Saffron Production: Planting Depth and Density for Saffron Corms

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Saffron (Crocus sativus) belongs to the Iridaceae family. There are more than 70 genera and 1,700 species in this family. Crocus is a genus in this family that includes 85 species, of which saffron is one. It is a sterile plant and thus does not produce productive seeds. Propagation occurs asexually by producing secondary or daughter corms. Several factors must be considered when planting saffron corms to maximize on the number of flowers and corms produced during one growing season. Saffron is commonly grown as a perennial crop, in which the corms are planted and then left to reproduce over 5-7 years. This cropping system requires minimal time investment after the first year, except weeding and harvesting the flowers. Alternatively, some growers dig up last year’s corms annually when they reach dormancy, sell the large corms and plant new corms in the fall. Herein, we will discuss the depth of planting and density we used for our research project in northern Vermont.

Saffron prefers soils with a light to moderate texture and a high level of organic matter. Research has shown that using soil with good drainage and enriching it with compost improves saffron yield and the weight of secondary corms. Humic acid which is released from soil organic matter has been shown to increase the saffron yield up to 50%. In addition, the density of corms and the depth at which they are planted play important roles in yield. The planting density for the corms varies depending on the cropping system used. In some countries such as Iran and Spain where saffron growers keep the corms in one place for 4-8 years, a density of 5-7 corms/ft² is common. However, in parts of Italy where growers replant saffron corms every 1-2 years, a higher corm density of 10-13 corm/ft² is used.

For our Vermont trials, we tested two planting systems, in milk crates and in the ground (raised bed), using a density of 11 corms/ft². The saffron yield we obtained in the first year was higher than that reported from other major producing saffron regions. Because the top soil at our research site contained a large number of weed seeds, we did not want to plant directly into the soil. Therefore, we put a 4-in layer of the top soil on the bottom of the planting container or raised bed, in which we planted the corms. A 2-inch layer of top soil covered the corms, followed by a 4-inch layer of certified organic “perennial blend” potting mix blended from composted manure and plant materials, composted maple and yellow birch bark, crushed and screened granite and basalt, blood meal, kelp meal, steamed bone meal, mined gypsum, vermiculite, washed coconut coir, herbs [Vermont Compost Co. http://www.vermontcompost.com/products/] (Fig. 1 & 2). The potting mix served as mulch to prevent weed growth, supplied nutrition for saffron over the growing season, and insulated the corms from the cold.
The depth at which a corm is planted is reported to affect saffron yield and the size of secondary corms. Different planting depths are used in different geographical regions. Based on the climatic condition, planting depth varies between 3-12 inches. It is reported that the highest yield is obtained when corms are planted at a depth of 6-8 inches. Planting the corms deeper protects the corms from cold winter temperatures and hot temperatures in the summer. However, planting the corms deeper than 7-8 inches is thought by some to restrict vegetative growth and decrease yield. Planting saffron corms at 8 inches or more also is believed to have a negative effect on the number of daughter corms produced, which impacts saffron productivity the following year. We have not conducted replicated trials to assess the effects of planting depth on saffron or corm yield. We selected a depth of 6 inches. Therefore they were somewhat protected from the cold. In addition, the soil we used was light and well drained. Growers who plan to grow saffron for the first time this year should take into consideration their soil type and climatic conditions when deciding the depth at which to plant their corms. This is general information gathered from multiple sources and through our research, and is not meant to serve as a recommendation for growers.

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