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Vegetable Seed Production

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Cucurbits: Cucumber, Squash, Pumpkin, Muskmelon, and Watermelon

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CUCUMBER

Cucumbers and other vine seed crops are characteristically warm-season crops intolerant of frost. Cucumber, squash, and muskmelon grow well where average summer temperatures of 65 to 80 degrees F. prevail.

The production of vine seed crops is similar to production of the crop for fresh market or processing. They can be planted in two ways—drilled in rows or planted in hills. The tendency has been to drill the smaller-seeded vine crops, such as cucumbers, and to plant in hills the larger-seeded crops, such as squash and pumpkins. Good yields have been reported with both methods. The hill method provides an opportunity for early cross-cultivation if weeds are a serious problem.

Planting

Cucumbers should be planted in a well-prepared seedbed from May 10 to June 10. May plantings are easier to establish than those made in June. July plantings usually fail to mature seed. All seed should be treated with a fungicide prior to planting to control damping off. Damping-off losses are usually most serious on very early plantings when soil temperatures are low.

If cucumbers are drilled, the rows are spaced about 3 feet apart with plants 4 to 12 inches apart in the row. If checked, the seed is placed in hills 3 to 3½ feet apart. Seeding rates vary from 3 to 4 pounds per acre depending on the spacing.

Growing the seed crop

Cucumbers require good soil, fertilizer, and plenty of water. Irrigation should be sufficient to keep the plants in an active and vigorous condition throughout the growing season.

Apply 300 to 400 pounds of complete fertilizer at seeding. Up to 100 or 120 pounds of nitrogen per acre may be sidedressed or broadcast during the growing season provided irrigation is adequate to maintain vigorous growth. Split applications of supplemental nitrogen have no advantage over a single application.

Harvesting and threshing

Cucumbers are ready for harvest in the Willamette Valley during the first part of October. The seeds are mature when they are no longer fastened to the rind and when the fruits lose their dark green color. The black-spined varieties are yellow to deep orange at maturity, whereas white-spined types are light green to almost white in color.

Special harvesting machines are needed to crush the fruits and to separate the rind and part of the pulp from the seed. The wet seed is sacked from the machine and left in the field from 1 to 2 weeks to allow for partial decomposition of the pulpy material by natural fermentation processes. Over-fermentation discolors and lowers the quality of the seed. After field fermentation, the pulp is washed free from the seed. After washing the clean seed is placed in trays or in revolving drums for drying. Warm, forced air speeds drying. With tray drying it is necessary to stir the seed occasionally in order to obtain uniform drying and to prevent the seed from sticking together. During the first part of the drying process, when the seed is still wet, temperatures should not exceed 100 degrees F. Temperatures throughout the remainder of the drying period should not exceed 110 degrees F.

Varieties differ in yielding ability. Pickling varieties yield more seed than slicing varieties. Yields of 800 to 1,000 pounds of seed per acre can be obtained with pickling varieties, whereas 500- to 600-pound yields are more characteristic of the slicing types.

SQUASH AND PUMPKIN

There are two main types of squash: the summer or bush type, and the winter or vining type. From a seed production standpoint both types are easy to grow, but they differ in their cultural and handling requirements.

Summer squash such as White Scallop, Yellow Crookneck, and Zucchini require better soils, are more responsive to fertilizer, and are generally higher yielding than winter squash. Summer varieties should be planted in rows or in checked hills 3 to 4 feet apart.



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Winter varieties such as Table Queen, Butternut, and Buttercup are spaced farther apart, with 6 to 8 feet between hills. Experiments with the very large Mammoth and Hubbard winter squash types indicate that various spacings, both between and within rows, have very little effect on seed yields. The trend, however, is toward higher seed yields at closer spacings.

Both types of squash should be planted between May 1 and June 1. Three to five pounds of seed per acre are required, depending upon the spacing used.

Sidedress or band the fertilizer if planted in rows, or place the fertilizer in bands around the hills if checked; 200 to 400 pounds of complete fertilizer should be used at planting, the exact rate depending upon soil fertility. Light broadcast applications of nitrogen fertilizers maintain plant vigor during the growing season if irrigation is adequate.

Squash seed should be harvested after the first frost, when the fruits have taken on their characteristic matured color and when the seeds inside of the shell break away readily from the pulp. If the seed is immature, the pulp will adhere to the seed.

Summer squash can be harvested with a cucumber thresher. Winter squash, which have thick, tough shells, are usually split open and the seeds scooped out by hand. After threshing summer squash, the seed should be washed within 48 hours in order to prevent heating. Undue fermentation at this stage can materially injure and darken the seed. The need for handling winter squash seed immediately after threshing is not quite as critical as it is for summer squash seed. Winter squash seed should be processed within 3 or 4 days following removal of the seed from the fruits. After washing, the seed is placed on trays for drying. Drying temperatures are the same as those for cucumbers.

Seed yields vary greatly for both summer and winter squashes, depending upon different varieties. Yields from 600 to 800 pounds of seed per acre are common for summer squash varieties; yields from 300 to 500 pounds are typical for winter squash varieties.

Pumpkins are similar to winter squash in their growing requirements and the general threshing and processing procedures. Irrigation of pumpkins and

winter squash should not be as heavy as for summer squash. Excessive irrigation produces too much vine growth and delays maturity of the fruits. Pumpkins yield 600 to 1,000 pounds of seed under irrigated conditions.

MUSKMELON AND WATERMELON

High-quality muskmelon and watermelon seeds can be produced in Oregon in those areas favored with a long growing season and with fairly high summer temperatures. Muskmelons require a warmer temperature than cucumbers and for this reason are not as well adapted to Willamette Valley conditions as are cucumbers and squash. Watermelons require a long season for maturity and thrive where average temperatures are above 70 degrees F. Watermelons and muskmelons can be grown successfully along the Snake River in eastern Oregon, in the irrigated Hermiston area of Umatilla County, and in sections of Douglas and Jackson counties.

Muskmelons are similar to cucumbers in their cultural and fertility requirements. The harvest process differs somewhat. Muskmelons do not mature uniformly and must be harvested several times during the season. Muskmelon pulp is sweet and deteriorates rapidly, so care must be taken to avoid excessive fermentation after threshing. The washing process should be done just at the time when the pulp material begins to break down. Seed yields of muskmelons in Malheur County average 300 pounds per acre, with 500 pounds being considered a high yield.

Watermelons require sandy soils. The preferred time of planting is from May 15 to June 10. Spacing between hills varies from 8 to 10 feet. Seed is mature and ready for harvest a little beyond the eating stage of the melon. The thresher commonly used for cucumbers is acceptable for threshing watermelons. Watermelon pulp ferments rapidly and should be washed soon after threshing. Excessive fermentation results in poor color and a reduction in the value of the seed. Seed yields are similar to those of muskmelons—about 300 pounds per acre.

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