



## HAWAII COOPERATIVE EXTENSION SERVICE

College of Tropical Agriculture and Human Resources

University of Hawaii

GENERAL HOME GARDEN SERIES No. 34

### CARE FOR YOUR HOME GARDEN—FERTILIZE

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Most seeds contain the necessary nutrients for germination and seedling growth until they emerge into the light and can manufacture their own food. Then the plants must absorb mineral nutrients from the soil or other growth media. If essential nutrients are lacking, they must be supplied as fertilizers.

Fertilizers are any source of essential plant nutrients added specifically to meet the needs of growing plants. They may be solid materials, liquids, suspensions or gases and may contain one or more essential plant nutrient.<sup>1</sup>

#### Starter Fertilizer

Starter fertilizers are applied at the time of planting. For row crops the fertilizer should be placed in a band near the seed. For large seeded crops such as sweet corn, beans, etc., place the fertilizer in a band two inches below and 2 to 3 inches to the side of the seed. For small seeded crops such as carrots, onions, etc., the fertilizer should be placed 1½ to 2 inches below the seed. For crops grown in individual hills, such as tomatoes, cucumbers, etc., apply the fertilizer in a circle 2 to 2½ inches below the plant and 2 to 3 inches away from the plant. Use 10-30-10, 10-20-20 or similar analyses mixed fertilizers at the rate of 2 to 2½ lbs. per 100 ft. of row for row crops and 2 to 2½ lbs. per 100 sq. ft. for other crops. If a soil test or other reliable information is available, follow the recommendations for both analyses and amount of fertilizer to use.

#### Supplementary Fertilizer

Many garden crops require supplementary applications of fertilizer to maintain a continuous supply of available plant nutrients for optimum growth and yield. For row crops this is accomplished by side dressing with the fertilizer material. For other

crops, top dressing or broadcasting is preferred.

Side dressing consists of placing the fertilizer in a band 2 to 4 inches from the base of the plants. It may be placed on the surface of the soil or buried an inch or so beneath the surface. The latter is best as the fertilizer material remains in place until the nutrient(s) are utilized by the plant.

Top dressing or broadcasting consists of applying the fertilizer material to the soil surface. Top dressed fertilizer usually is not tilled or buried in the soil since the crop is already established.

For many vegetable crops in the home garden, side dressing with 10-30-10, 10-20-20 or similar analyses mixed fertilizers at the rate of 2-2½ lbs./100 ft. of row or per 100 sq. ft. is recommended. For corn a side dressing of ammonium sulfate at the rate of one pound per 100 ft. of row, or its equivalent, is recommended. The ammonium sulfate should be applied when the plants are five to six weeks old. The supplementary nitrogen is needed at this time as the corn utilizes two thirds of its nitrogen requirement after the period of six to eight weeks of growth.

For tomatoes, apply a mixture of equal parts of ammonium sulfate and potassium sulfate at the rate of 2 to 2½ lbs./100 sq. ft. after the first fruit set. This application should be repeated after the first fruit harvest and repeated once every two weeks as long as harvesting continues. Ammonium sulfate may be used alone although it is not as effective as the mixture because the fleshy fruits require potassium for best quality and yield. Muriate of potash may be used for the potassium sulfate, however, chlorine may reduce quality of the fruits. Urea may be used instead of the ammonium sulfate although it is not as effective. Potas-

<sup>1</sup> For the composition of various fertilizer materials see no's. 13, 14, and 15 of this General Home Garden Series.

sium nitrate, when available, may be used in place of the mixture and is as effective on most soils. However, on those soils deficient in sulfur it will not be as effective.

For melons, cucumbers, and most squashes, apply the mixture of ammonium sulfate and potassium sulfate when the plants have begun to run and have run about six inches. Repeat at the beginning of harvest to prolong vine vigor and fruit production. If the plants are growing on stakes or trellises, apply the fertilizer three to six inches from the base of the plant. If they are running on the ground, apply the fertilizer as near the base of the plant as possible, without damage to the plants.

Care in applying fertilizers is necessary as these materials may "burn" the plant causing reduced growth or death. For this reason it is necessary to observe the proper distance between the base of the plant and the fertilizer, especially when applying in bands at planting and side dressing. Irrigation after applying fertilizers may also reduce the danger of burning the plants and increase the effectiveness of applied fertilizers.

#### **Other Fertilizer**

Many soils in Hawaii are deficient in the micro-nutrients: iron, zinc, copper, manganese, boron

and molybdenum. If these are deficient, they may be applied as foliar sprays<sup>2</sup> in the form of chelates, oxides, sulfates, borates or molybdates. They may also be applied directly to the soil or mixed with other fertilizers for application.

When applying fertilizers always follow the instructions on the container. This will give best results with minimum danger of damage to the plants.

#### **Fertilizer Equivalents**

1 cup = 1 pound (454 grams)

2 tablespoons = 1 oz. (28.4 grams)

1 tablespoon = 3 teaspoons (14.2 grams)

1 teaspoon = 0.17 oz. (4.7 grams)

1 double handful is approximately 4 ounces (113.5 grams)

1 handful is approximately 2 ounces (56.8 grams)

For further information contact your County Agricultural Agent.

**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 Tropical Agriculture and Human Resources, the Hawaii Cooperative Extension Service or any of their employees.

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<sup>2</sup> See no. 24 in this General Home Garden Series.