III. Container Gardening

Gardening on the roof has been very successful both summers. The first summer, due to a late start, we did not get an accurate idea of the yields we could expect. During the summer of 1976 records have been kept and a wide variety of vegetables have been planted. We are now in a position to advise on the type of crop best suited to rooftop gardening, from the standpoint of both growth patterns and consumer preferences.

The primary consideration when planting in containers is the size and depth available. In addition, rooftops are approximately 5°C hotter than surrounding land. In a short growing season such as Montréal's, this is an advantage in that the growing season is slightly prolonged. However, the heat causes the earth to dry out very rapidly so that watering is a grave concern and must be done constantly.

a) Drainage.

Drainage must be provided in a container. Drilling 3/8" holes randomly dispersed along the bottom of the box proved to be adequate. A layer of gravel over the holes did not significantly improve the system, and since it greatly increased the overall weight it was dispensed with. In order to protect the roof membrane and avoid pockets of water, the boxes were elevated on runners. This is an essential precaution and very simple to carry out.

b) Staking.

Staking and stringing vines or climbing crops greatly increases sun exposure and allows the gardener to plant more intensively. This was done wherever possible and yielded the expected benefits. This was particularly true of cucumbers.

c) Soil mixes and fertilizers.

One of the greatest advantages of container gardening is control over the soil mix. We tried various soil mixes, including 1/3 soil, 1/3 peat moss & perlite and 1/3 compost in order to try to keep weight down. However only a few of these ratios proved satisfactory. From a gardener's point of view, a basic mix of 7/8 soil and 1/8 vermiculite, perlite and peat moss is ideal. Vermiculite acts as a soil lightener and moisture retainer, whereas perlite increases drainage efficiency. Peat moss, used judiciously, acts as an anti-fungicide as well as retaining moisture.

It is essential to use a light soil mix for weight and drainage but ratios can be varied to suit the crop being planted. Greater concentrations of perlite are advisable for root crops whereas the average mix suits the heavier moisture and nutrient requirements of tomatoes.

Frequent fertilization is necessary in containers since the natural nutrient cycles of the soil are essentially by-passed. Most nutrients leach out of containers very rapidly and must be regularly replaced.

Compost is the ideal fertilizer and we have used it whenever possible. A three-bin compost box was built on the roof, following the Olkowski design from "The City People's Book of Raising Food". Community gardeners collected waste and helped the staff to build compost heaps. It was an entirely successful experiment but we did not always have as much compost as we would have liked. To rectify this, other organic fertilizers were used as top and side dressings.

Every three weeks a combination of bone meal, granite dust, flaked seaweed, bloodmeal and liquid fish emulsion was applied to the crops. Where soil was particularly acidic,

Composting is an integral part of urban gardening. The compost box (above) on the rooftop, is a three compartment wood construction. The decaying material is periodically shifted from one compartment to the next. The nutrient-rich humus is used in the planting boxes. Leaves, plant material and household garbage can all be used.

All the individual planters (below) are made from recycled wooden crates and boxes, retrieved from downtown food suppliers, particularly in Chinatown. These are painted with (non-toxic) preservative, fitted with runners and drain-holes, and put into use.

or an acid intolerant vegetable such as beets was planted, lime was applied.

It was found that where fertilization was not carried out, there was significant reduction in growth. As soon as compost, or some other amendment was used, the plants showed rapid signs of improvement.


Spinach

d) Companion planting and intercropping.

Companion planting, though an important concept in gardening, is not an efficient way to plant in a container. One plant generally becomes dominant and this is frequently at the expense of the preferred crop.

It was discovered that onions and garlic can be companioned as long as they are close to the edges of the box, where they don't interfere with the other plants. An herb such as basil is useful but must be seeded in to avoid overwhelming growth. Sage, the best cabbage moth repellent, should be used with cabbage family but planted to the sides of the container to avoid being overseeded by brassica.

Intercropping is most successful using two leafy vegetables of the same general growth pattern. Swiss chard and romaine lettuce or chinese cabbage and bok choy are good examples of possible combinations. Quick-maturing vegetables such as radish and lettuce are also sensible plants to intercrop with plants which have a long season such as tomatoes or peppers. Attention should always be paid to the date of maturity so that one vegetable is harvested slightly before the other. This gives the late one time to mature.

e) Successful plants and varieties.

Following two summers of experimentation with different plants and varieties, we found some to be far more practical than others. The reasons relate both to restricted space and to more intense heat.

Baby head cabbage is practical in a container since it comes to head more quickly than other sorts and is more compact. Jersey Wakefield and Red Rock Cabbage should be avoided. Though they are excellent varieties, they require too much space.

Midget vegetables though tasty are wasteful for the opposite reason. They take up too little space. It is more sensible to harvest a 20cm carrot from a 20cm deep box than to cultivate a vegetable such as Baby Finger carrots which only grow to 7cm.

The dwarf varieties of tomatoes have been highly successful. Both cherry and intermediate tomatoes such as Starfire are excellent choices.

Any crop which has limited heat resistance should be avoided until fall planting. Spinach and bok choy are excellent as late crops. Despite the fact that the spring

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bok choy bolted, it produced a sizeable amount of edible product. Swiss chard, Tampala, and New Zealand spinach are all admirable, both for spring and fall plantings.

Cucumbers, when strung, give prodigious yields. A hybrid gynoecious, self-pollinating variety called Victory grew nine feet high in three months. The harvest was excellent. We did discover, however, that cucumbers require a soil depth of at least 0.75 metres if they are to produce to potential. Both pole beans and bush beans have been successful but bush beans have a shorter season and can be intercropped with something small and fast while they are growing.

Any plant which produces just one small crop for a lot of inedible foliage is a luxury in a box. Broccoli or brussel sprouts are thus far more practical plants to use than cauliflower.

Zucchini, given sufficient depth (1 metre) gives an exceedingly heavy yield but should be planted more than one per box. Buttercrunch lettuce was our main lettuce crop because of its resistance to heat and superiour taste.

Among the peas, Little Sweetie Edible Podded peans outproduced all the other varieties. It is a savings not to throw away the pod and it also has some resistance to heat. For a conventional pea, we chose a heat resistant one such as Wando.

In general, it is best to start by using the most disease and insect resistant varieties common to the area and choose among them on the basis of size and heat resistance.

f) Planting schemes.

An ordinary box measures 60cm X 90cm X 60cm deep. It is advisable to plant more intensively in a container to utilize the limited space most effectively. The frequent application of fertilizer compensates for the crowding. Plants such as lettuce, beets, swiss chard and parsnips can be started at 5cm intervals and thinned out later. Carrots and spinach are planted even more closely, at 2cm intervals.

Broccoli and zucchini are best alone, while tomatoes and eggplant can be planted two to a box. In this standard box, three rows of peas are planted at 8cm intervals and beans in two rows at 8 cm intervals.

Cabbages must be planted so that the finished heads do not touch, three to a standard box in a zig-zag design. Plants which do well in beds should be broadcasted rather than seeded in rows. This includes such plants as carrots and lettuce.