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G89-902 Intensive Gardening Techniques

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Intensive Gardening Techniques

This NebGuide describes techniques which will allow the gardener to grow more vegetables where space may be limited.

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For some people, a small-sized garden is preferable to a larger one. Smaller gardens require less labor and expense than larger gardens. Decreasing garden size provides more yard space for other activities. The gardener can concentrate soil improvement efforts in a smaller area, and, with careful management, small gardens can produce sufficient vegetables for fresh eating during the growing season, and perhaps extra produce for preserving.

Considerations

For some gardeners a small garden is not practical. If you are interested in preserving, a smaller garden may not provide enough produce for winter use.

"Intensive" gardeners must pay close attention to scheduling plantings to ensure that no part of a smaller garden is left unoccupied. Nebraska's growing season (actually two shorticulture seasons interrupted by a heat spell) can complicate trying to stagger plantings.

Smaller gardens also require careful management. Growing plants closer together demands particular attention to pest control, fertilization and training of plants. To grow all the vegetables you want, you may have to use transplants instead of direct seeding, which will increase your costs.

To manage smaller gardens successfully, gardeners must use different growing techniques. These can

include bed planting, vertical growing, interplanting, and succession planting. Growing vegetables in containers is another type of intensive gardening and is described in the NebGuide *G86-781, Container Gardening in Nebraska*.

Raised Beds

Raised beds are growing areas whose surface is "raised" above the surrounding area. Raised beds can be temporary or permanent. Once established, the garden traffic is confined to paths, which reduces soil compaction. Soil improvement efforts are focused on the beds alone, not in the paths. Raised beds warm faster and dry earlier in the spring, allowing earlier spring planting. All these factors allow plants in raised beds to be spaced more closely than in normal growing areas.

Disadvantages of Raised Beds

Raised beds are not the answer for all gardeners lacking space. The initial labor and cost to establish the beds may be high. Once established, especially with permanent "sides," it may be difficult to use a standard size plow or tiller for cultivation. The tendency of the soil in raised beds to dry faster may increase the need for irrigation later in the season. Also, not all types of vegetables grow well in bed culture.

Types and Sizes

Raised beds can be free-standing or built with more permanent sides to help hold the soil in place. Freestanding beds can be formed by marking out a tilled area to indicate paths and beds. Make beds any convenient length, but not wider than five feet across for easy reaching from either side. Once marked, use a hoe or rake to move soil from paths up into beds. Make freestanding beds no higher than eight inches or they will dry too quickly or be washed easily by rains. Finish by smoothing the top of the bed with a rake.

The beds will settle somewhat through the growing season. To prevent excessive drying and washing of soil, mulch the sides of the beds with an organic mulch like straw, leaves or grass clippings.

Permanent raised beds have supported sides. A variety of materials including wood or concrete blocks can be used for the sides. Redwood or western redcedar of at least two-inch thickness are long-lasting, or you may use pressure-treated wood.

Treated Wood For Plants

Certain wood preservatives can damage growing plants. Avoid materials which have been treated with creosote or penta (pentachlorophenol). Old railroad ties have been creosote-treated, and may contain enough residue to cause plant injury.

Safe preservatives include salts of copper, chromium and arsenic (indicated by combinations of initials like CCA or CAC) or by trade names like Osmose and Koppers. Woods treated with these materials are greenish in color.

The wood should be pressure-treated for the longest life. Use care when handling treated wood. Always handle it with gloves, and wear a mask while sawing it to avoid absorbing any of the preservative residues. Dispose of scraps and sawdust in a landfill. Do not burn scraps or use sawdust in the garden.

Make permanent raised beds for disabled gardeners somewhat higher for easy reaching. The gardener can sit on the edge of the bed to work. Design wheelchair access growing beds to be three feet high and no more than two feet wide.

Once the sides are installed, fill beds with garden soil which has been amended with peat, shredded leaves, compost or other organic materials. Since these beds will be in place a number of years, enriching and loosening soil when first establishing beds is important. Properly amended raised beds will have soil loose and friable enough to be turned easily with a shovel. Old mulch, compost or other organic material can be turned under each year which will further enrich the soil.

You also can organize your garden into beds, but not make the beds raised. This is a good option in gardens with sandy soil that would dry too quickly if formed in raised beds. Beds are a more efficient way to organize the garden than rows, especially for small-sized vegetables. By establishing permanent paths and beds (even if not raised) you still will avoid compacting the soil in growing areas.

Most crops are adaptable to growing in beds, but small-sized vegetables like lettuce, greens, dwarf or bush varieties and cabbage perform the best. Root crops like beets and carrots also will thrive in the looser soils of beds.

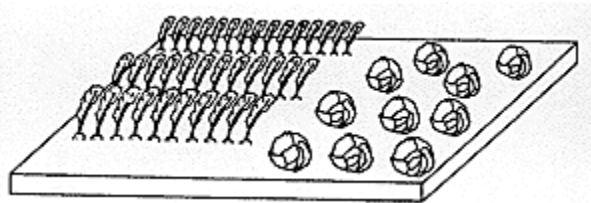


Figure 1. Ideas for spacing vegetables in bed plantings.

Whether raised or not, the advantage of beds is that vegetable plants can be grown more closely together. Space plants by thinning or transplanting so they are

evenly spaced in the beds. The spacing should be whatever the seed packet recommends for spacing between plants. For example, if the seed packet says to thin lettuce so plants stand six inches apart in rows two feet apart, ignore the row spacing, and thin all lettuce plants to stand six inches apart. Root crops like carrots and beets still can be sown in rows, but plant two or three rows the length of the growing bed. (See Figure 1).

Plants like lettuce and radishes can be sown by lightly sprinkling seed over the bed and gradually thinning young plants to their recommended final spacing.

Trellis and Vertical Growing

Most gardeners already use vertical growing to save space in the garden. Caging tomatoes and trellising peas are two familiar examples. Besides saving space, vegetables grown this way are easier to pick and may have less rot because the fruit does not contact the soil. Improved air circulation can reduce diseases. Growing plants vertically can mean higher yields per unit area. In addition, vegetable plants can be trained on trellises to provide welcome summer shade or privacy screens, as well as to produce food for the table.

Trellising does have some disadvantages, however. Climbing supports must be sturdy, especially in windy sites. Building and installing trellises can involve time and expense. If plants are not naturally twining, they will have to be trained or secured to trellises, and heavy fruit will require additional support. Transpiration is higher in plants growing upright, so they may require extra water. Flowers will be more exposed to the wind, which may discourage pollinators like bees, or cause flower abortion.

Types and Installation

The type of vegetable determines what kind of trellis used. A wide variety of trellising materials is available. A good rule is to install the sturdiest trellis you can afford. If the trellis is part of your landscaping it should be aesthetically pleasing, too.

Posts or supports for trellises can be made from metal, wood or plastic like PVC pipe. Metal posts will last longer and are easier to install than wooden ones. Wooden posts should be treated with a preservative or they may last only one season.

Posts can be used to support plastic or string mesh, or chicken wire. Plastic and string meshes can be disposed of, plants and all, at clean-up time. Removing dead plants from chicken wire fencing may be frustrating and futile.

Longer poles made of bamboo can be arranged in teepees to support climbing vegetables like pole beans. (See *Figure 2* for some trellis examples.)

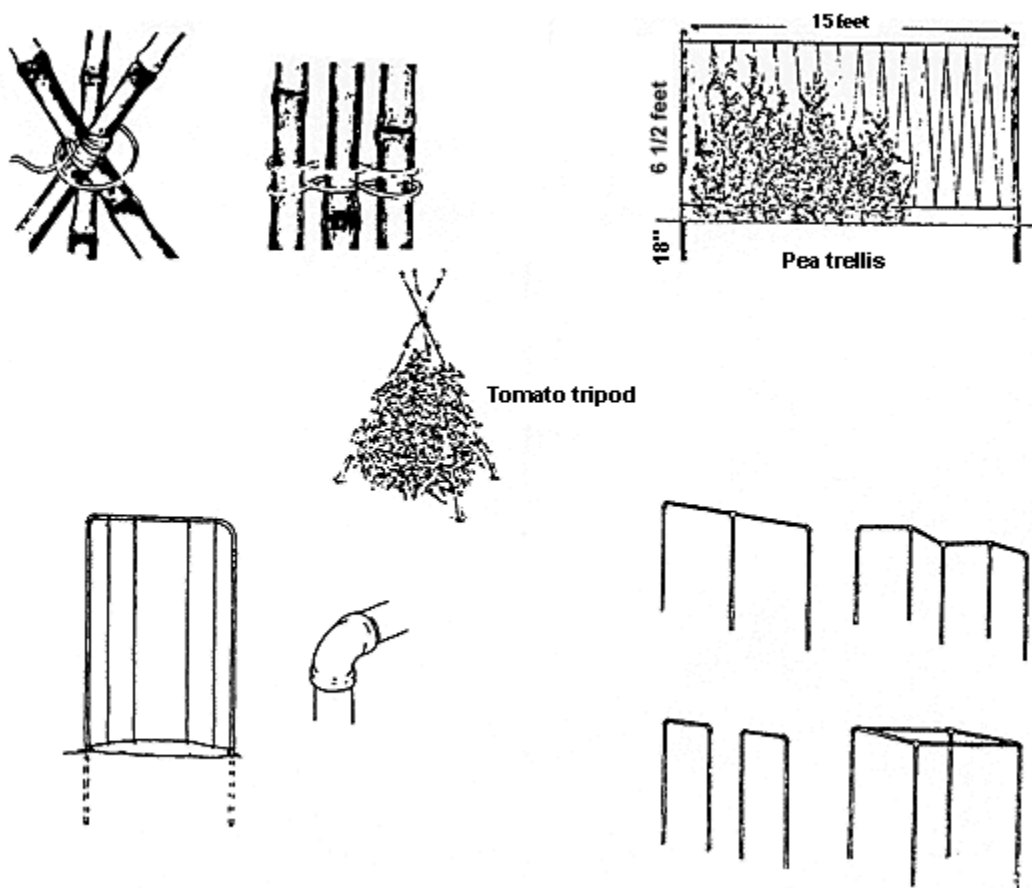


Figure 2. Above are some trellis examples.

You can make a vertical frame of electrical conduit fastened with slip fittings, or 1/2 inch water pipe with threaded elbow couplings (detail). Attach strings to support the plants.

You can arrange vertical frames in a number of ways. Run them as a straight fence (upper left), in zigzag pattern (upper right), with space between the frames (lower left), or as an arbor (lower right).

All trellises or climbing supports should be installed while plants still are small. Orient trellises to run in an east-west direction, and locate them on the north side of the garden to avoid shading other plants.

Figure 3. You can use slings to support fruit as it develops.

Melons and squashes do not naturally twine and will have to be trained initially by weaving stem ends through mesh openings. Developing fruit can be supported with slings made from used stockings or rags. (See *Figure 3.*) Insect protection is an extra benefit of using slings, especially if the entire fruit is wrapped.

Succession Planting

Most gardeners practice a simple succession planting in row gardens by following a lettuce planting in spring with a late crop of, say, beans, or by staggering plantings of beans or sweet corn to ensure a steady harvest. Staggered plantings also work well with lettuce, radishes and other fast-yielding crops. Succession planting demands careful attention to days-to-maturity for each vegetable you plant, and attention to soil fertility to keep the intensively planted vegetables growing well.

Schedule plantings so no area of the garden remains empty for long. Remember that later planted succession crops mature faster than earlier planted ones because growing conditions, especially temperature and light intensity, usually are more favorable. Remove plants once their initial flush of bearing is over. Some vegetables which work well in succession plantings are listed in *Table I.*

Table I. Some vegetables for succession planting.	
Vegetables for Succession Planting	
<i>Vegetable</i>	<i>Plant every:</i>
Radishes	10 days
Lettuce	2 weeks
Summer squash	3 to 4 weeks
Snap beans	3 weeks
Sweet corn	2 to 3 weeks

Interplanting

Interplanting is planting different crops in adjoining areas to take advantage of differences in growing habits, light requirements or nutrient needs. A traditional example of this technique is growing beans and corn together. Making plants share space means the individual plants may yield less, but the total garden yield will be greater because the space is being used more efficiently.

The number of ways different vegetables can be combined is limited only by your creativity. For successful interplanting combinations, plan your garden around the largest, longest-growing vegetables like tomatoes or winter squash. Once you've decided their location, plant smaller, fast-growing vegetables around them.

In your design, consider the different growing habits of vegetable plants: for example, combine upright plants like caged tomatoes with a scattering of scallions, or grow melons around sweet corn. Interplant lettuce with pole beans; the lettuce will be slower to bolt when growing in the partial shade provided by the taller beans. (See *Table II* for other possibilities.)

Table II. Some interplanting combinations

<i>Some interplanting possibilities</i>			
<i>Combine tall with low/spreading</i>		<i>Combine fast with slower-growing</i>	
caged tomatoes	melons	lettuce	tomatoes
sweet corn	lettuce	radishes	sweet corn
peas	radishes	greens	winter squash
okra	winter squash	beets	pole beans

An interplanted garden does not resemble a traditional garden with all the vegetables planted in straight rows. Rather, interplanted gardens have a mosaic effect with paths oriented around the interplanted areas. Plants can be arranged to take advantage of contrasts in texture and color, making a garden more visually interesting.

A common error in interplanting is crowding vegetable plants. Crowded plants yield poorly and are more subject to diseases. Consider the eventual harvest size of the vegetables you interplant, and space them so that at maturity they will just be touching each other. Make the interplanted area no wider than what you can easily reach across to keep from trampling plants.

You also can avoid crowding by interplanting fast growing vegetables with slow growing vegetables, for example, radishes or lettuce with tomatoes. By the time the tomato plants are bearing, the lettuce or radishes will be harvested. Or some of the lettuce can be removed in May to make room to sow seed of winter squash. Eventually the winter squash plants will cover the entire lettuce bed.

Similarly, vining squash or melons can be sown between trellised pea plants. The pea plants will be finished bearing about the time the melon or squash needs the trellis. Some other interplanting combinations are illustrated in *Figure 4*.

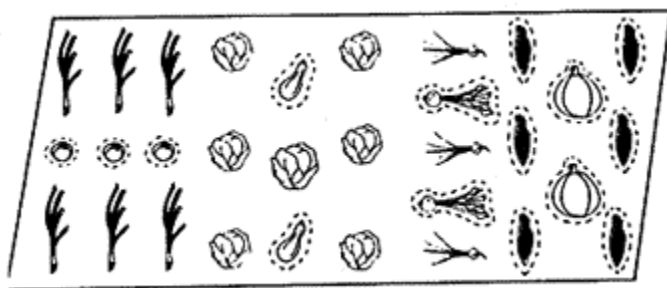


Figure 4. Here are some interplanting designs. Early: scallions, lettuce, radishes. Later (in dotted lines): tomatoes, summer squash, beets, sweetcorn, pumpkins.

A method of interplanting which has received notice recently is known as "square foot gardening." This technique (based on a book of the same name by Mel Bartholomew) involves

planting vegetables very intensively. The growing area is divided into square foot sections. In each section, plants or seeds are carefully spaced.

For example, in one square foot you can grow 16 radishes, nine beets or one cabbage plant. This technique may be useful for container growing or where space is extremely limited, but will demand correspondingly more attention by the gardener.

Follow the usual fertilization guidelines for each crop in the interplanting. Amend soil with compost or organic matter before planting, use a starter fertilizer for early spring plantings, and topdress vegetables at the proper stage of growth.

The closer spacing of interplanted vegetables will discourage some weeds. But the weeds that do grow must still be controlled, and rototillers will be too large for the job. Use small tools like onion hoes, or pull weeds by hand. Better yet, use mulches to control weeds; this also reduces watering needs.

All gardeners can grow vegetables more efficiently by using some of the intensive growing techniques described here. Careful management is the key to successful intensive vegetable gardens. The benefits can include greater yields per square foot, and more attractive vegetable plantings.

File G902 under: Horticulture

C-27, Vegetables

Issued February 1989; 12,000 printed.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

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