

CHAPTER I

Some Principles of Gardening

It is not possible to know garden plants and learn gardening thoroughly by reading books and journals only. Practical experience and careful observations on the response to plant growth will give you the pleasure in growing plants successfully and the confidence in suggesting others to develop a good garden.

Some general principles might prove very useful to tackle problems in garden and avoid casualties and failures.

Knowledge of plants

If you want to develop, maintain and enjoy your garden according your ideas, you should have interest and knowledge about plant and plant growth. Otherwise it becomes a mali's garden. You cannot grow and appreciate many beautiful plants possible in your garden with less effort and expenditure. With little interest and time spent in the garden, one can very easily gain a fairly good knowledge about plants and their relation to soil and environment. You may then advise your Mali what and where to grow.

Knowledge of soils

Physical condition and chemical composition of the soil affect the fertility and plant growth. Porous soil, rich in organic matter and containing sufficient nutrients is ideal for most garden plants. Then the correct preparation, depth of it and after-care play a great part. Careless planting, keeping the soil wet or dry, exposure to extremes of heat or cold will also affect the plant growth.

While surface soil conditions cannot always be changed, a study of the sub-soil often helps a great deal. Test-holes

dug in different parts of the garden may disclose a pocket of sand required for digging into stiff clay. The strata of 30 or 40 cm deep is sometimes far superior to the worn out surface earth and deep digging will improve the tilth of the soil. No soil should dryout too quickly ; but if this condition exists, it must be rectified if plants are to thrive. There must be at least 40 cm of soil for annuals, less than this would result in slow starvation and quick scouring of the soil. Change the top layer of soil from time to time by digging deep and thus permit the nutrients which are lodged in the bottom to come to the top. In digging, remember that sandy soil can be attended to almost immediately after rain but clay must be allowed to dry to some extent. Never let a crust form. When turning over soil always remove old roots and stones.

Cultivation of soil

This is the digging of land with the kodali or hoe or ploughing it, and many amateurs consider that the operation is sufficient to ensure a good tilth and all other desirable qualities. But this is an error. The worst soil can be made to grow plants if a little care is taken on digging and manuring. To get a slope on a plot of ground, dig towards the end which is desired to be lower. If it is done twice or thrice a natural fall will result. But the mere digging or ploughing of ground is not enough, subsequent disturbing of the surface soil must be carried out. If soil is allowed to crack after watering, a large proportion of the moisture escapes ; when the surface is forked lightly and the soil broken fine the disturbed area may dry but other capillary tubes having been broken, prevent the moisture from the lower layer being dispersed quickly. The rake can also be used and the surface of the soil scarified.

Drainage, surface

Dig a pit and half fill with stones but provide an outlet for water. On the hills, if a plot of ground has to be prepared for

planting, build up the side toward the slope with a stone wall and after laying a base of stones of varying sizes, fill in the compost. The natural grading of land should also be noticed and care taken not to allow scour which will relieve the soil of a good percentage of the fertiliser worked into it.

On the plains, drainage is often difficult and raising the level of the land is the only solution, though expensive and impossible where the house is only on short lease. There should be a fall of a few cm to be at all effective.

Drainage, sub-soil

Drainage pipes are often laid with good effect to relieve land of the excess subsoil moisture. In the case of sandy soil these pipes of 10-15 cm in diameter should be laid at 16 m intervals, and about half this distance in clay soils. The water should be diverted to a sump or connected to a large drain or tank (the gradient is 1 : : 100 or 1 : : 300). When bedding down the pipes use cinders, broken brick or some such material to avoid the pipes being clogged quickly by earth. The roots of trees will rush to these areas because of the moisture and in time fill the pipes with rootlets. If pipes are not available a satisfactory drainage channel can be arranged by setting a triangular drain of tiles or stone slabs and filling in the space with clinkers or broken bricks.

Agricultural pipes of porous material with four rows of holes each and few cm apart running the length of the pipes can be purchased.

LIGHT AND SHADE IN THE GARDEN

Intensity and duration of sun light greatly influence growth and flowering of plants. Gardens in cities are often shaded partially, in some crowded locality almost fully, in such places common sun loving flowering plants including shrubs, annuals, roses, etc. will prove to be failure and so design for shade plants without affecting unity in the garden.

WATERING

Water is the medium which conveys the soluble nutrients in manure and fertilizer to the roots of the plant, at the same time providing the moisture. One good soaking is far preferable to repeated sprinklings ; over-watering damages the delicate root system, and weakens the vitality of the plant. The soil should be allowed to dry before next watering.

Daily sprinkling encourages surface roots which are liable to be affected through extremes of heat and cold and are damaged when the soil is loosened. Moreover, less labour is required to give a thorough soaking every few days.

No hard and fast rule can be laid down for watering as it depends entirely on the season of the year, the type of soil and the plant. During the winter months, certain bulbs and succulents are dormant, these naturally want little moisture. When spring comes, water has to be applied generously and during the hot summer you can hardly overdo watering. In the rains, except when there is a break, give the watering-can a rest. The average mali's favourite outdoor sport is wetting the ground daily, no matter what you may say, he is confident about his knowledge on gardening. Absorption of water does not take place as quickly in cold as in warm weather, therefore, watering should be withheld to a certain extent in winter and supplied also as a spray during hot dry periods. To test when a pot plant requires water, sound it with a wooden mallet, if it gives out a hollow sound it is dry, a dull sound ensures moist soil.

Water is essential in a garden and where this is not under pressure but has to be delivered by drain or channel maintain levels for the passage of water to ensure the minimum of labour necessary of its distribution.

A saucer of water kept continually under a pot is apt to damage the roots, moist sand is better, when the sand dries moisten it again.

Never water a plant near the crown ; the roots that make use of the moisture are along the sides of the pot. With

shrubs in the ground, water should be applied 30 to 40 cm from the stem. The feeding roots of a tree are roughly at the same distance as the spread of the head from the trunk and water should, therefore, be accordingly given.

How to water

First see that the soil is lightly forked to allow water to penetrate ; even seed pans with a hardened surface should be scratched with a wooden splinter or else a few small holes made along the outer edge to allow the water to penetrate. A good way is to gradually lower the pan or pot into a tub of water till the soil is thoroughly soaked. Pot plants should be periodically soaked ; a sharp instrument run down the sides of the pot before watering is an easy method. With ordinary soil if the ground is thoroughly soaked it will be impossible to fork up the surface within 24 hours in the summer and twice or thrice as long in the winter months.

When to water

In the cold months, avoid giving water late in the evening when the nights are cold ; afternoon or early morning is better.

During the warm months late afternoon is better than early morning.

Never syringe foliage when the sun is up as there is the fear of the drops of water acting as burning glasses and damaging the leaf surface. Always use clean water as mud in suspension deposited on the leaf is troublesome to remove and spoil the foliage.

What to water

Do not give more water when the soil is already wet, nor it should be allowed to get bone dry. Pot plants require more water than those in the ground and by sounding the pot

you can soon judge when water should be supplied. Keep the surface of the soil loose so that water may sink to the lower strata where the feeding roots lie. A plant that has faded through neglect, should in addition to a good watering, have the foliage syringed twice a day and transfer it in shade.

WHEN TO PLANT

What is the correct planting season ? (a) When plants are dormant, they can then be lifted carefully and can tolerate pruning of roots, with the coming of spring the plant will break into leaf. Dormant season planting takes place on the hills and in climate where there is a real winter.

(b) Spring starts growth but when this season merges into a severe summer one has to be careful ; if you look after the plants yourself, transplanting is best done in February. When very hot winds blow, newly planted stock will suffer and it is advisable to avoid planting till the first rains.

(c) Rainy season planting is perfectly safe, provided the soil does not get waterlogged. Drainage, therefore, is the main problem at this time, as the newly formed roots are prone to excessive moisture. Let a few showers fall to cool the atmosphere, then fork deeply and plant. The pits for planting can be excavated prior to the planting season.

Planting should be done when plants have the greatest chance of survival. Never take unnecessary risks by leaving the minimum of roots when lifting a plant ; avoid cutting any of the large ones. Always shade plants in hot dry weather and syringe the foliage in the late evening to further assist them to recover. When the normal flow of sap is held up for a day or two the plant hardly loses a leaf or on the other hand, when every leaf turns yellow and drops, this plant will live. Those plants with leaves that hang on the twigs and do not fall, with shoot-tips that droop, usually die. To save such seemingly hopeless cases, clip the tips, strip off the dead foliage, syringe frequently and keep the soil moist.

TRANSPLANTING

Transplanting is a simple operation and yet a number of plants collapses apparently for no rhyme or reason. Have the pit ready, moisten it with water and lower the lifted plant into place. Raise a ridge of earth around the plant to contain water, flood, then to make certain that the bottom soil is also wet run a bamboo splint down in several places to allow the water to penetrate. Shelter the plant and syringe the foliage at dusk for several days. Arrange for a supporting stake according to the height of the plant ; a tree guard will often save it from being damaged in an open public place.

In the hot months, do not risk transplanting during a spell of moist weather as the plant cannot stand it.

Before transplanting soak the pot or ground so that the ball of earth can be lifted easily. After repotting leave about 2-3 cm space between the rim of the pot and the ball of earth for watering purposes. Before transplanting seedlings of flowers and vegetables, withhold water for a day before the operation and flood immediately after planting.

Unless you have an exceptionally careful Mali, supervise transplanting personally. This will minimise the casualties.

Large plants should have moss or straw wrapped around their stems and periodically syringed and all soft sappy shoots should be pruned back to hard wood.

No matter how urgent the occasion, never plant in sodden soil ; if it is imperative to transplant during wet weather excavate the soil and replace with dry earth. No manure and very little leafmould should be used, the addition of sand to heavy clay is recommended and a basket of screened leafmould to a pit 1 m deep.

Newly planted trees should be cut back to the point where the stems are green. Do not allow plants to carry dead wood longer than is necessary. All deciduous fruit trees should be cut back and the new growth thus forced. Guard against deep planting which is responsible for a lot of collar rot. Plants of

slow growth and hard wood must be planted firmly ; those of quick maturity and coarser root systems moderately ; give plenty of room to such as they are impatient of root disturbance.

When to transplant

The wet weather is safest though during the winter months dormant plants can safely be shifted. It depends on the care with which the operation is performed as to when you transplant. For transplanting seedlings use a bottomless milk tin, press down into the soil around the seedling to be lifted, cut through soil below the tin with a khurpi, transfer and press out ball of earth.

How to transfer

In order to transfer a pot plant to the ground, remove and loosen the ring of roots and place in the prepared hole. Any tree with a tap root should not be kept too long in a pot otherwise the most important anchor will become useless.

The transfer of a pot plant to pot, has been dealt with in the repotting section.

Transplanting of ground plants to pots. Here we are on different ground for if the soil is clay, the lifting operation is simple. Dig a trench of a larger diameter than you actually require severing the roots as you go round. Gradually reduce the ball of earth after under cutting to a size slightly smaller than the pot. Have the pot crocked and slightly covered with soil, place the plant in position and drift in fresh compost. Lightly ram the soil down and soak thoroughly.

The last type of transplanting refers to the removal of large bushes or trees from the ground to other situations. Some plants roughly taken out of the earth and thrown into a roughly dug pit will survive, others lifted with all the care and attention that it is possible to give them—die. The chief trouble lies in the delicate root system, the severance of the tap or main root

without the supplementary roots coming into action. Open up the trench as suggested above but after severing the roots on one-third of the circle close it down again for a week. Should the plant show no signs of wilting carry on with the next, completing the circle within the month when the plant will be ready to lift. When lifting any large ball of earth it should be well tied with straw, grass or even gunny bags to prevent the earth from falling away. If by chance the earth should break, immediately prepare a thin paste of fresh cow manure and clay, one-third manure to two-third clay and dip the roots into this before planting. Shading, and frequent syringing in addition to watering are necessary. Prune the tips if they wilt or bend ; if the bush or tree has a heavy head of foliage reduce the branches before lifting as the leaves play an important part in transpiration and will get the sap moving and the roots to work but do not be too drastic in pruning. Transplanting, if carefully done, stimulates the formation of the fibrous roots, for the main roots are severed and the smaller ones develop to take their place.

How to toss out a plant

First, water the pot plant an hour before attention, then placing the pot upside down in the left hand with the stem of the plant between the extended fingers, hold the bottom of the pot with the right hand and tap the pot gently on the edge of a platform or log of wood raised from the ground to avoid damaging the plant which might otherwise come in contact with the ground. If roots show through the drainage hole push these back and sever any large tap root which looks as if it will prevent the release of the plant.

Potting

It is a common practice in garden plant to transfer it from a smaller pot to a larger one by gradual stages. In the majority of cases when a root comes to the limit of extension it curves and follows a course around the sides of the pot. The main

roots travel as far as they can go before dividing into the fine roots with their root hairs which feed the plant. In a small pot it is not very far and naturally the plant benefits quickly by receiving a good food supply. Before the plant gets root bound, make the shift to a larger size ; the plant thus obtains the maximum nourishment that roots can provide with each successive shift. It becomes a far stronger plant when it reaches the last stage than if the transfer had been made to the large pot at the very commencement.

How to repot

When potting, place the crocks concave-side down, one over the drainage hole and build up around this and over, finishing off with smaller pieces then a layer of coarse screenings or half decayed leaves, or fibre. Fill in compost, leaving at least 2 cm of space for retaining water. Moss is ideal but often difficult to obtain. Small pieces of cinders, brick or gravel on the surface of the pot prevent the soil being washed away and also help to retain moisture and check evaporation. Never use too large a pot for a small size plant, as this does harm. A small sized pot can always give place to a larger size when necessary. Bury the old ball of soil 3 cm below the compost and ram the compost with a blunt stick to settle the plant. Gently jar the pot as this will help the soil to settle. Keep the pot in a shady spot at least two days before placing it in the sun and syringe regularly. The potting compost should never be used bone dry and always moisten it thoroughly before potting. If this is not done, very often moisture will not penetrate below the top 2 cm soil after the plant has been watered.

In very dry climate, where the heat affects the earthenware pot it is a good idea to place the pot in a larger pot with a layer of coarse sand and crocks between the two receptacles or partially bury the pot in the ground.

Plants in pots are usually placed anywhere and anyhow. Ants, earth worms, termite etc. often enter and cause trouble.

Always keep pot plants on a couple of bricks laid parallel so that the drainage hole has a clear passage, or else on a bed of clinkers, broken bricks or such materials.

When you receive a consignment of plants from Bangalore or Madras, remove the ball of red sticky soil and then plant in pot or ground.

When to repot

The best time of the year is during wet weather for any damage to the roots will not cause the death of the plant ; if the replanted specimens are kept in the shade, syringed and watered ; this work can be done any time of the year. Avoid transplanting the plant when new growth just commenced ; dormant bulbs or plants should be attended to just before the growth starts and not immediately after they have lost their leaves.

What to repot

Repotting of a plant will depend upon the rate of growth of both shoot and root. Chrysanthemums need repotting at intervals of 30-40 days, while a palm may remain in a pot for 4-5 years. Again when a plant grows rapidly it may need repotting every year but after few years change of pot is done less frequently. Specimen plants of fern and foliage plants are not repotted every year but some rich soil is incorporated to maintain the growth.

Shading

The shading of plants is sadly neglected and no thought is ever given to the direct rays striking one side of the plant. It is only when the plants are scorched and sunburnt that we realise what the sun can do. A rough mat screen, a few branches, or a green screen composed of *Tephrosia*, *arhar*, *jaint* or other quick growing plants will be helpful. A plant

gets a set back when thus sunburnt ; a palm or anthurium, for instance takes a full season or more to make up the damaged foliage. Not only are the leaves destroyed but the entire system of the plant is adversely affected.

Staking

This may be called an art. It is necessary almost with all types of ornamental plants.

The mali often ties a branch to a stake so close that the bark is damaged badly and the growth of the plant affected. The tying material should be first fastened to the stake by a simple knot, then the tie passed over the twig or branch in a loop allowing for growth and yet not sufficiently loose to permit wind play. When large branches are to be staked a block of wood or bamboo or a pad of coir or gunny fixed to the branch over which the tying rope or wire is drawn, will prevent damage to the bark.

With bushy growth three or more stakes linked together with string forming large mesh interlacing is better. Carnations have special wire stakes which are efficient and inexpensive and stakes are removed at the end of the season. Trees or shrubs, that are loosely tied or with straggling growth are apt to be injured by high winds ; either reduce the growth or else tie them to substantial stakes.

Syringing

The syringe is not considered important by most amateurs, yet it makes a difference to a plant if the foliage is sprayed regularly. Insects and dust are removed and the cleansed leaf surfaces are useful for efficient functioning of the leaf. The air is also cooled and moistened even for a short while. First of all, use a fine jet to wet the surface of the leaf and loosen the dust and dirt. Follow this up with a second spraying slightly stronger to remove unwanted matter. If the syringing is done before the dew dries it will be more beneficial to the

plant. If water alone fails to make much impression on the dirt use a soap solution.

New arrivals

When deciduous plants arrive after a long journey, especially from abroad, they should be potted off in a light compost without the admixture of any manure and placed in a cool dark room for a couple of days. Thoroughly wet the foliage and syringe the plants every day ; on the third day admit a little light so that the etiolated stems may become green. Gradually increase light and water till the plants can be taken into the open. Do not place in full sunlight for at least ten days.

On receiving plants from a nursery, examine the ball of earth around the roots as often this is a stiff clay, which has hardened on route to brick like consistency. During wet weather the removal of this ball by soaking and washing, and replanting in a more congenial compost is suggested. At other times, gently crack the ball by pressure and plant in light soil, filling the fissures with sandy soil to induce the roots to leave the hard shell.

Forcing

This is only possible where there is a dormant period and the sap is held up. Arrest growth by artificial wintering, i.e., withholding water ; at the desired season heavy flooding and warmth will rush along growth and consequently the flower bud. This principle is not always practicable on the plains and can only be tried within small limits with a few bulbs such as hyacinths, etc. Hot beds are not often required on the plains but if desired, can be made of rotting material, stable manure or mown grass, with top layer of 6 cm of soil. A glass frame placed on top will conserve heat. The bed should be renewed as the heat is reduced.

Off Season Attention

When one is acquainted with the period of dormancy, water should be withheld and every opportunity given for the rest that nature desires. Other plants that have a growing time varying with the seasons, but never dormant, should be attended to with common sense. Before flowering do not force leaf growth and therefore, be careful what fertilizers you use.

Follow the instructions and you will find a difference in the condition of your garden.

- (1) Get advice from reliable source.
- (2) Always buy the best seeds, it pays in the long run.
- (3) Dig the ground deeply before planting.
- (4) Manure carefully with recognised fertilizers.
- (5) Aerate the soil while the plant is growing.
- (6) Weed continually, not by fits and starts.
- (7) Never over-water or over-manure a plant.
- (8) Plant for succession in your garden but allow for a period of rest.
- (9) Avoid a seasonal repetition in the annual and the vegetable garden.
- (10) Remove flowers as they fade.
- (11) Gather vegetables as they reach a fair size.
- (12) Destroy weeds when first noticed.