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SOYBEANS IN IDAHO

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Can soybeans be grown successfully in Idaho? The answer is yes. In a limited number of trial plantings in the state during the past dozen years, growers got fairly satisfactory yields. But one question still puzzles Idaho farmers: *Will soybeans ever be economically competitive with other crops we now grow?*

Soybeans are a possible alternative crop for the future. If price levels change, soybean production may become economically advantageous for Idaho farmers. Soybeans can be grown in areas which produce other beans or corn.

In the early 1960's, soybeans were produced on a commercial trial basis in southwestern Idaho, with the goal to avoid the high cost of transporting soybean products from the Midwest to the Northwest. These field trials were grown under contract.

At that time, soybean variety trials had been in progress for several years at the Malheur Branch Experiment Station, Ontario, Ore. Researchers of Oregon State University had demonstrated 1) some commercial soybean varieties would mature under the climatic conditions of Malheur County and southwest Idaho, and 2) reasonably good yields could be expected. *But would net cash returns to growers make soybean production economically attractive?* The commercial field-scale trials in the 1960's answered this question in the negative. The commercial effort to produce soybeans in the Treasure Valley died for lack of economic advantage to the grower.

In 1973, at least 5 economic growers tried soybean production in field-scale trials. Treasure Valley farmers were experimenting strictly "on their own." Since soybeans and soybean meal were then bringing extremely high prices, these growers wanted to know if they could produce soybeans satisfactorily.

One grower produced 50 bushels per acre from a 4-acre field in 1973. Another had a 47-bushel-per-acre yield on 7 acres. Yields of other growers were lower. Although none of these growers produced soybeans again in 1974, producers' trials demonstrated that a yield of 50 bushels was possible on a field-scale basis in southwest Idaho.

These field trials also demonstrated the importance of following these guidelines for top-yielding production: 1) use an adapted variety; 2) plant as early as possible; 3) fertilize properly; 4) control weeds; and 5) harvest carefully.

Idaho's limited field experience with soybeans in 1962, 1964 and 1973 generally corresponds with the results of OSU research at the Malheur Station. Cultural practices for soybeans are very similar to those used in producing common field beans. These suggestions—based primarily on OSU research—should be helpful to Idaho farmers who are interested in the requirements of profitable soybean production:

Varieties. In southwestern Idaho, soybean varieties that should do well are Merit, Morsoy and Norman. Merit, the highest-yielding line tested at the Malheur Station, will mature in mid-to-late September—depending on season and planting date. For the Twin Falls area and the Magic Valley, use Clay, Altona, Norman and Ada varieties.

Time of Planting. Plant soybeans at corn planting time as soon as possible after the first of May. The ground should be pre-irrigated, then allowed to warm. In a cold soil, soybeans emerge slowly and suffer from damping-off disease.

Spacing. Any row width within a range of 18 to 24 inches should be satisfactory. For plant spacing, top yields come from uniform spacings of 1½ to 2 inches in the row. Since seed size in different lots will vary, there's no reliable rule concerning pounds of seed per acre. Calibration is on the basis of average plant spacing per foot of row. For the small-seeded variety Merit, about 60 pounds of seed per acre will usually be necessary to average 2-inch seed drop in 20-inch wide rows.

Seeding. Bean and corn planting equipment can be used for planting soybeans. Flex planters, Plant Jr. planters and several others have been used successfully. Special soybean plates are needed. Use a planter and planting plates which will allow uniform spacing of seeds. Seed should be placed 1 to 2 inches deep in a fine, moderately firm, moist seedbed. Cover the seed with moist soil.

Fertilizer. With proper inoculation, soybeans can produce most of the nitrogen they need. Attaining proper inoculation the first season of soybeans is difficult on Idaho soils. To compensate for this difficulty, the crop may be side-dressed with up to 100 pounds of nitrogen per acre. Side-dress prior to first bloom—usually around mid-June.

Soybeans are sensitive to zinc deficiency. Apply zinc at the standard rate—same as for field beans—if a deficiency is suspected. Use a soil test to determine phosphate needs.

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Inoculation. Use fresh dated inoculum. Be sure the label on the inoculum specifically permits use on soybeans. Because most Idaho soils have never grown soybeans, the doses of inoculum must be more massive in Idaho than label instructions specify for Midwest growers. One successful method is to use concentrated liquid inoculant as a moistening agent instead of water when applying the labeled rate of humus inoculant just prior to seeding. A new granular inoculant can be applied with the Gandy-type applicator used for granular pesticides. This granular material flows uniformly through the machine with distribution of 4 pounds per acre. Five pounds of the granular inoculant per acre is recommended which is about 18 times the ordinary amount applied to the seed. Another possibility to insure soybeans will not lack nitrogen the first year is to compensate with a side-dressing of nitrogen up to 100 pounds per acre. Side-dressing should be done prior to first bloom (usually around mid-June).

This "massive-dose treatment" is only necessary the first time soybeans are produced on a field. Subsequent crops of soybeans produced on this same field should be inoculated, but probably with normal "Midwest" amounts and procedures.

Irrigation. Frequent irrigations early in the season are unnecessary and will cause weed problems. However, be sure the soybeans do not lack for moisture during the blossoming and the late pod fill stages of development. Continue irrigation until 2 or 3 weeks before the expected maturity date—or until the plant begins to yellow and some of the pods are mature. "Full maturity" comes when 95% of the leaves have fallen from the plant. Short duration irrigations are less apt to create root disease problems than are long duration irrigations—unless the soil is very well-drained. On heavy soils, 7 to 10 irrigations during the growing season will generally be sufficient. More irrigations will be needed on light soils.

Weed Control. By irrigating before planting, the grower can destroy an early crop of weeds while fitting the soil for planting. A shallow harrowing 2 or 3 days after planting will aid in getting the soybeans established ahead of the weeds. Set the teeth shallow and be careful to avoid damaging the

emerging soybeans. Weed control is essential because young soybean plants do not compete very well with weeds. Unnecessary early irrigation stimulates weed growth.

Many excellent herbicides are available for use on soybeans. Under furrow irrigation, good results are obtained from preplant herbicides—such as Treflan, Amiben, Lasso and Vernam—which are incorporated in the soil. Sprinkler irrigation or overhead rainfall is essential to achieve full potential activity of surface-applied herbicides—Dacthal, Preforan and Dinitro preemerge, for example.

A rotary hoe, finger weeders or tine weeders may be adapted for postemergence weed control. Use this equipment in the heat of the day after the first true leaves of the soybean plant have unfolded. Avoid deep cultivation.

Harvesting. Combining should begin as soon as most of the beans have reached 13% moisture. Unless there is excessive nitrogen in the soil, the plants will have dropped essentially all of their leaves at this time. Do not wait for stems to dry out; combine when the pods and beans are ready. Soybeans are generally combined standing. Cylinder speed must be reduced, as with field beans, to avoid excessive cracking.

Soybean seeds occur low on the plant. To get a high percentage of the beans harvested, operate your combine as low as possible. With an 8-inch stubble, you would leave almost 14% of the crop in the field. Losses are less—only 4.3%—with a 6-inch stubble, but this would leave in the field 1.68 bushels of a 40-bushel-per-acre crop. When the stubble is 3 inches tall, about 0.5% of the crop is lost. Try to keep a field as level as possible when cultivating or arranging for irrigation. The same holds true for tillage operations. The smoother the field, the lower you will be able to operate the cutter bar—thus, increase the percentage of soybeans harvested. The floating cutter bar is the best recovery attachment for soybeans, even when harvesting a weedy crop.

At present, soybeans do not occupy an important place in Idaho's agricultural picture. Conditions do change—sometimes rapidly. The time may come when knowledge about soybean problems and potentialities will be valuable information for some Idaho farmers.

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