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# The Fall Crop of Irish Potatoes

THE fall crop of Irish potatoes is more difficult to grow than the spring crop, and yields are generally much lower. There are also certain factors operating to make the fall crop less certain than the spring crop. It is more difficult to obtain stands from summer-planted than from spring-planted potatoes; temperatures and rainfall during the growing period are often unsatisfactory; and many soils are not moist enough in late summer and fall to produce a good yield. There are, however, many farms where seed potatoes are available from the spring crop, where a small area of moist, well-drained bottom land is available, and where there is sufficient straw to permit mulching of the crop. On such farms, a fall crop of potatoes may be planted each year with a reasonable assurance of a yield sufficient to justify planting. With a good stand and favorable seasons, high yields may be obtained. On farms where seed potatoes must be bought, where only dry upland soil is available, and where mulching cannot be practiced, the growing of a fall crop of potatoes is too uncertain to be generally recommended. There are many farms between these two extremes where the advisability of attempting to grow a fall potato crop will depend upon the individual circumstances. It is of fundamental importance that the potatoes used as seed be ready to sprout when planted and that they be placed in a soil which is cool and moist enough to insure favorable conditions for sprouting of the potatoes and growth of the young plants.

## WHY POTATOES FAIL TO SPROUT

To be certain that the potatoes, or the tubers, are in condition to sprout when planted, it is necessary to understand something about their characteristics. Potato tubers after maturity always pass through what is called a "rest period". This rest period is nature's provision for making certain that the potato will perpetuate itself through future years. Until the rest period is broken, the tubers will not sprout. In nature a crop of potatoes is produced one year, the tubers pass the winter in a resting or dormant condition, and sprout in the spring. So fixed is this cycle that a tuber is not easily induced to behave differently. However, there are conditions or treatments which affect the the length of the rest period. Cold, heat, wounds, and certain

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chemicals have been known to shorten the rest period. Nature makes use of cold or low temperatures to break the dormancy of the potato; winter does this in a natural way. It has been known for some time that the rest period of potatoes may be artificially broken by placing them in a temperature of 32° F for about one month. Various chemicals, such as potassium thiocyanate, ether, and ethylene chlorhydrin have been used to break the rest period and hasten sprouting. Some of these treatments are being used in a practical way on many farms today. Cutting potatoes into pieces, or removing a portion of the peel, materially hastens sprouting.

There are several ways of handling the spring crop to shorten the rest period and hasten sprouting. Satisfactory results have been obtained at Auburn by placing potatoes in cold storage at 35° to 40° F. for about one month and then storing them in a ground cellar until planting time. Potatoes may be stored in a damp cellar or under the house for about one month, and later placed for one month in an attic, where the temperature at noon reaches about 100° to 110° F. In the central and southern part of the state, certain varieties stored on straw in the shade of trees have generally completed their rest period by planting time and are ready to sprout without further treatment. In the northern part of the state, where there is only a short period between the harvest of the spring crop and planting of the fall crop, potatoes have been cut into seed pieces, dipped for one minute in an ethylene chlorhydrin solution (1 pint ethylene chlorhydrin to 4 gallons of water), placed in a tightly closed container in a cool place for 24 hours, or in some instances overnight only, and then planted. This treatment in some cases has been satisfactory in the northern part of the state. In the central and southern parts of Alabama a poorer stand and lower yields have consistently resulted from the use of the ethylene chlorhydrin treatment.

## VARIETIES AND SOURCES OF SEED

Four sources of seed for the fall crop have been used in Alabama. They are: first, the northern-grown main crop which has been carried in cold storage until planting time; second, the fall-grown crop of Virginia, also carried over in cold storage; third, the early Florida, or South Alabama, spring-grown crop; and fourth, the local-grown spring crop. Certain seed dealers are prepared to supply Cobblers, Triumphs, and Green Mountains from the northern-grown main-crop and also Triumphs from the Virginia fall-grown crop. Many seed potatoes in Alabama have been purchased from the Florida early spring crop, the Rose No. 4 being the variety most generally used. Local-grown spring seed, however, constitutes the largest source of seed for the fall crop. This is logical since many small potatoes are available from the spring crop, and since more potatoes are often produced in the spring than will be consumed before sprouting

occurs in the fall. Fall-grown potatoes can, therefore, be planted from the spring-grown crop without cost of purchased seed.

The larger part of the spring-grown potatoes in Alabama consists of the Triumph and Cobbler varieties. Of these two varieties, the Triumph has a shorter rest period, will generally give a better stand when planted during the summer, and also will produce a higher yield of fall potatoes than the Cobbler.

Results of experiments comparing each of the different sources of potatoes mentioned above have shown that local spring-grown Triumphs are as satisfactory as any other potato; this suggests that they should be used for the fall crop if available. Besides Triumphs fair yields have been obtained at Auburn from the following varieties and sources of seed potatoes: Florida spring-grown Rose No. 4, local spring-grown Green Mountain, Virginia fall-grown Triumphs, and northern-grown Green Mountain.

## PLANTING DATE

There is nothing to be gained by planting potatoes so early that the growing plants are subjected to the high temperatures of summer or early fall. Favorable soil moisture and cool weather make for high yields of potatoes. If tubers are being formed during periods of drouth and during periods of high temperature, low yields will generally follow. The seed should be planted so that the plants are up to a stand approximately 8 to 10 weeks before frost.

Potatoes should be planted in North Alabama from 15th of July to the first of August and in middle and South Alabama from 1st to 15th of August.

## SITE, CULTURE, AND FERTILIZER

A moist, but well drained, bottom land is ideal for fall potatoes. Mulching with three or four inches of straw keeps the soil cool, helps maintain a favorable level of soil moisture, and greatly increases the yield. To obtain the best results with the fall crop of potatoes, especially in the central and southern portions of the state, a well-drained, moist bottom land should be selected and the area mulched with straw. It is not as necessary to mulch in North Alabama nor is it as necessary to plant on bottom land in this section of the state, as it is in the other sections. Failures with the fall crop of potatoes are less frequent in North Alabama than in other sections, due apparently to more favorable climatic conditions.

If the spring crop which preceded the fall potato crop received 800 to 1,000 pounds per acre of a complete fertilizer, it is not necessary to add more potash or superphosphate; an application of 150 pounds per acre of ammonium sulphate, should, however, be applied at planting time. If no fertilizers have been added during the spring, then 800 pounds of a fertilizer analyzing

approximately 4-10-7 should be carefully worked into the soil, or applied in two bands about two or three inches to the side of the seed, and the soil so turned in covering the potatoes that there is a minimum amount of contact of fertilizer with the seed.

## EXPERIMENTAL RESULTS

In Table 1 are given the yields by years of fall potatoes from spring-grown seed stored in different ways. It should be especially noted what wide differences in yields have been obtained in different years; this shows to what extent favorable seasons affect yields. Moist conditions during part of the storage period seem necessary for good sprouting. Sprouting has been satisfactory with potatoes stored from harvest to planting time in a cool moist cellar or with potatoes stored 6 weeks in a moist cellar and 3 to 4 weeks in a warm attic. Potatoes dug less than 8 weeks before planting time will be benefited by 3 weeks storage at 35 degrees. Sprouting has been poor where potatoes have been stored continuously from harvest to planting time under warm, dry conditions.

**TABLE 1.—Yield of Fall Potatoes from Seed Stored in Different Ways.**

| Storage condition | Yield in bushels per acre by years* | | | |
|---|---|---|---|---|
| | 1932 | 1933 | 1934 | 1935 |
| Cellar | 238 | 26 | 212 | 61 |
| Under greenhouse bench | --- | 39 | 229 | 61 |
| Cellar 6 weeks—attic 1 month | --- | 34 | 252 | -- |
| Barn | --- | -- | --- | 30 |

*Potatoes planted approximately August 10 on moist bottom land and mulched.

In Table 2 are given the yields of potatoes in 1932 from certain treatments. It may be seen that ethylene chlorhydrin reduced the yield on mulched plots located on bottom land 94 bushels per acre; it may also be seen, with untreated seed, that mulching gave an increased yield of 107 bushels on bottom land, and that the yield of potatoes was 66 bushels higher on bottom land than on upland.

**TABLE 2.—Yield of Potatoes from Local-Grown Triumph Potatoes—1932.**

| Location | Cultural treatment | Yields in bushels per acre | |
|---|---|---|---|
| | | Treated* | Untreated |
| Bottom land | Mulched | 144 | 238 |
| | Unmulched | 113 | 131 |
| Upland | Unmulched | 26 | 65 |

*Potatoes cut and dipped in solution containing 1 pint of ethylene chlorhydrin to 4 gallons of water and then stored 24 hours in a closed container.