PLANTING A WELL GARDENED GARDEN (MAIZE)

The term 'well watered garden' comes from Isaiah 58:11. FfF is a plan for the poor and Isaiah 58 outlines the wonderful blessings that flow from turning to God in unselfishness and humility and attending to the poor and oppressed. One of the promises is that we will become like a well watered garden. The demonstration plot that you put in is a demonstration to the community of how they can come out of poverty through effective use of their land.

Equipment:

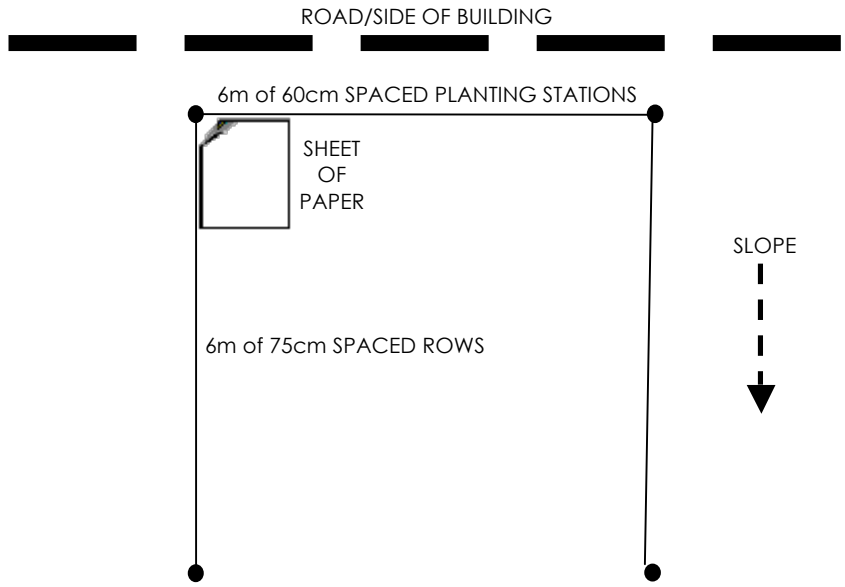
a 6m planting string with markers every 60cm
a 75cm planting stick
hoes
maize seed
AN fertiliser, compost or manure
a watering can

Pray and ask for God's Help

Selecting the Site - Pray that God will show you where to put it.

a) Where can the 'light shine like the dawn' best? Where is it most visible and where will the greatest number of people pass by? i.e. at an entrance or at a crossroad, near the church entrance or administration block etc.
b) Where would it be most aesthetically beautiful?
c) Avoid too much shading by trees and tall buildings.
d) For a winter garden it should be near a water supply i.e. garden tap, borehole, well or river.
e) Are birds i.e. chickens, francolin (chikwari) and animals a problem? Is fencing available?

MARKING THE SITE



Marking the Site

a) Establish where your base line (side) will be. Make it parallel to the access road or the nearest building, etc so that it looks pleasing.
b) Look at the slope and make sure your 75cm rows run across the slope.
c) Put in your base peg and measure out your 6m base line putting in another peg.
d) Measure out both perpendicular sides of the plot which should also be 6m. Use a sheet of A4 paper to make sure that the corners are an exact right angle.
e) Explain that to be so meticulous might appear to be 'over the top', but we are trying to teach the principle of excellence, which honours God. Then explain that high levels of production come from high standards. You reap what you sow. It is possible to get 12 tonnes per hectare with the highest standards. Every degree of lowering of standards correspondingly reduces yield potential from 12 to 10 to 8 to 6 to 4 to 2 to1 tonne per hectare.

Marking out the Planting Holes

Take your 6m wire at 60cm spacing and stretch it across the base line pegs. Dig the planting holes at the 60cm spacing. The holes must be about 5 – 6 cm deep and 15cm long by a hoe width. Make sure that the centre of the hoe blade is exactly opposite the 60cm mark.

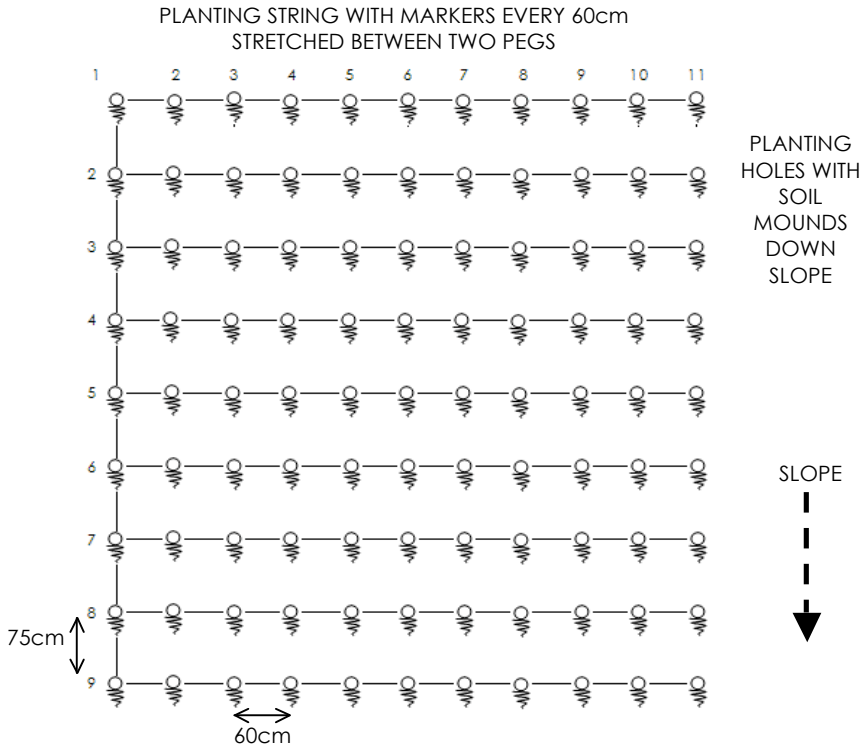
Then when you have finished the line (which will have 11 holes and 10 spaces) use the 75cm stick to move your pegs 75cm along your string down the slope. Remember that the 75cm rows run across the slope to prevent soil and water loss. Always dig the holes on the down slope side of the measuring wire so that the soil pile (borrow) is down slope of the hole. This prevents soil from being washed back into the hole, as might happen after heavy rain, if the soil were on the other side of the hole.

The soil pile on the down side of the hole helps to capture a bit more rain water by providing a small extra barrier to any overflow from the holes. These little details can make a real difference and is all part of reaching for the excellence that honours God (1 Samuel 2:30). Remember to point out this Godly principle to the audience as you do it.

Get your training team to do the physical work enthusiastically and evenly. Evenly spaced holes of even size and depth are the foundation for a beautiful even crop, which makes it possible to achieve the highest possible potential yield. Pray for the Holy Spirit to move your audience's hearts to understand and accept this important fundamental principle. Remember that this may be used by the Lord to introduce higher standards of management in to all aspects of stewardship in our nation, be they agricultural, industrial, administrative, or governmental. Don't say this at this stage unless the Lord prompts you to do so. He may prefer you to say it at the end as part of your summary, if at all. Check your audience to see if this will cause offence – this should not be the case with church audiences.

Point out that we will seldom have fields that are exactly rectangular. However, we must endeavour to have carefully measured row spaces with evenly measured planting stations in our fields. This can be done by using measuring sticks or measuring strings. Straight planting rows are important, because they make this marking out easier and enable us to grow subsequent crops on the same lines (rows). This maximises the residual build up of fertiliser in the soil and also minimises compaction, by limiting the compression from human feet, animal hooves and tractor wheels, to the inter-row spaces.

MARKING OUT PLANTING HOLES



[10 x 60cm = 6m; 8 x 75cm = 6m]

Fertilisation

a) **The Necessity of Fertiliser**:

Fertiliser is placed in the hole by measuring cup. Explain why fertilisation is necessary. When we remove grain or produce from the field we also remove the nutrients from the soil that the plants have used to produce the grain. It is like a bank account. If you keep on removing money from your bank account without putting sufficient money into it, you will eventually have no money left in that account. You have to give to receive; you have to put this faith gift of seed and fertiliser into the soil for God to multiply it back to you.

The amount of fertiliser you put down should be sufficient to replace the nutrients that will be removed by the realistic potential yield you expect to harvest.

tonnes/Ha Grain	kg/Ha Compound D	kg/Ha AN	No. Cup
10	400	400	16
8	350	350	
6	300	300	12
4	200	200	8
2	100	100	

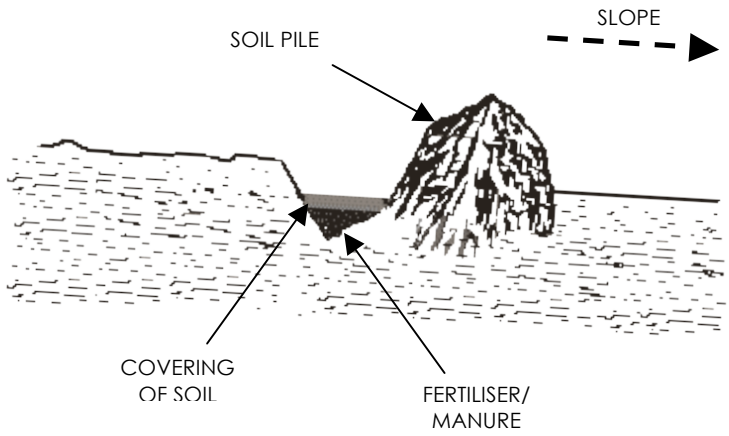
This is a general guideline. The levels of fertilisation will vary according to the state of your soil and the standards of your management. If your soils are deficient it will pay you to put in a bit more fertiliser than you remove. This will build up your soil and give you a higher yield

potential. If you only have 4 x 50kgs of Compound D and 4 x 50kgs AN, it is better to put all of it on 1ha at 200kgs/ha rather than spread it over 2ha at 100kgs/ha. You would still have the yield potential of 4 tonnes gross return, either 1ha at 4tonnes/ha or 2ha at 2 tonnes/ha. By doing 1ha at the highest standard planted on time, you would have the best chance of achieving that yield. By being able to carry extra mulch onto a smaller plot and by the investment of higher management and by the generosity of the higher level of fertilisation, you would be giving God more to multiply back to you! Also in the event of a serious drought you would be more likely to get enough grain to feed your family. If one puts 100kgs/ha onto 2ha at a lower standard of management with less mulch and probably more weeds it is likely that one would get a complete crop failure and no food for the family.

b) **Placement of Fertiliser**:
The fertiliser should be poured carefully into the lowest point of the hole. Then a small amount of soil should be pulled over the fertiliser to prevent it from "burning" the seed.

N.B. If you don't have any fertiliser a jam tin of manure/compost will help, or better still a little fertiliser plus the manure, correctly placed under the seed, will be excellent. If you use manure/compost make the hole deeper.

PLACEMENT OF FERTILISER

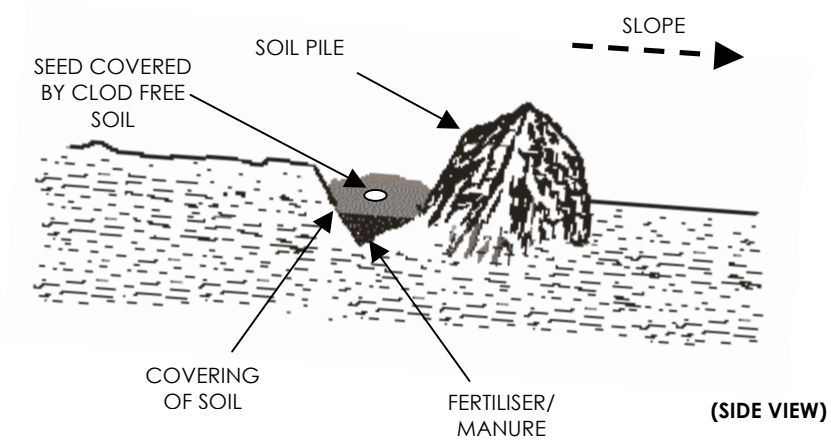


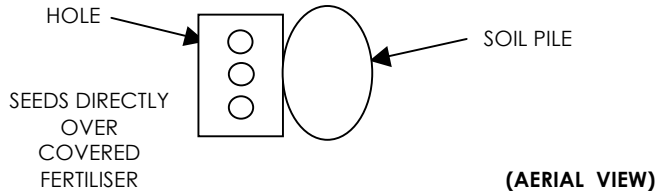
Seeding

a) **Placement of Seeds**:
Put 3 seeds on top of the layer of soil directly over the fertiliser. This is the best place for the germinating seedling to be, for the earliest and most efficient uptake of nutrients.

Please have the wisdom and faith to put down 3 seeds per station knowing that at +/- 2 weeks after germination the plants MUST be weeded down to 2 plants per station. A good full even stand is an essential foundation to achieving a high yield. With the difficulties of the weather, capping soils, pests and all the opposition from the Evil One it is difficult to achieve this good foundation by planting 2's. The difference between a 90 – 100% population rather than one of 60 – 70% can mean a difference in yield of between 1 and 3 tonnes/ha. An extra investment of about $1500.00/ha can bring you a return of anything between $30,000.00 - $90,000.00 per ha. Ask the Lord for a generosity of spirit and put enough seed into an area you can manage at the highest standard possible.

PLACEMENT OF SEED





b) **Covering of Seed**:

This is the single most important operation that you will do as a farmer. The standard of covering and the effort you put into this operation will determine whether you have a good or a poor crop. We have found that over the years that 2 – 3 cm of soil covering the seed is best. Don't plant too deep with capping soils. You can go a little deeper with soft friable soils. It is very important to carefully cover evenly with **clod free soil and no stones**.

The importance of a full, even stand cannot be over emphasised. This will achieve an early canopy of leaves across the rows forming a "roof" over the soil to which creates the right microclimate for the crop. There is less evapo-transpiration from the soil and the weeds get shaded out. When there are gaps in the rows the sun gets to the soil surface and dries it out and the weeds grow vigorously and start to really compete with the crop.

Evenness of growth is also important. If the crop is uneven the bigger plants overshadow the smaller ones, progressively stunting them. It has been proved that the worst weeds in a crop are plants of their own kind. These overshadowed plants don't produce a cob and yet rob moisture and nutrients from the bigger plants resulting in a marked reduction in yield. Careful, even covering of the seed helps to prevent all this.

Satan may suggest that we are being too fussy demanding such high standards. I have seen over the years that it is "the little foxes that ruin the vineyard" (Song of Solomon 2:15). They come in and cause low yields. A little lessening of standards here and there collectively cause our yields to plummet to a tenth of what they could be. High standards could mean the difference between life and death for hundreds of thousands, maybe millions of people, if we suffer another series of droughts, as we experienced in the early 1990's.

Mulching

The best and most convenient mulch in the field is the crop residue from the previous crop. This is why crop rotations such as maize and beans are good. Rotations help prevent any build up of disease and pests. The minimum amount of mulch cover that is effective is about 30% of the soil surface area, but the more the better.

Mulching is very important for soil and water retention. When we look at the bush we see that God has designed that the soil surface is covered with a blanket of dead grass and leaves. We call this "God's blanket". Where there is no cover, the soil degrades and a desert ensues where no food can be grown!

The mulch blanket breaks the kinetic energy of the falling raindrops, cushioning the surface, and preventing it from sealing over from the impact. This also slows the rainwater down allowing it to percolate into the soil. By not ploughing the soil deeply the mulch is left on the surface and the roots of the previous crop are left in position to hold the soil in place. This stops the soil from slumping downwards and washing away laterally in a rainstorm. These roots eventually rot "in situ" making channels for other roots and water to filter into the soil. By not inverting the soil more beetles and worms move in the soil also creating these infiltration channels.

Watering

We hope to plant many "gardens" of 6m x 6m during the winter and before the rains in order to "teach the heart" to as many people as possible before the main planting season. We hope that this will inspire many who see the "gardens" growing during the winter, to be prepared in mind and spirit, as well as logistically to do their own fields "on time, at standard and without wastage!"

This will necessitate watering the crop up to the on-set of the rains. I pray that this will also stimulate the people to plant a portion of their crop with water prior to the rains. This will provide them with an early food crop and will also be a teaching prompt so that they will be ready for their own main planting with what rain the Lord will send. This may mean carrying water in buckets and cups, some distance, to the field, but "going the extra mile" pleases God and they will reap abundantly from every bit of extra effort.

Method

Having holed out and cupped in the fertiliser as described earlier. The best way to "water plant" is to fill the hole with water first. A normal rain-planting hole will probably take about 2 litres of water. A larger hole that can take 4 -–5 litres of water is ideal, but this can confuse the work study example that we are using as a model for rain planting. Therefore let us stay with the original demonstration model and use the 2 litre hole.

Allow the water to soak away and then immediately put the 3 seeds on top of the wet soft soil. Then cover with 2 – 3cm of **clod free drier** soil. This dry soil will act as mulch, in itself and will prevent undue moisture loss. These 2 litres of water should suffice for 2 – 3 days (4 – 5 litres should be sufficient to germinate the seed in 6 – 8 days). Thereafter 500ml per day for the 2 litre example should be enough to keep the soil moist. It is absolutely essential to keep the surface soft and moist from days 5 to 8 after first moisture to prevent hard "capping" of the soil and subsequent germination losses. The application of mulch greatly helps in this respect and prevents water loss from evaporation.

This accumulated water volume of about 4 –5 litres/plant should keep the new seedlings going for one to two weeks, depending on the heat and the general moisture status of the soil before planting. When the plants show signs of wilting, apply 2 litres per plant once per week, increasing to 3 litres per week as the plant gets bigger. At knee high and onwards the plant may need 4 litres

per week in the extreme heat before the rains in October and November. In a winter planted crop (June or July) only half this amount will be necessary.

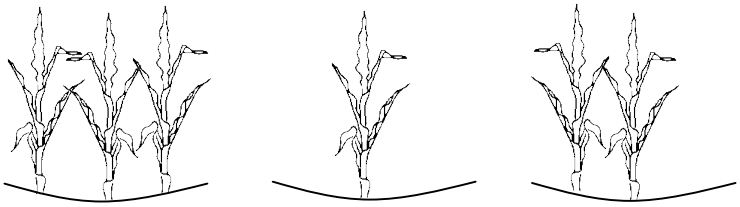
The reason why I recommend the smaller planting holes with less water is that we are trying to demonstrate a summer planting model. The greatest energy requirement is for the holing out operation. If the people think that they have to dig huge holes for the rain watered crop, they may be discouraged from trying to put the concept into practice. We must ask the Lord for discernment and wisdom over these matters, remembering the Deceiver's tactics (Matthew 10:16).

Thinning

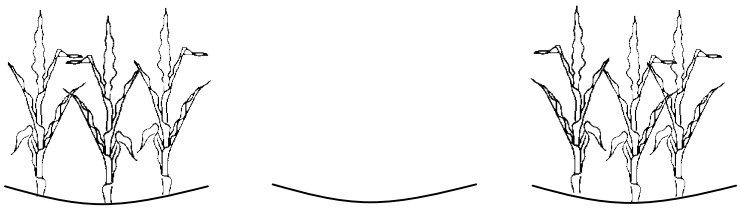
Between 2 –3 weeks after emergence you must thin the plants down to 2 plants per station. Where there is only 1 leave 3 on one of the stations next to it. If there are no plants there, leave 3 on both sides. This will bring you back to an average of 2 plants per station.

On no account leave 3 plants per station. This will give you too high a population especially in a dry year. You will get excessive lodging in a wet year. In any event you will get a lower yield from 3 per station rather than 2. The only exception to this is if you use a "4" series or a short statured plant like SC401 or SC403. **Only** in this case it is recommended that you leave 3 plants per station. The temptation to leave 3 plants per station is very strong for beginners and may need extra prayer and emphasis to get the message through. (If you try and thin before the plant is 10 days old, it will just break off above the roots and grow again, Try and make sure you pull the plant out with the roots.)

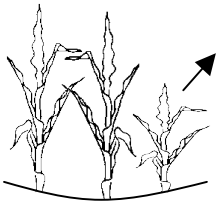
THINNING



IF ONLY ONE PLANT HAS EMERGED IN ONE STATION LEAVE THREE ON ONE SIDE TWO ON THE OTHER.



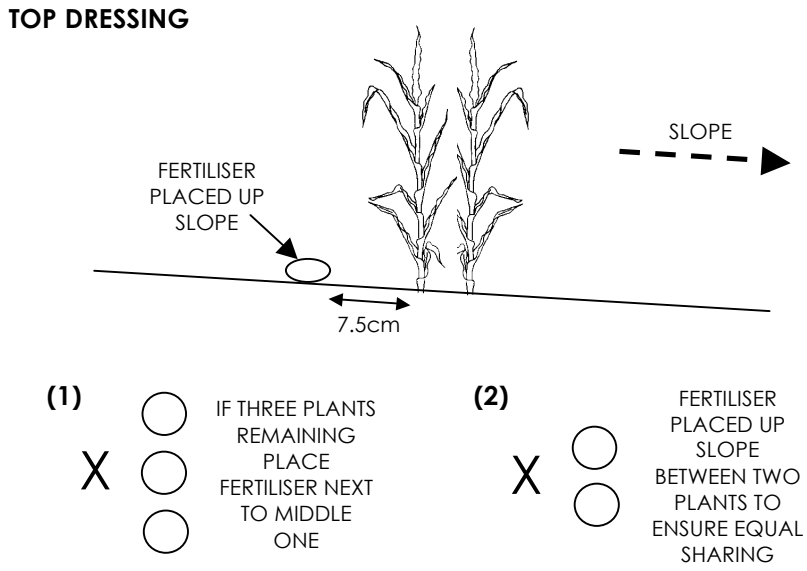
IF NO PLANT HAS EMERGED IN A STATION, LEAVE THREE PLANTS ON BOTH SIDES.



REMOVE THE WEAKEST PLANT

Top Dressing

Having applied our basal compound fertiliser before planting, we then come and apply a nitrogen top dressing at about 3 weeks after emergence – **no later** (rather earlier than later). I would recommend the same size cup as you used for your basal application. This is designed to meet your realistic potential yield. The fertilisation level will depend on your natural region, soil type, likely rainfall and above all your management standard. If you are a beginner and there is a likelihood of a drought, the most I would recommend is a no.8 cup of basal fertiliser and a no.8 cup of AN (or a no.5 cup of urea, as it has a higher nitrogen content than AN). This would be my recommendation for you on a field scale. However on a 6m x 6m "watered garden", where your standards should be high and you can give it some water, I recommend using a no.16 cup for both the basal and AN applications (no.12 cup for urea). This will give you confidence and demonstrate the wonderful potential of the concept.



Method

Pour the top dressing out of the cup onto the soil surface on the upper side of the slope about 5–7cm from the planting station. This means if there is rain the fertiliser will be washed towards the plant rather than away from it. It would be ideal to cover the AN with a little bit of soil i.e. by scraping a little soil over it with a hoe. This covering is much more critical when using urea, because it vaporises much more readily than AN.

You can split your top dressing into two dressings of 2 no.8 cups, one at 2 – 3 weeks and the second at 7 – 8 weeks (more ideally, a no.12 cup first and a no.5 cup second). This is best done in very wet seasons where heavy rains may leach some of the top dressing away if applied all at the first application. On average in dry years it is quite all right to apply all the top dressing in one dose. I would recommend this latter single application for beginners who have enough on their plate learning the ropes. It will allow them to really concentrate on their weed control.

Weed Control

This is one of the most important aspects of farming. Weeds are part of the curse (Genesis 3:17 – 19). We need to turn to God and ask Him to help.

A jungle of weeds at the end of the current crop is the reason why most people either burn these weeds and the wonderful mulch or else they turn them in by deep ploughing in order to make a

seed bed. This is not God's way in nature! There is no inversion of the soil in the natural bush. Instead the seeds fall onto "God's blanket" of protective mulch where some make sufficient soil to seed contact to enable them to germinate and continue God's precious cycle of life. Sometimes this is aided by the shallow disturbance of the soil by the hooves and feet of animals. This is why we dig shallow holes about 7–8 cm deep.

The Discourager will want to overwhelm us with weeds, but if we ask God for wisdom, faith and help, this need not be the case. In Romans 12:2 God says, "Do not conform to the standards of the world, but allow God to transform you inwardly by a complete change of your mind. Then you will be able to know the will of God – what is good and pleasing to Him and is perfect." (GNB)

Method

We need a new way of thinking. Our weed control and land preparation must start in the previous crop.

Most often we battle with the weeds until we see that we have a crop and cobs or ears have developed. We then stop weeding and the leaves senesce and the light comes in and reaches the ground. The weeds grow rapidly with this sunlight together with the last moisture of the season. We end up with a jungle of weeds that set seed for another huge crop of weeds the next year.

It is imperative that we keep the weeds out until the conditions are too dry for any of them to germinate. By doing this we are already preparing our land for the next season. All we have to do is knock down our stalks evenly and we have our mulch (God's blanket) for the next crop. It is tidier and neater for harvest and it gives you a psychological boost to persevere enthusiastically with the system. This also prevents late weeds from removing soil moisture and nutrients.

After planting your next crop look out for any early weeds and hoe them out as soon as you see them germinate. Large weeds have already removed soil moisture and nutrients and have started stunting the crop. It takes far less energy to hoe small weeds than larger ones. If you are on time and do everything well and your stand is full, with a good covering leaf canopy, you will only have to do four light weedings in your crop during the season. Again **timing** is the answer.