

## CULTURAL REQUIREMENTS OF BEANS

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Washington produces 50 percent of the small red beans grown in the United States. Idaho and California are other important bean-producing states. Red Mexican or small reds make up 90 per cent of the dry bean production in Washington. Pinto, small white, Great Northern, pink and black turtle beans are grown to a limited extent.

In 1958, 73,000 acres of beans were grown in the Columbia Basin. The acreage has been declining. In 1961 there were only about 26,000 acres seeded to beans. While the acreage has been going down, the price has increased. In 1961 the price averaged \$6.20 per hundred. The average yield of beans in the Basin has remained fairly steady at about 1700 pounds per acre.

Using recommended practices, many bean growers in the Columbia Basin produce over 3,000 pounds per acre. Each year growers are disappointed in their bean yields because they do not seed beans on the good soils. Disease and weeds also reduce their crop. In selecting fields to grow beans, poorly drained and saline or alkali soils should be avoided. Beans should not be grown on land where more than one previous bean crop has been grown until a good rotational program is established. With the new chemicals available, it is possible to reduce the loss caused by weeds.

If fertilizer is broadcast, it should be applied before plowing. After the field is plowed, it should be harrowed, ditched, and irrigated until the soil surface is thoroughly wet. After the field is irrigated, the seed bed prepared, and the beans planted, the field should not be irrigated before the seedlings emerge.

To make beans a paying proposition it is necessary to use a good fertilizer program. Soil tests will give you an accurate indication of the phosphate and potash needs. If the soil test rating is very low, 120 to 200 pounds of phosphate per acre and 120 to 180 pounds of potash will be needed. If the rating is low 60 to 120 pounds of phosphate and 60 to 120 pounds of potash may be required. A medium rating requires 40 to 60 pounds of phosphate and 0 to 60 pounds of potash. If the rating is high no phosphate or potash fertilizer should be needed.

Phosphate and potash fertilizers should be broadcast and plowed under. It is possible to side-dress phosphate after the beans have emerged.

If zinc has not been applied to the field in the last four years, 10 pounds of zinc per acre should be applied. An easy way to apply zinc is to mix it with the nitrogen fertilizer and plow it down when preparing the seedbed. Zinc can be applied during the growing season with the zinc sulfate solution at the rate of 1 pound of zinc and 50 to 100 gallons of water per acre.

Beans are a legume, but they still require nitrogen in the Columbia Basin to produce profitable crops under most conditions. On new fields that have never been in crop before, 100 to 120 pounds of nitrogen will give the best returns per acre. Sixty pounds of nitrogen is needed after most row crops. Following alfalfa or other legume green manure crops nitrogen fertilizer is not needed. Aqua or anhydrous ammonia should be injected about 7-inches deep and the shanks spaced about 16-inches apart at least 7 days before seeding. Broadcast nitrogen should be plowed down.

The best time to apply fertilizer is during the seedbed preparation, but zinc and nitrogen can be side-dressed as emergency measures. Care must be taken to keep the bands 6-inches away from the plants and 4-inches deep for dry fertilizers or fertilizer solutions. Aqua or anhydrous ammonia should be placed 7-inches deep and 8-inches away from the bean plants. Bean plants can be damaged or killed by placing fertilizer materials too close to the roots.

Beans should be seeded when the soil temperatures reach 70 degrees Fahrenheit between May and June 1. Red Mexican beans should be planted by May 15th because they are slow to mature. Beans are normally seeded in 22-to 24-inch rows. The amount of seed required depends on the variety; 60 pounds of red Mexican and 80 pounds of pinto and Great Northern are recommended. Use certified seed of adapted varieties to help control disease.

Since beans are a shallow-rooted crop it is necessary to maintain moisture in the top 3 feet of the soil. Beans use little water for 2 to 3 weeks after emergence. Bean plants will tell you their irrigation needs by the change in the color of the foliage from a light green to a dark blue-green. Irrigation before this color change doesn't help the crop. Irrigation should be made 4 or 5 days after color change takes place. Root rots and drouth may cut the yields if irrigation is delayed after the color change. In the fall, irrigation water should be cut off when about one-fourth of the pods are yellow. If irrigation is continued, pod rot and harvesting problems will result.

Beans require special care in threshing because of the large brittle seeds. Any harvester will do a good job if properly adjusted. Cylinder speeds should be adjusted so that the peripheral speed does not exceed about 1,000 feet per minute for small-seeded types and about 700 feet per minute for the large-seeded types. The peripheral speed is the speed with which the cylinder strikes the beans.

It is good management practice after the beans have been harvested to seed a green manure crop of hairy vetch, winter wheat or rye to protect the soil from wind erosion during the winter and spring. If a cover crop or some other fall crop is not seeded, the field should be ditched and irrigated to help control blowing.

To make the most money in growing beans:

Seed beans only on fields that have had no more than one previous crop of beans.

Use certified seed of recommended varieties.

Use good fertilizer program.

Plant between May 1 and June 1.

Never irrigate before seedlings emerge.

Control weeds.

Irrigate when the foliage changes from a light green to a dark blue-green.

Cut at night or early morning to prevent shatter loss.

Adjust combine to prevent seed damage.