Center for Crop Diversification
Martin-Gatton College of Agriculture, Food and Environment

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Dry Beans

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Introduction

Dry beans (Phaseolus vulgaris) are beans grown to maturity and harvested for the seeds within the pods. Also referred to as field beans, dry beans are primarily grown in the U.S. for human consumption.



Dry Beans

Marketing and Market Outlook

The annual per capita use of dry beans remained steady (around 7 pounds) from the 1980s through 2019. However, there was a shift in consumer preference in the types of beans used. Use of black beans and garbanzo beans (chickpeas) doubled from 2000 to 2010, from around one-half pound to 1 pound annually. Black bean and chickpea use rose again during the 2010s, averaging 1.70 pounds through 2017. This increase came with higher foodservice use and sustained consumer interest in ethnic food staples. As of February 2022, dry bean consumption in the U.S. was at 7.5 pounds per capita per year. Pinto beans and black beans accounted for the largest increases in consumption.

The top dry bean producing states are North Dakota, Michigan, Nebraska, Minnesota, Idaho, Colorado, California, and Washington. According to USDA, approximately one-

third of the United States' dry bean production was exported during the 2010s. Top destinations were Mexico, Canada, and the United Kingdom. The U.S. imported about 10% of dry beans used during the 2010s. Top suppliers were Canada, Mexico, and China.

Dry beans are typically grown under contract, with contracts typically negotiated year-to-year. Quality guidelines may vary considerably, with bonuses for quality often paid according to processor specifications. There is also an active spot market for dry bean purchases.

Including dry beans in crop rotations can help spread production risk across more crops for row crop producers with access to markets. Row crop machinery can be adapted for dry bean production and harvest. Production of food-grade beans usually requires additional cleaning and food safety guidelines that may differ from grains and oilseeds used for animal feed.

Production Considerations

Plant and cultivar selection

The most popular dry beans in the U.S., based on per capita consumption, are pinto, navy, great northern, red kidney, and black. Adzuki, garbanzo (chickpea), and lima beans are also familiar to many consumers. There are a large number of lesser-known types (e.g. such as Anasazi, cannellini and cranberry beans) that could be grown for specialty niche markets. UK extension specialists believe most dry bean types could potentially be grown in Kentucky; unfortunately, there is insufficient research data to recommend the types that are best suited for our region. Local county extension personnel and other dry bean growers may be able to provide guidance to potential growers. New growers should start small; larger plantings should not be attempted until the crop has been evaluated over several seasons and the grower has test-marketed their product. When grown under contract for wholesale markets, the buyer specifies the cultivars to be grown.

Site selection and planting

Dry beans are a warm-season crop and are not planted until all danger of frost has passed. Well-drained soils are preferred; dry beans do not tolerate heavy clay or waterlogged soils. While seed can be inoculated with nitrogen-fixing bacteria, additional applications of nitrogen fertilizer may be needed to help meet season-long nitrogen needs. To optimize quality and yield, dry beans should be irrigated to supplement rainfall.

Pest management

Dry beans are susceptible to a number of diseases that can result in crop losses, including common blight, rust, halo blight, Rhizoctonia root rot, Pythium root rot, rust, anthracnose, white mold, and bean common mosaic virus. Selecting resistant cultivars and following good management practices can help reduce the impact of disease problems. However, it is likely that fungicides will be needed, especially if dry beans receive sprinkler irrigation. Potential insect pests include bean leaf beetle and stinkbugs. Aphids and whiteflies can also serve as vectors for virus diseases. Regular scouting to monitor populations helps the grower determine when and how often insecticides should be applied. Dry beans compete poorly with weeds; however, a combination of cultivation, herbicides, and a good rotation system can help manage weedy vegetation.

Harvest and storage

Dry beans are harvested when a majority of pods are yellow, typically when moisture content is at 16 to 20 percent. Equipment used to harvest soybeans can be used for harvesting bush-type cultivars. Vine-type cultivars require different machinery for harvest. Drying to less than 18 percent moisture for storage is accomplished with or without heat. Storage facilities need to be dry, clean, and free from rodent and insect pests. Some buyers may require that beans be polished for the edible market.

Labor requirements

Labor needs per acre are approximately two hours for production, two to four hours for harvest and one to two hours (or more) for packing and grading. These labor estimates may be slightly higher for small acreages or significantly higher if harvesting equipment is not available.

Economic Considerations

Initial investments include land preparation, purchase of seed, and installation of an irrigation system.

Dry beans are usually grown with irrigation and often require additional fertilizer and pesticide expense than similar crops, like soybeans. Variable (cash) costs between $300 and $400 per acre are likely. Likely fixed costs for dry bean production are approximately $80 to $120 per acre. Producers may incur added costs due to the variety selected and/or disease problems that may occur.

Dry bean returns vary widely because of fluctuating bean prices and varying production costs. Estimates from Michigan show dry navy beans returning about $200 per acre to land, management, and operator labor (eight hours). This is based on a price of $30 per

hundredweight and 1,800 pounds of production. Such large-scale dry bean production is feasible in Kentucky's geography, but potential growers should expect risk because of lack of markets and production experience. Small-scale production of dry beans marketed direct to consumers, including in value-added products like soup and bean mixes, could generate positive returns to land, labor, and management.

References/Resources:

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