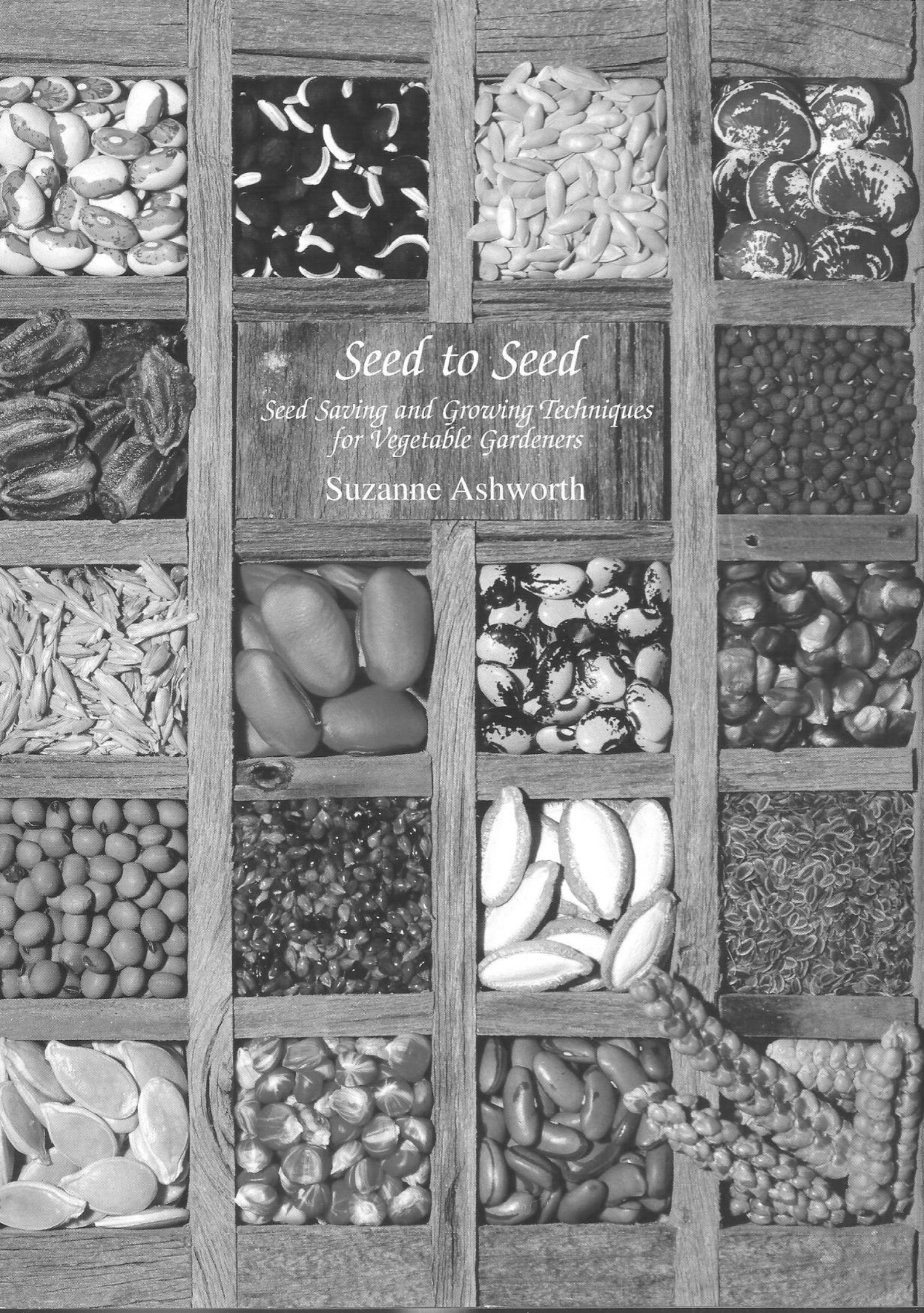

Seed to Seed

Seed Saving and Growing Techniques for Vegetable Gardeners

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Botanists believe that the onion originated in Iran and Pakistan. Onion carvings and seeds have been found in Egyptian tombs dating back to 3200 B.C. Greeks and Romans wrote about onions as early as 400 B.C. and held festivals during onion harvest. By the Middle Ages, onions had been transported throughout northern Europe and were used as both food and medicine.

Onion bulb formation is dependent on daylength or photoperiod. Onion varieties are classified according to the photoperiod required for bulbing: short day varieties require 12 to 13 hours of daylight; intermediate varieties 13.5 to 14 hours; long day varieties 14.5 to 15 hours; and a few very long day varieties require 16 or more hours of daylight. Onions tend to bulb more quickly during warm days, however temperatures over 104° F. can actually retard bulbing.

Despite these daylength classifications, onion bulbing is really a response to the length of the night, not daylight. Locations closer to the equator have shorter summer days than, for example, some areas of Alaska that have 20 hours of light on some June days. Thus, short day onions grow to full bulb size during the 12 hours of light available in the southern regions of the United States. Intermediate varieties bulb well in the nation's midsection, and long day types grow well in the northern regions. Gardeners in the mild winter regions of the intermediate zones often grow long day onions from spring to summer, and short day varieties from summer to fall.

BOTANICAL CLASSIFICATION

Onions belong to the genus *Allium* and species *cepa*. *A. cepa* includes several groups or subspecies.

The Aggregatum Group includes all of the multicentric onions that divide vegetatively. Shallots, multiplier onions and potato onions are all examples of the Aggregatum Group.

Biennial onions that produce seed comprise the Cepa Group.

The Proliferum Group includes the topsetting onions which are commonly known as Egyptian onions, tree onions or walking onions.

POLLINATION, CROSSING AND ISOLATION

Common onions are inbreeding plants. All varieties of seed-producing onions can be crossed by insects. Some of the top setting onions (*Allium cepa*, Proliferum Group) produce fertile flowers that can contaminate nearby seed-producing onions. There can also occasionally be some crossing between seed-producing onions and some varieties of *A. fistulosum*. Seed-producing onions do not cross with chives or leeks.

Isolation of one mile is adequate for seed purity. Bagging or various caging techniques can be used when more than one variety is grown in the garden. These techniques are described in the introductory pages of the Amaryllidaceae family and also under each applicable species.

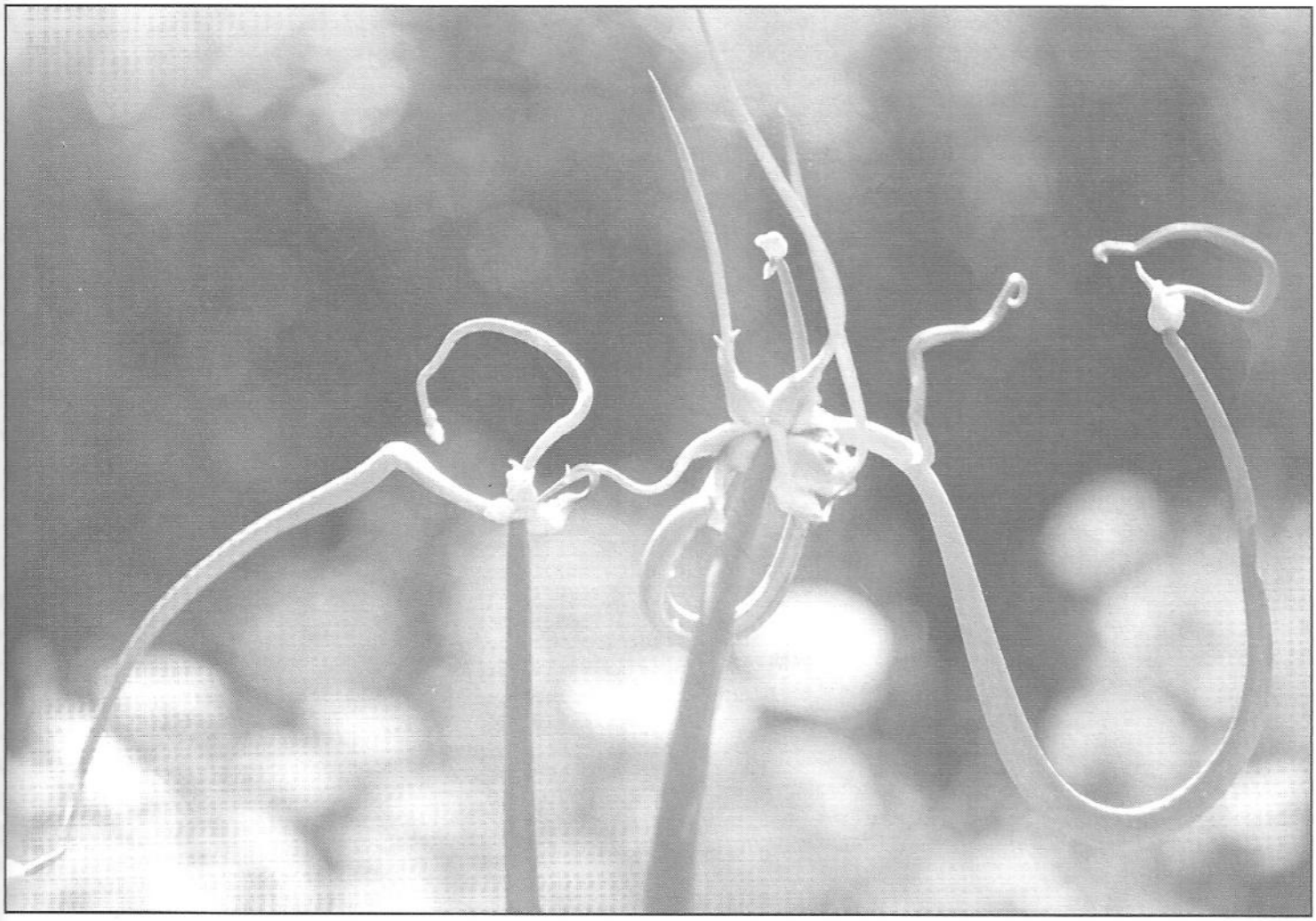
SEED PRODUCTION, HARVEST AND PROCESSING

Seed-producing onions are biennial and require two growing seasons to produce seed. Onion bulbs that are going to be replanted for seed production can be harvested after the first season. Only the best bulbs should be stored for replanting in the spring. This is referred to as the seed-to-bulb-to-seed method. In some mild winter climates, onions can be left in the ground to overwinter.

When using the seed-to-bulb-to-seed method, the onions are harvested after the first growing season when the tops begin to dry. The bulbs are then dried or cured for 10-12 days. Avoid drying the bulbs in the sun where temperatures exceed 75° F. or the bulbs will sunburn and spoil in storage. After curing the onions, remove the dry tops or braid into strands. Recent studies suggest that most varieties will keep for 3-6 months at 32° to 45° F. or at 77° to 95°, and at 60-70% humidity. The worst possible storage temperature is 60ϒ to 70ϒ F., which is about room temperature. At a relative humidity of 40% or lower and a temperature of 37ϒ F., some onion varieties can be stored for 10-12 months.

Onions will begin to sprout only after a period of rest, which varies from variety to variety. During this resting period, the bulbs will not sprout even when exposed to optimal growing conditions. Following the resting period, the onions enter a dormant phase. During this period of dormancy, the onions will sprout if the temperature and humidity are both within the proper range.

During the next spring, the best, most true-to-type onions are replanted for seed production. As the days get longer, each onion will form a seed stalk and a flower head that contains hundreds of tiny flowers. As the seeds form, the flower and plant begin to dry. The seeds are encased in tiny pods that shatter easily. Onion seeds should be harvested as soon as the seeds



Egyptian onion (*Allium cepa*, Proliferum Group) with sprouted bulbils.

are mature and the pods start to dry. The seed heads can be bent over into a sack and cut from the stalk to avoid losing any seeds during harvest.

The seed heads should be placed in a protected area, away from direct sunlight, to complete drying. Onion seeds fall free of the seedpods quite easily once the pods are dry. The remaining seeds can be removed with a commercial seed thresher. Other successful seed removal techniques include jogging in place on the seed heads, rubbing them over a wire mesh screen, or rubbing the seed heads together. Winnowing the seeds in a light wind will remove any remaining seedpods and debris.

SEED STATISTICS

Onion seeds will retain 50% germination for two years when stored in cool, dry, dark conditions. Members of the Seed Savers Exchange annually offer about 38 varieties of common onion (and 88 varieties of multiplying onions) and the *Garden Seed Inventory* lists sources for 128 varieties of common onions (and 38 varieties of multiplying onions) that are available from commercial mail-order seed companies. There are approximately 6,500 seeds per ounce (230 per gram or 105,000 seeds per pound), depending on the variety. Federal Germination Standard for commercially sold onion seed is 70%.

GROWING COMMON ONIONS FROM SEED

Seed-producing onions are biennials, requiring two seasons to produce seed. The seed-to-bulb-to-seed method or the seed-to-seed method can be used depending on the climate. Plants producing seed in one season should not be used for seed stock. Onion seed can be either direct seeded or greenhouse started. Lightly cover the seeds in either direct seeding or greenhouse sowing. Optimum germination temperature is 70° F. with germination usually occurring in 10 days. Plant or set out in full sun in northern climates, or afternoon shade in hot climates. The plants should be thinned to 3" (depending on the size of the variety being grown).

Flower stalks and seed heads of common onions (*Allium cepa*, Cepa Group).

REGIONAL GROWING RECOMMENDATIONS

Northeast: Common onions can be started in a greenhouse in early March and transplant into the garden by mid-May. Likes full sun and average water. Dig the plants in late August when the tops begin to brown, and store as hanging braids or in net bags, in cool drier part of cellar. Replant in early May. In late August of year two, watch carefully to avoid shattering. Flower stalks will often need staking.

Mid-Atlantic: Common onions can be direct seeded about March 1, or started in a greenhouse about January 15 and transplanted into the garden about March 1. The plants like full sun and average water and overwinter in the garden with no special care.

Southeast/Gulf Coast: Start bulb onions in a greenhouse about January 30 and transplant into the garden about March 15. The plants like full sun. Multipliers overwinter in the garden with no special care, and bulblets can be set out in the fall.

Upper Midwest: Common onions can be started in a greenhouse about March 1 and transplanted into the garden about April 20. The plants like full sun and average water, and require mulching (with straw or cornstalks) in mid-November. At harvest time, watch for heavy rainfall as the seed is ripening. Winters with minimal snow cover will cause problems, so a portion of the crop should be dug as insurance.

Southwest: Common onions can be direct seeded September 15 to March 15. The plants like full sun and average water. In low desert, the plants can "oversummer" in the ground, but must be mulched to protect from heat.

Central West Coast: Common onions can be direct seeded March 15 to April 15, or started in a greenhouse about January 15 and transplanted into the garden March 15 to April 15. The plants like full sun and average water, and overwinter in the garden with no special care.

Maritime Northwest: Common onions can be direct seeded March 20 to April 10. The plants like full sun and average water. The plants should be stored in a cool (50-60° F.) location that is dry and dark, and replanted March 20 to April 10 to produce a seed crop.