

# Cut Flowers from Bulbs and Corms

Liliaceae (tulip and lily), Liliaceae (daffodil and narcissus), Iridaceae (Dutch iris)

## Fast Facts:

Acres in Washington: in the open acres: 1,785 Under glass or other: 991,292 sq feet
Per Acre Value: \$16,000-\$18,000
Number of Growers: in the open farms: 306 under glass or other: 51
Value of Production in Washington: \$30 Million
*Statistics Provided by the Washington Agriculture Statistics Service (NASS).

## Description of crop:

A bulb is an underground storage organ that has accumulated energy stores from the previous years for a dormant plant. Corms are closely related to bulbs but rather than the energy being stored in the scales or layers of the bulb, the energy is stored in a large fleshy basal plate. In both bulbs and corms, roots emerge from the underside of the plate and new stems and leaves emerge from the upper side. Tulips, lilies and Easter lilies, narcissi and bulbous iris are grown commercially in Washington. Bulblets or small, immature bulbs are planted in the fall and remain in the ground for 1-3 years until they achieve commercial size. Some of the more tender varieties are lifted, or removed, from the ground and stored over the winter. Most bulbs are mechanically harvested using methods similar to those used for onions. The bulbs are lifted from the soil and deposited onto a conveyor belt that moves them into the harvester. The harvester shakes loose soil for planting the next crop. After harvesting, bulbs are washed and cured. Wet field conditions can delay harvest and increase losses.

Early in the growing season and prior to the harvest of the bulbs or corms, the flowers must be removed. Flowers left on would reach maturity, create seeds sexually and sap the energy stores of the bulbs. Flowers can be topped mechanically or they can be harvested for the cut flower market. Bulbs at harvest are sorted into stock for the field next year (smaller bulbs), for dry sales and for forcing in greenhouses. Flowers and potted plants are held in controlled temperature environments to simulate the natural chilling required by the bulb.

Tulips are generally grown at 130,000 bulbs to the acre. The planting cost for an acre of tulips is approximately \$10,000 per acre.

## Key pests:

Diseases are the most critical issue with bulb production. Botrytis, Fusarium, Penicillium and Rhizoctonia all have species that attack specific bulb families. Control is difficult but critical to the economical production of bulbs. The

dwindling economic margin in bulb production has caused only the most critical issues to be addressed and at the same time has elevated their importance due to lack of any economic margin of error. Daffodil bulbs are 'cooked' in 111 degree F. water bath to control botrytis, mites, nematodes, fungi and bulb fly. Fusarium can tolerate higher temperatures than the bulb so a fungicide is added to the dip. 'Fire' and 'Smoulder' are the names of two different forms of Botrytis. The names are reflective of their symptoms and the rapidity with which they move through a field of bulbs. In the state of Washington, narcissus bulb fly is only a pest in the Puyallup/Sumner area because the fields are relatively sheltered. In the Skagit Valley the bulb fly is not a pest due to the fact that there is more wind control of Botrytis are good sanitary practices that remove leaf litter and debris variety selection for resistance and longer crop rotations. Aphids are a significant pest in the sense that they vector viruses. Weed pests are prostrate knotweed, Russian ivy and horsetail. Bulb production has a greater margin for economic thresholds regarding pests. Cosmetic damage from insects or viruses is not a concern. Only pest pressure that affects the energy storage in the bulb or corm and impacts growth warrants control measures.

**Key pesticides:**

"Fire" is controlled with Decree and Champion. Growers should rotate out of the crop yearly and all flowers should be removed before they become infected if possible. "Smoulder" is controlled with Decree and Fore. Growers should avoid planting in wet areas and use disease-free planting stock. They should rotate to a new site each year and dig bulbs early. Fusarium is controlled with a preplant soak of Daconil Flutolonil and PCNB are used as fungicides. PCNB is used as a pre-plant soil treatment. Medallion and Contrast can be effective on Rhizoctonia. Mertect and thiophanate- methyl based products are effective on Penicillium or Blue Mold. Few chemistries have been developed for weed control. Napropamide, oryzalin, diuron, EPTC, trifluralin, and paraquat/glysophate are registered pre-plant only, and a few others are registered for bulb specific and use specific applications.

**Critical pest control issues:**

Field sanitation is critical but one of the most effective means of ridding the field of pathogen is field burning which is coming under increased regulations by clean air authorities. Increased costs of urbanization and land value have created a shortage of storage space for bulb growers. The alternative to replant earlier than had been done historically has created increase disease pressure and resultant costs for control. The earlier season plantings are made while there are higher soil temperatures and greater moisture levels with exacerbate the potential damage from high pathogen pressure. Higher labor costs have translated into more use of herbicides and there is speculation that the bare soil is also contributing to the higher soil temperatures and resultant fusarium pressure. Herbicide use prior to planting is critical because if there is too much competition from weeds there will be no flowers to protect later on. Cosmetic concerns

impact chemical use for the cut flower market. Any insect that causes cosmetic damage is a concern as well as any chemical that may cause spotting or reduced height or blossoming in the cut flowers. Chemical residuals are also of concern to the grower and consumer.

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**Location**

**of production:** They are grown in Asotin, Benton, Chelan, Clallam, Cowlitz, Douglas, Ferry, Franklin, Grant, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Klickitat, Lincoln, Lewis, Mason, Okanogan, Pacific, Pend Oreille, San Juan, Skamania, Snohomish, Spokane, Stevens, Thurston, Wahiakum, Walla Walla, Whatcom, Whitman, Clark, Pierce, Skagit and Yakima Counties.