



## HAWAII COOPERATIVE EXTENSION SERVICE

College of Tropical Agriculture and Human Resources

University of Hawaii

GENERAL HOME GARDEN SERIES No. 5

### FERTILIZER USE IN THE HOME GARDEN

by Wade W. McCall\*

Fertilizers are applied to supplement the soil's capacity to supply plant nutrients. For more efficient use of applied fertilizers, the pH of the soil should be satisfactory for the crop, there should be adequate organic matter, adequate moisture, and good aeration, and the soil should have good tilth.

#### When to Apply

Fertilizers should be applied to meet the needs of plants, and the amount and kind should be determined by a soil test. In the small home garden, however, it is usually satisfactory to apply 2 to 2½ pounds fertilizer per 100 square feet garden area at planting and the same amount again when the plants are 3 to 4 weeks old. Apply 10-30-10, 13-34-10, 10-20-20, or similar analysis fertilizer.

For leafy vegetables, an application of nitrogen when the plants are 2 to 3 weeks old will give good results. For tomatoes, cucumbers, melons, and vine crops, applications of nitrogen after the first fruit set, after the first harvest, and every 2 weeks after the first harvest give excellent results. For sweet corn, the application of nitrogen when the plants are 6 to 8 weeks old will increase yields. Nitrogen should be applied at ¾ to 1 pound ammonium sulfate or its equivalent per 100 square feet garden area.

For plants that are to be transplanted, the use of a starter solution instead of tap water at planting will reduce the shock of transplanting and produce larger, healthier plants; use 1 pint of starter solution per plant. Starter solutions may be made by adding 2 ounces dry fertilizer or 2 teaspoons liquid fertilizer per 1 gallon water. Use complete fertilizers high in phosphorus.

#### How to Apply

Fertilizer may be applied broadcast, which consists of spreading the fertilizer over the surface of the soil and working it into the topsoil by raking or similar means. It may be placed in a band below or

to the side of the seed—generally, in a band below the seed for small seed plants and in a band below and to the side of the seed for large seed plants. A variation of band seeding is placing the fertilizer in a circle below the level of the seed and around the hill. For small seed plants place fertilizer 1 to 1½ inches below the seed; for large seed plants, 2 to 3 inches to the side and 2 to 3 inches below the seed. Hill placement is 2 to 3 inches below the seed and 2 to 3 inches away from the seed. When you are sidedressing after the plants are established, place the fertilizer in a shallow band 3 to 4 inches away from the plants—in a circle for hills and in a continuous bands for row crops. Cover the fertilizer with soil after application. Exercise care at all times that the fertilizer does not come into contact with the leaves or stems to prevent “burning” the plant.

Fertilizer may be applied in a dilute solution as a spray to the leaves of plants. All nutrients can be absorbed through the leaves, but since the amounts required of nitrogen, phosphorus, and potassium are so great, leaf spraying is not considered an economical means of application for the major and secondary nutrients. The micronutrients (iron, zinc, copper, manganese, boron, and molybdenum) are generally applied in this manner. Use soluble materials according to directions only.

Fertilizer may be applied through the irrigation water. Use soluble materials only and do not leave any residues on the plant.

#### How Much to Apply

Fertilizer recommendations are generally given in pounds per acre, but since few home gardens are this large, information in Table 1 is based upon the different methods of planting or applying the fertilizer. Not all fertilizer materials will weigh the same for a given volume; however, for home garden use it is assumed that all fertilizer materials weigh about the same as water, and the recommendations in Table 1 are made on that basis.

Table 1. Fertilizer recommendations for home garden use

| Recom-<br>mended<br>rate<br>(lbs/acre) | Broadcast<br>(per 100<br>sq ft) | Banded<br>(per 10-foot<br>row spaced:) |        |        | Hill placement<br>(per hill sized:) |          |         |
|--|---------------------------------|--|--------|--------|-------------------------------------|----------|---------|
|  |                                 | 1 ft                                   | 2 ft   | 3 ft   | 5x5 ft                              | 2¼x2¼ ft | 2x1½ ft |
| 100-110                                | ½ c (¼ lb)                      | ¾ tbs                                  | 1½ tbs | 2½ tbs | 2 tbs                               | 1¼ tsp   | ½ tsp   |
| 200-225                                | 1 c (½ lb)                      | 1½ tbs                                 | 3¼ tbs | 5 tbs  | 4 tbs                               | 2½ tsp   | 1 tsp   |
| 400-450                                | 1 pt (1 lb)                     | 2½ tbs                                 | 5 tbs  | ½ c    | 6 tbs                               | 1½ tbs   | 2½ tsp  |
| 850-900                                | 2 pts (2 lbs)                   | 6½ tbs                                 | ¾ c    | 1¼ c   | 1 c                                 | 3¼ tbs   | 1½ tbs  |
| 1300                                   | 3 pts (3 lbs)                   | ½ c                                    | 1¼ c   | 1-¾ c  | 1½ c                                | 5 tbs    | 2½ tbs  |

c = cup

pt(s) = pint(s)

tbs = tablespoon(s)

tsp = teaspoon(s)

lb(s) = pound(s)

1 pint fertilizer is approximately equivalent to 1 pound, 2 cups, 32 tablespoons, or 96 teaspoons.

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Tropical Agriculture and Human Resources, the Hawaii Cooperative Extension Service, and their employees.

NOTE: The use of trade names is for the convenience of readers only and does not constitute an endorsement of these products by the University of Hawaii, the College of

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