground is dry raked clear of stones under the planting lines and reasonably level.

Roots (need planting lines)

In recent years we have planted roots in "no dig " beds 1.5m wide running the length of the plot.

Thse beds are created by accurately measuring them out, weeding thoroughly and layering at least **100mm** of imported compost (mushroom or local authority garden waste sterilised and contaminant free) This requires about 12 tons of compost tobe delivered annually but it is also used in the new large polytunnel which has permanent no dig beds.(see Large Polytunel section)

Carrot, parsnip and beetroot need to be planted thinly. This can be painstakingly done on a windless day by hand planting each seed 2 inches apart. Alternatively, if not using a seed drill, mix enough small seeds for a row (20 per meter) with weed free compost, wood ash or sand and sprinkle lightly along the rows.

Carrots take two to three weeks to germinate, parsnips take even longer so after 10-12 days lightly comb the soil with a rake or burn off sprouting weeds with a flame thrower. Thin ASAP, fewer plants do better than too many. Use a hoe to weed between the rows and hoe between the plants until they are established. Once covered with fleece thinning and weeding may have to be done by

crawling along under the fleece! NB Protect skin from parsnip leaves as their oil can burn skin when activated by sunlight.

There are critical times for infestation of carrot fly. Early sown carrots, harvested in July ,might avoid the fly, later main crops are vulnerable however and need to be permanently covered with fine fleece which is only removed , stage by stage for harvesting and secured again immediately!

This means weeding may be impossible during periods of high fly activity so the bed needs to be as weed free as possible before covering.If thinning and weeding is necessary it may have to be done in the rain or by crawling along under the SECURED fleece! NB Protect skin from parsnip leaves as their oil can burn skin when activated by sunlight.

As soon as the plants show and are thinned and weeded ,push good strong short bamboo or metal stakes in every 5 meters. Slip 3m lengths of alkathene pipe over the stakes and cover with fine white netting, secure well with half filled stone bags at 3m intervals. Alternatively just lay the fleece over the plants and lift it on a rainy day to weed or thin. This protects the roots from carrot fly.

Swedes and turnip are planted in a similar way but can be protected from birds as seedlings by simply laying white fleece over them till the plants are 6-9 inches high. They are then too coarse for birds to peck at.

Lettuce and spinach (need planting lines)

These are small seed and can be sown in a shallow line drawn in the soil 1cm and 2cm deep covered over by scuffing with your feet or a rake and firmed up. Planting can be less precise as the varieties we grow are perpetual leaf crops which continue producing leaves as they are picked. Leave enough room between rows to hoe with hoss hoe 12” or rototiller 18”

Brassica,

Brassica plants are planted out through membrane with stations cut in the form of a cross cut in the material.Space plants about 18 inches all round. Make planting holes some time before planting, fill with water and allow draining. Lime can be applied around brassica plants and doing this in rotation ensures that all the plots are topped up with lime regularly (lime reduces the Ph which our stony ,sandy soil needs as it has a slightly high Ph)o

Divide roots of plants by soaking prior to planting out .Try to keep the root/soil ball complete and firm the soil well round them when planted to avoid air gaps where rotting can occur. Fold back flaps of membrane to protect plant from pests and secure these flaps with stones.

Push good strong bamboo or metal stakes in every 5 meters. Slip 4m lengths of alkathene pipe over the stakes and cover with fine white netting, secure with half filled stone bags at 3m intervals. This

protects plants from birds and cabbage white butterfly.

Courgette and Squash

Dig one foot deep holes allowing one metre all round. Fill the holes with dung, at least 2-3 shovelfuls. Backfill soil from hole on top of dung, and maybe more soil from between plants to create a mound. Finally cover and surround with coarse bark to mulch and discourage slugs or lay membrane down the row of mounds. .A few weeks later, dib a hole in the top of the mound, fill with water and drop the courgette plant in with as much root ball as you can, firm up and re-cover with bark or membrane.

Beans (need planting lines)

Broad bean plants: Dib a hole to receive plant and root ball in a double row with plants 9 inches apart in every direction. The plants do not generally need support but If in a position exposed to the wind, drive in stakes 4m apart on each side of the double row and as plants grow run binder twine round the stakes securing with clove hitches every 4 stakes . Similarly, for second sowing but sow seed directly into soil at same intervals. Beans and peas love wood ash so have a bucket of ash mixed with loam and a little lime to sprinkle round planting stations. Sow seed no deeper than 3 times the size of the seed.

Peas and Runner beans

These crops are planted similarly to Broad beans but on either side of a fence made from 2.4 m Fence posts at 3-4m intervals which hold up sturdy green plastic netting for the vines to climb up. Runner Beans prefer a pole at least 8 feet high.Some dwarf field peas are sown as for French beans in a matrix pattern.

French beans

Seeds are either planted directly into the ground 9”apart in rows 12”-15” apart when all danger of frost is past .If not planted through membrane ,they will need a lot of hoeing .Use the Hoss hoe, until they are big enough to provide shade to the soil. In some areas, we plant French beans as green manure (All legumes synthesise nitrogen as they grow via enzymes in their roots) so don’t worry if they get too weedy or you can’t keep up with the harvest, at least its good ground cover. In these areas, plant rows wide enough to hoe between them with hoss hoe ,1 foot or rototiller 18”.
Legumes fix nitrogen in the soil so leave the roots in the ground when the crop is harvested. If you do not dung this will be perfect for growing carrots next year.

Green Manure

We try to fallow one of the plots each year and plant with green manure, otherwise any unplanted areas should be sown with green manure before the weeds take over. Some weeds are acceptable as ground cover but not dock, couch, nettle. When ploughed in green manure provides **huge quantities of carbon** and nutrients which can sustain most crops without additional fertiliser for three rotations. It also creates a rich textured root mass sponge which retains moisture through dry spells. It is vitally important in maintaining soil quality and preventing loss of nutrients.

Rye grass, clover and vetch mixtures are broadcast by hand on soil raked to a level coarse tilth then raked over to cover most of the seed from the birds. It germinates quickly but needs mowing or scything before it seeds ,hence the need for a level plot with no humps or hollows. Mown grass is left on the field as a mulch to return carbon to the soil.

Polytunnel growing at the Field

Our large polytunnel, built in 2018, is proving to be a real asset to our growing programme at the Field, providing us with a range of new opportunities and challenges.

- Among the range of tender crops we can now grow are tomatoes, cucumber, chillies, aubergines and sweetcorn.
- With experience, we are also finding ways to extend the growing year, producing crops out of season when the outdoor conditions aren't suitable.
- Most importantly, it also gives us a cosy place to sit for our winter workday coffee breaks.

Layout and Facilities

We operate a 'no-dig' system (as with the Kitchen Garden) with 12 growing beds, each around 120cm wide.

Watering during the warmest months of the year is done by the automatic watering system which operates on a battery timer. The drip line hose directs water to the roots of plants in a very effective and economical way. At present the system switches on twice a day for 15-20 minutes.

The tunnel is ventilated by easily adjustable mesh panels along the side walls, in addition to the sliding doors at both ends.

Growing approach

Our main polytunnel crops are grown on a 3-year rotation. Many of the plants we grow are members of the tomato family and it's important that they are moved around from year to year.

Most summer crops are raised in pots or modules in a greenhouse and heated propagators, before being planted out into beds. Other crops such as salad leaves and winter spinach may be sown directly into the soil.

All work can be done from the paths. We don't dig or turn over the soil in the traditional sense. Soil condition and fertility are maintained by adding a compost mulch, at least once a year. Fruiting crops are given a liquid feed, either tomato fertiliser, seaweed or comfrey, once weekly through the summer.

Once the work of bed-preparation, sowing and planting has been done, there are a few routine maintenance tasks. These will include checking plants for pests or disease; checking that the plants are getting the water and liquid feed they need; tying in climbing plants such as tomatoes and cucumbers to their support strings and pinching out tomato side-shoots two or three times a week. Side shoots on sweetcorn are also removed to concentrate the plant's energy on producing one good cob.

In addition to the main crops we grow summer herbs such as basil and towards the end of summer we sow spinach, oriental leaves, rocket and lettuce to overwinter.

Plant feeding, Composting and Weed Control

Feeding

Manures: Chicken is concentrated and can burn plants, cow is best as it has bedding material in it, horse is good, and Sewage sludge is dubious.....

Compost feeds plants but also inoculates soil with bacteria which help decomposition and nitrogen creation.

Animal products: Bone meal is excellent, collect bones and burn them in your stove or on a bonfire!

Urine is rich in nitrogen, potassium and phosphates -don't waste it!

Seaweed solution is excellent it has all the trace elements: dilute 150mll to Gallon

Rock dust, lime or clay slurry

Wood ashes, contain potassium and calcium, apply topically mixed with lots of compost, loam and lime around plants in dry weather. Don't use too much or dilute in water as it is caustic in suspension. Remember it leeches out quickly so use it where and when it is needed.

Comfrey "tea" (just a tub filled with green leaves and water and left to rot) has potassium, Borage has magnesium and nettles silica and iron, all are excellent!

Green manures should be dug in or mown before they seed, several short crops are better than one long one. If covered over in the autumn ,they will have rotted down into soil by next spring.

Vetch, rye and clover can become weeds if not managed carefully, regularly cut and ploughed in deeply.

Borage, Mustard and legumes are easier to control. Squash has high levels of calcium and should be dug in or composted.

Weeds are not all bad they are excellent ground cover and can provide nutrients, just don't let them seed and dig out deep rooted perrenials like dock, thistle,nettle ,dandilion!

Good Practice Composting

Low maintenance composting method:

Rows of compost bins have been built at the NE and SW corners of the field. Near these bins you will find piles of dung and bark. This routine will save turning the compost:

At the base of each of bin lay sticks and large pieces of bark , cover with a finer layer of bark.

1.On top of this build up green material , grass cutting , annual weeds which have not seeded, scythed nettles.
Shake soil off any weed roots before adding to heap.
Do not make this layer any deeper than 8"!
Do not add perennial weeds with roots or seeds to this layer(see instructions below for disposal of pernicious weeds and tattie tubers)!

2.When the “green” layer is 6-8” deep spread a couple of inches of dung on top.(Not always essential but speeds up the process)

3.Add a layer of bark or cardboard 4” deep

4. Place a temporary lid of cardboard, carpet or polythene on top, which is removed for the next layering and replaced.

Continue this layering system till the bin is full. Cover with a section of carpet cut from the old carpet at the side of the SW corner bin. Leave that heap for at least 6mths, preferably a year. Start the process again in an adjacent bin.

This system will rely on large quantities of grass cuttings from the mower so on mowing days helpers will be required to ferry the cuttings from the mower to the bins.

In the event of drought ,water the heaps, preferably with urine.

You may notice at the side of the bins a covered heap of turf , divots and weeds.This is for material other than grass cuttings and annual weeds . Tidy this heap and cover it up, it will rot down and form loam which can be added to the compost much later.

Pernicious deep rooted weeds should never be put on the compost, , couch grass, dock,nettle which spread by roots or rhizomes should be disposed of separately in the areas provided at the bottom of the Field with black plastic both beneath and above the weed pile.covered , like tuberous tattie roots, in a “cemetery” and left to turn to sludge and rot away .

Shallow weeds can be composted down with other vegetable waste PROVIDED they have <u>not gone to seed</u> at the time of disposal. If seed heads are present they should not be put on the compost but disposed of at the bottom of the Field under black plastic. Such weeds should be left at least two years before the loam can be used without risk of contaminating the loam.

After harvesting and weeding of a plot the area may be protected by covering with **thick black plastic** sheets, preferably laid double if the plastic is thin.. Placing plastic over live weeds may restrict growth and can be helpful as a stop gap measure, but will not kill the weeds unless the whole area is left completely dry and covered for at least 18 months, or longer for deep rooted weeds. This is not desirable as it takes the area out of use for all this period, so it is best to clean the plot of weeds before covering.

Tattie tubers should never be placed on compost piles. Even really small pieces of tattie can grow into a full sized plant in the compost pile or when this is spread on the plots later.

Summary of weed control strategies

After fifteen years ,we are beginning to inherit some interesting weeds. Many organic gardens which we have visited tolerate this in the interests of biodiversity and we could too if we can prevent

them seeding. Within our group of volunteers we have diverse levels of tolerance for weeds and this can result in hours of labour intensive hand weeding.
We need to manage this as it could further reduce the time we have for planting and looking after the crops. There comes a point where hand weeding or even hoeing can't keep pace with the weed growth in certain crops. The following strategies can help:

1.**Stale seed bed :** As soon after ploughing, lightly cultivate the soil with harrow, Hoss hoe or rotovator to create a flat stale seed bed. If necessary, encourage weed germination by covering with clear polythene or fleece. Once weeds have germinated lightly rake them out with field rake, rototiller, hoss hoe or burn with flame thrower before planting the ground. Small annual weeds may be left after hoeing to dessicate and return to the soil **but only in hot dry weather**.

2.**Removal :** During the growing season develop a culture of removing perennial weeds and never walking past a flowering or seeding weed without plucking it out or at least removing the seed head! All deep rooted perennial weeds need to be **removed by the roots** and disposed of away from the plot. If any part of the roots are left in the soil the weeds will quickly grow back up again, and deep rooted weeds will spread new roots under the soil.

3. **Semi mechanical weeding of crops**: Opportunities need to be taken to remove any weeds by the roots if possible without damaging the growing crop. This includes weeds in the spaces between rows.
Plant crops at distances which allow the **hoss hoe** to run between rows until plants are big enough. Use this repeatedly when the soil is dry and before weeds show rather than hand weeding or hoeing which should then only be necessary between the plants, not the rows.

3. **Deprive of light**: Cover any unplanted areas with membrane, plastic, green manure or crops asap! If there is any time remove covers for a week or so during the growing season to allow weeds to germinate and show then rake or hoe them out before re covering. Large infestations of perenial weeds like couch grass can only be controlled in this way as digging merely distributes the rhisomes ,however they **need to be covered for at least 18months!**

4. **Strimming and scything**: Some annual weeds can be tolerated as they do provide ground cover and biodiversity but keep strimming or scything them to avoid seeding ,.Keep the field margins and paths cut to avoid spreading grass seed.

5. **Thorough Composting**: Make sure all compost and dung is covered and has heated up enough to kill most weeds before adding it to the field. A**s** some of the horse manure we spread on the plots may contain pernicious weed seeds or even roots before spreading l**et manure rot down before using it on plots**.

6. **Tattie roguing**: Volunteer tatties should ideally be dug up before they set new tubers (i.e. under 4-6 inches high). If this is impossible leave to mature but make sure you lift all the tubers with the tattie shaw.

7.Preventing weeds from growing into plots from paths and edges : Deep rooted weeds, (such as couch grass, nettle, docken), can spread underground by their roots and spring up even several feet away, the grassed areas and paths around the growing plots contain such weeds. As the plough can only cut a straight edge in one direction the soil on one side of each plot is always piled against the path making a bridge for weeds to grow into the plots .It is therefore important for plots to **be neatly edged with a straight cut 7-9 inches deep after ploughing**. This should prevent weed roots from spreading into the plot. At the ends of the plot the plough cannot cut a straight edge and leaves a ragged area of turf. This damaged edge needs to be restored as soon as possible to a clean vertical edge 7-9 inches deep to match the side edges, and levelled out to allow the mower to pass without danger of snagging on stones or clumps of soil. At present this can only be done by hand digging / forking.

8.**Harvest weeds with the crops:** after harvest when other crop plants are bring removed, it is best to take the opportunity to take up any weeds by the roots and dispose of them away from the plots.

https://www.dropbox.com/s/3r7mzdb04y9lm3z/HOW%20THE%20FIELD%20WORKS.docx?dl=0

Raymond Simpson 26/1/16

Appendice 1. Monthly Tasks at the Field January and February

Week 1	Week 2	Week 3-5	Week 4	Week 5-11	Week 6	Week 7 -11	Week 8
		Lift and store winter veg		Empty compost and start new bins		Sow in Pollytunnel:	Start ground prep if dry
	Dung	Dung	Dung	Dung	Dung	leeks	
						sweet peas, flowers	
						, basil ,tageties	

Monthly Tasks at the Field March and April

Week 9	Week 10	Week 11-13	Week 12	Week 13	Week 14	Week 15	Week 16
	Sow tomatoes in propagator	Harvest Brassica,			Plant Onion sets	Plant onion sets	Sow carrots 16-22
	Plough and harrow10-13	Harrow and rotovate	Plough and harrow10-13	Harrow and rotovate	Plant tatties	Plant tatties	Sow spinach 16-23
					Sow courgette		Prep courgette bed
			Sow brassica	Sow brassica	Sow brassica		Put leeks and brassica out to harden off
					Lime if>3years since 2012		Sow peas in pollytunnel
					Sow parsnip		
					Sow broad beans inside		

Monthly Tasks at the Field May and June

Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24
Sow carrots 16-22	Sow carrots 16-22	Sow carrots 16-22	Sow carrots 16-22	Sow carrots 16-22	Sow carrots 16-22	Sow spinach 16-23	
Sow spinach 16-23	Sow spinach 16-23	Sow spinach 16-23	Sow spinach 16-23	Sow spinach 16-23	Sow spinach 16-23		
Put leeks and brassica out to harden off	Put leeks and brassica out to harden off	Put leeks and brassica out to harden off	Put leeks and brassica out to harden off	Put leeks and brassica out to harden off	Lettuce out	Lettuce out	Sow lettuce
Prep brassica plot	Prep brassica plot	Prep brassica plot	Sow parsley	Prep root bed	Prep root bed	Prep root bed	
Plant Spring onions	Hoe rotovate mulch	Hoe rotovate mulch	Hoe rotovate mulch	Hoe rotovate mulch	Hoe rotovate mulch	Hoe rotovate mulch	Hoe rotovat e mulch
Sow broad beans	Plant broad beans /peas out side	Sow French /broad beans/pe as	Sow French/bro ad beans/peas	Sow French/bro ad beans	Sow French beans	Sow French beans	
Plant out courgette s	Plant out courgette s	Plant out courgette s	Plant out courgettes	Plant out courgettes	Plant out courgette s		
		Plant leeks	Plant leeks	Plant leeks	Plant leeks	Plant leeks	
			Plant out summer brassica	Plant out summer brassica	Plant out summer brassica	Plant out summer brassica	Net brassic a
						Sow chard/lettu ce	Sow beetro ot
					Thin carrots and cover with fleece	Thin carrots and cover with fleece	Thin carrots and cover with fleece
				Cut green manure	Cut green manure	Cut green manure	Cut green manure

Monthly Tasks at the Field July and August

Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32
Sow beetroot		Cut blighted shaws	Cut blighted shaws	Cut blighted shaws	Cut blighted shaws	Last sowing spinnach	Last thinning of carrots
Net brassica				Lime for winter brassicas	Plant out winter brassica	Plant out winter brassica	Plant out winter brassica
			Lift early tatties	Lift early tatties	Lift early tatties		
			Pick garlic	Pick garlic	Pick garlic		

Monthly Tasks at the Field September and October

Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40
		Lift maincrop tatties	Lift maincrop tatties	Lift maincrop tatties	Lift maincrop tatties	Lift maincrop tatties	Lift maincrop tatties
Start lifting onions	Start lifting onions	Start lifting onions	Start lifting onions		Last sowing green manure		Tidy up and compost

Monthly Tasks at the Field November and December

Week 41	Week 42	Week 43	Week 44	Week 45	Week 46	Week 47	Week4 8
Get maincrop tatties up!				Plant garlic			
Tidy up and compost	Tidy up and compost	Tidy up and compost					

2 weeks either side of Xmas and New Year NO Tasks! But remember to **order** tatties and seeds for next season before Xmas!

Planting and harvesting times for most crops.

Onions in week 14/15 harvest from week 33-36

Tatties in week 15/16 harvest 28/30(earlies) 35-41(maincrop)

Leeks sown week 7-11, planted out 19-23, harvest from week 30 till following spring

Courgettes sown week 15-18, planted out weeks 18-23, harvested from week 30-38

Carrots sown weeks 16-22, lifted from week 34 onwards.

Brassica, sown in polytunnel weeks 12-18, planted out 20-22 harvested from week 35 to next spring.

Tomatoes sown week 11, potted out week 16, harvested from week 30

Beetroot sown weeks 20 -24.harvested week 30 onwards

French beans sown from weeks 19-22, harvested from week 32 onwards to week 38

Garlic planted week 38 harvested week 29

Lettuce planted from weeks 18-22 harvested till week 40

S**pinnach** planted 16-23 harvested week 25 till next spring

First stall in week 26 -30

Blight appears on tattie shaws weeks 27 to 35

Record and Plan of Crop Rotation @The Field

(Plots arranged in annual columns as they are on the ground,ie from left or east to right or west.)

2012	2013	2014	2015	2016
Tatties Tatties Courgette Leeks Onions& roots Brassica KitchenGd	Brassica&Courgett Leeks Onions&Beans Tatties Tatties Roots / Beans & Kitchen Garden	Roots &Leeks Brassica&Beans Courgette Fallow Spinach &Onions(+tatties Tatties & Kitchen Garden	Beans&Spinach Roots& Lettuce Tatties Brassica&Leeks (+tatties) Fallow Fennel&Cellaria (+tatties S.end) Kitchen Garden	Tatties Onion/Leek Courgette/GM Fallow 2 years Brassica/swed Spinach Kitchen Gdn
		Tatties Tatties	Courgettes &Swedes Onions(+tatties)	Roots Beans

2017	2018	2019	2020	2021	2022	
1Fallow 2Tatties 3Black plastic	1Brassica 2Fallow 3Onion/Leek 4Roots	1Allium 2Beans/Courgette 3Brassica 4Tatties	1Roots 2Brassica 3Tatties 4Beans/4Courgette			

4Beans/spinach 5Roots/Courgettes 6aCarrots Kitchen Gdn 7Allium 8Brassica	5Tatties 6aPS Brocolli Kitchen Gdn 7Beans /Peas 8Courgette	5Fallow 6aFennel/Brassica Kitchen Gdn 7Roots 8Spinach	5Allium 6aSpinach Kitchen Garden 7Various no dig 8 tatties			