

# A Report on the Chinese Market Gardening System.

**ANIANO FLAYDA,**

*Assistant Horticulturist.*

**K**INDLY furnished with a general letter of introduction from the Chinese Consul-General, the writer lately made an investigation as to how the Chinese gardeners grow vegetables in the district of Tondo and Paco within the City of Manila and between Maypajo and Caloocan, Rizal.

The investigations originally had two purposes: to study the intensive cultural methods and second to gather data on the cost of production. In view of the difficulties encountered in securing facts and figures on the money value of labor and crops produced due to the opposition of each and every individual Chinese gardener to answer questions relative thereto, the work herein reported relates to the different garden operations only.

*Preparation of the land.*—The laying out of the field into plots is done in such a way that practically no space is unnecessarily unoccupied. The plots are about a meter wide and of convenient lengths ranging from 5 to 6 meters long. The distance between the plots is 6 to 8 inches wide—just enough for the foot paths. The ground before planting is thoroughly prepared and pulverized. This is done by hoeing the land to a depth of about a foot with a Spanish hoe. The first hoeing is very thorough, the surface and subsoil being well mixed and pulverized. The soil of each plot is raised in two ridges leaving the greater portion of the subsoil surface exposed to the sun. Unless heavy rains fall to render the soil compact and less mellow, the ground is only worked twice before planting. Subsequent to planting and after the land is worked it is exposed to the sun from three to ten days depending upon the sanitary condition of the land observed from the crops raised from the individual plots. This is done to give land plenty of air and to kill fungi or bacteria that may be present in the soil.

*Planting.*—The plots before planting are worked thoroughly with the hoe and rake and the ground levelled to about 3 inches above the level of the path. The sides of the plots are raised about an inch above the surface of the bed apparently to prevent the water and fertiliser from running off in watering or during rains. The land is fertilized by light dressing, usually put on in the morning. The fertilizer is mixed in with rake. The plot is then ready for planting seeds or seedlings and plantings are usually done in the afternoon.

It is of interest to note that the Chinese gardeners have no nursery sheds or seed flats and so do not prepare and compose seed-flat soil in which to germinate seeds and raise seedlings to transplant later to the open, considering that this system is too tedious, and increases instead of reduces labor in intensive garden management.

The practice is to germinate the seeds direct in the open field. The quantity of seeds to be sown in the plots depends upon the kind of crop to be raised. In case of crops that are to be planted and transplanted just enough seeds are broadcasted. For crops that need to be transplanted and spaced in other plots, the seeds are sown fairly thick to allow for the proper development of seedlings. Enough seedlings are left in the plots where seedlings are raised for transplanting after thinning.

*Mulching.*—After the seeds are sown and covered with soil, rice straw is spread over the plot thinly. The same thing is also done after transplanting seedlings. Aside from conserving moisture, as in the case of newly sown seeds, this serves to keep the seeds from being scattered and washed out when watering and during rains. The mulch is subsequently covered with soil and allowed to rot.

*Fertilization.*—Fertilization is one of the principal determining factors in intensive vegetable culture. The only fertilizer now used by the Chinese gardeners is lumbang cake in pressed solid form. This is broken into pieces and soaked in water in wide-mouthed pots for about 24 hours, to become soft. It is pulverized by hand and dried in the sun until it becomes slightly moistened and then screened through basket sieves when it is ready for use.

The first application of fertilizer is just before the seeds are to be sown or seedlings are to be transplanted by hand broadcasting in light dressing. The fertilizer is mixed with the soil with a home-made hoe. The frequency of application up to the time when the crop is ready for the market depends upon the growth of the plants. At least three applications are made in light dressings and the increase depends upon the growth of the plants (the poorer and slower the growth of the plants, the more fertilizer is added).

Before application of fertilizer to the growing crops, the soil on the path between the plots to be fertilized is hoed; then the fertilizer is broadcasted and this operation is followed by soil-mulching of the plots taken from the path between the plots. The soil is spread practically even by the forward throw of the hoe.

*Watering.*—Wells about 5 meters wide are dug in different parts of the field, and are provided with steps so that a man can go down and dip his pair of wooden pails into the water easily. This arrangement economizes time and facilitates watering.

The pail for watering is so constructed that when the water is poured out it falls in a thin mist over a wide superficial area. This is a far better way of watering than ordinary sprinkling, both because it is easy and because it does not beat down the tender young newly sprouting seedlings.

Water is one of principal needs in raising vegetables and to its use by the Chinese gardeners is mainly due their success as to quality as well as quantity. The volume of water given to each plot (1 by 5-7 meters) for each application is two pail-fuls—equal to 2 petroleum canfuls (10 gallons) and the frequency of application depends upon the susceptibility of the kind of crops being grown to the heat of the sun. Ordinarily from 3 to 5 waterings are given daily for each crop during sunny days. The practice of watering the plants liberally but once in the afternoon or evening is in contrast to the methods of the Chinese gardeners. They claim that leaf crop vegetables especially are forced to grow earlier with better eating qualities of leaves by giving water as above explained than by watering them liberally but once in the evening as the leaves become tough and the growth is slower. The growing plants and the newly sown seeds

are never allowed to suffer from the intense heat of the sun. Even if the soil is still wet, water is applied as soon as the leaves show signs of suffering from heat.

*Cultivation.*—The tillage of the land before planting being thorough and the crops raised being short-lived plants, no cultivation is given the plants, except hand weeding. The closeness of planting, the nature of the root systems (spongy and shallow), the short period for maturing of the crops, and the nature of the soil (sandy loam)—all these considerations, they believe, make cultivation unnecessary and expensive.

*Vegetables grown.*—The 20 Chinese gardeners in the places investigated raise the same kind of vegetables; namely, cabbages, onions, petchay, lettuce, kinchay, mustard, tango, spinach and peppers, all in great demand in the Manila markets.

The methods of planting in vogue are solid planting and successive and companion cropping. The latter method of planting are so planned that there is no loss of time and no space unnecessarily wasted. One crop follows another in succession.

The different intercroppings or companion croppings observed in the field are as follows:—

1. *Peppers—kinchay—petchay.*—The peppers are planted in one or two rows and the petchay and kinchay are broadcasted thinly. The last two are harvested simultaneously and the peppers left until all the fruits are harvested and removed after they cease fruiting.

2. *Cabbages—Onions.*—The onions are harvested as a green crop first and the whole space left to the cabbages. These are both transplanted crops.

3. *Tango—onions.*—Tango is also harvested first and the space left to the onions. Tango is broadcasted and onions transplanted in rows.

4. *Onions—kinchay.*—The latter is broadcasted and harvested first and the former is transplanted.

5. *Peppers—kinchay.*—Peppers planted in two rows and kinchay broadcasted and harvested first.

6. *Onions—lettuce—peppers.*—The onions are planted in six rows lettuce planted in between the onion plants and peppers planted in a single row in the middle of the plot.

7. *Peppers—mustard.*—Mustard is broadcasted and harvested first.

8. *Cabbages—peppers.*—Peppers planted in a row.

From the time of planting up to pulling or harvesting the crop for the market, the maximum marketable age of kinchay is  $3\frac{1}{2}$  months; mustard, 2 months; petchay and lettuce,  $1\frac{1}{2}$  months and tango and spinach 50 days. The cabbages are left until fairly good-sized heads are formed. The peppers are pulled up when the plants bear no more fruits and the onions to be sold as greens are left until fairly good-sized bulbs are produced with the idea of using both the bulbs and leaves for food.

*Rotation.*—Rotation of crops was observed. The purpose based upon information acquired, is not to deplete the soil and produce poor plants and also to destroy either bacteria or fungi attacking crops successively raised on the same plot 3 times over at most after which another kind is planted.