

## Dill

### Introduction

**D**ill (*Anethum graveolens*), a member of the Umbelliferae (carrot) family, is a hardy annual plant. Traditionally, it is grown as an herb for food flavoring. Dill is also grown for its essential oil, which is used in the food industry.

### Description

Dill is an annual herb that reaches a height of 3 to 4 ft (0.9 - 1.2 m) at maturity (Figure 1). It has finely cut leaves that appear quite feathery, and small, yellowish-green flowers are borne in umbels (Figure 2 and 3). The plant usually consists of a single stalk.



Figure 1. Dill is an annual herb

### Adaptation

Dill will grow over a wide range of soil types and conditions, but it performs best on well-drained, sandy loam to clay loam soils. It has a low salinity tolerance. Dill responds to temperature and day length, and seed yields will decrease under very high temperatures. Oil yields increase with greater day length and warmer temperatures. Dill requires 12 to 18 in (30 - 45 cm) of water during the growing season. In southern Alberta,



Figure 2. Flowers are borne in umbels



Figure 3. Dill bears small, yellowish-green flowers

irrigation may be needed in addition to rainfall. If irrigation is used, low pressure pivot systems are recommended for dill crops.

### Properties and uses

Dill is used mainly in the food industry as an herb or extracted oil for flavouring pickles and various other foods. The pickle industry, because of new technology, now uses dill oil almost exclusively for flavouring purposes. Dill oil is recovered from the dill plant and seeds by steam distillation. The oil has a high concentration of a chemical called carvone.

# Agronomy

## Seeding

Dill seed is very small and requires a fine, firm seedbed with moisture close to the surface for maximum emergence. Germination occurs in 10 to 14 days at approximately 15° C. Dill should be seeded in early May or as early as possible after the danger of frost is over. The seed should be placed at a depth of 0.75 to 1.0 in (2 - 2.5cm). Deeper seeding will result in poor emergence.

Equipment such as Planet Jr. seeders with a spread shoe are satisfactory, and sugar beet seeders with proper seed plates have also been used. Seeding too deep has been a problem with ordinary cereal crop seeders. Commercial dill is generally planted in rows 21 to 24 in (54 - 61 cm) apart, although research plots have produced well at 14 inch (35 cm) and 6 inch (15 cm) row spacings. The seeding rate for dill is 8 to 10 lb/ac (9 - 11 kg/ha).

## Fertilization

Dill responds well to high levels of fertility. Soil sampling will help determine the fertility level of the soil, but generally 60 lb/ac (66 kg/ha) of nitrogen and 30 lb/ac (33 kg/ha) of phosphorous are required. If the soil is low in potassium, an application of 30 to 40 lb/ac (33 - 44 kg/ha) may be necessary. Fertilizer may be broadcast or applied as a side dressing, but should not be applied directly with the seed.

## Harvesting

Dill matures approximately ninety days after seeding. Seed harvesting should be done when the crop is damp, during early morning, to decrease shattering. For the fresh herb market, dill should be cut at first bloom. When harvesting for essential oil, dill should be cut when the early seed clusters begin to turn brown. Oil quantity and quality are their best at this time.

Dill is harvested for the limonene, dillapiole and carvone content in its oil. The dill plant is allowed to wilt in the swath for 24 hours and then is picked up with silage harvesters and blown into steam-tight forage boxes. Steam distillation is necessary to extract the oil. The extracted oil is collected in large drums and shipped to processors for further refinement. Dill oil yields approximately ten percent of seed yields, and typical yields for dill seed range from 500 to 800 lb/ac (560 - 900 kg/ha).

# Pest management

## Weeds

Heavy weed competition directly affects fresh weight and oil yields of dill. For example, carvone, an important constituent of dill oil, will decrease at high levels of weed infestation. At present, very few herbicides are registered for dill production, so proper weed management prior to seeding will minimize problems. Registered herbicides include Treflan®, Linuron®, Poast® and Edge®. Check with the latest weed control literature for up-to-date herbicide registrations.

## Diseases

Diseases that affect dill are alternaria blight and aster yellows.

## Insects

Aphids may pose a problem in dill crops. Malathion is approved for general use for insect control.

## For more information, contact

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Website: [www.agriculture.alberta.ca](http://www.agriculture.alberta.ca)