



Onion

About Onion

Onion is a cool season bulb vegetable. Onion can be direct-seeded, grown from transplants, or sometimes grown from sets (small bulbs). Onions are biennial, so plantings can lead to bulb or seed production. Onion is very day-length sensitive regarding initiation of bulbing. Thus, production can occur in a wide range of latitudes, and planting periods within some latitudes. Varieties vary widely in size, shape, color, pungency and dry matter content.



Climate and Soil

Temperature	Frost tolerance	Water needs	Tolerance to waterlogging	Drought tolerance
Optimum daily average 13-24°C, maximum 30-35°C. Seed germination 21-27°C.	Will tolerate some freezing if acclimated.	Shallow rooted, frequent watering and high available soil moisture needed.	Low. Root fungal diseases increase at high soil water.	Fair to poor. Critical at seedling stage. Growth retarded.
Humidity tolerance	Wind tolerance	Soil needs	Nutrient requirements	
Fair to good – leaf foliar diseases in wet environments.	Fair.	Sandy and organic well suited. Heavy, well drained soils provide high soil moisture capacity.	Mod to high N, P, K Low soil N late in season.	

Production, Harvest and Postharvest Practices

Planting Material	Seed, transplants and/or sets.
Varieties	Open-pollinated and hybrid varieties. Short day, intermediate day and long day depending on latitude. Short and intermediated commonly planted in fall or winter as transplants. Long day planted in spring, usually as seed.
Spacing	Direct seeded on single row or multiple rows on raised beds 60 to 150 cm wide, 2-3 cm deep at rate of 2-4 kg/ha. 40-80 plants/m ² for fresh market bulbs, 100-200 for dehydration bulbs, 200-400 for green onions. Transplants commonly used for fresh market; transplants are 8-12 weeks old or 3-5 mm stem diameter.
Site selection and Field Preparation	Level soil to permit irrigation. Firm seed bed. Raised beds to increase soil surface area, aeration, drainage. Rotate with other Alliums once each 3-5 years
Time to harvest	6 to 9 months depending on planting date and variety.
Length of harvest	2 to 4 weeks for necks to dry before tops can be removed.
Expected yields	15-30 t/ha
Harvest	Hand harvest for fresh market. Machine harvest of dehydration varieties and some long day, storage varieties.
Storage	Cure at 30°C for 1-3 days to dry tops and leaves. Long storage - 2 to 8 months - at 0°C, 60%RH. Storage length depends on variety. Controlled Atmosphere or Modified Atmosphere storage possible.
Pests and diseases	Weeds, insects, nematode, viral/bacterial/fungal diseases

Prepared by Ron Voss, Mark Bell. June 18, 2007

Primary references: Ron Voss et al. 1996. Fresh Market Onion Production in California. Processing Onion Production in California. Green Onion Production in California. UC Vegetable Research and Information Center. www.vric.ucdavis.edu; IPM Pest Management Guidelines. www.ipm.ucdavis.edu; V. Rubatzky and M. Yamaguchi. 1999. World Vegetables, 2nd ed. Aspen Publications. 843 pp.

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