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GROWING LATE POTATOES

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Experiments on the Horticultural grounds of this Experiment Station in 1918 and 1919 indicate that a late, or fall crop of Irish potatoes can be grown successfully in Central Missouri. Reports from growers located in St. Louis, Buchanan, Green, and Butler counties state that they have been growing late potatoes successfully for several years. In view of the fact that the usual planting of early, or spring crop potatoes is often prevented, or delayed by unfavorable weather, in Missouri and neighboring states, it seems desirable to draw attention to the fact that a crop of late potatoes can be successfully grown in Missouri, at least as far north as St. Joseph. The late potato crop matures in late fall, so that the potatoes are in fine condition for winter storage. Late potatoes are of better eating quality, as a rule, than the early crop. They also seem to be less subject to attacks of insects and diseases than the early crop.

Planting Time.—This item is of first importance in connection with growing late potatoes. If planted too early, the summer drouths usually catch the plants at a critical stage, and if planted too late there is not enough time for the crop to mature before frost. If planted at the right season, the plants grow slowly during the dry weather, but begin growing rapidly in early fall. In the northern half of Missouri, the late potato crop should be planted the last week in June; in central and southern Missouri the first two weeks of July.

Seed.—One difficulty in growing late potatoes is to obtain suitable seed. Several ways of providing seed are possible. The best method probably is to keep seed potatoes in ordinary cellar storage over winter, then transfer to cold storage in early spring. This method has been used very successfully for all varieties in our experimental work. When stored at a temperature between 30 and 40 degrees Fahrenheit, seed potatoes have kept in perfect condition with little decay or sprouting, until August. Another method is to obtain the seed potatoes in early spring, and spread out thinly on the floor of a dry, light room. Even if the room is not very cool, the potatoes remain in fair condition until July. The tubers turn green, shrivel slightly, and send out

short green sprouts, which are to be carefully left on the seed pieces when cutting for planting. A third method, which may be used as an emergency measure, is to buy potatoes from the grocery store, of last year's crop, grown in Northern or Western sections. A source of seed for late planting in the extreme southern part of Missouri is new potatoes from the early crop. Such early varieties as Bliss Triumph, Irish Cobbler, and Early Ohio can be grown in this way. The new potatoes should be dug three or four weeks before time for planting the late crop, and "ripened" by spreading out under a tree, or shed. After this treatment, they may be expected to sprout fairly well, whereas they would sprout very slowly if planted as soon as they are dug. This method cannot be used in central and northern Missouri, because the early crop does not mature until after the date at which the late crop should be planted. Even in southern sections, it probably would be more satisfactory to use "old potatoes" for seed purposes.

Varieties.—About thirty varieties of Irish potatoes have been tested at Columbia, for the late crop, the last two years. The following seem to be especially satisfactory: White McCormick (Lookout Mountain), Banner and Peachblow. These are vigorous growers, of fair table quality, and good producers. Other varieties which have been quite productive when grown as a fall crop are: Dibble's Russet, Rural New Yorker, Pearl, and Carmen No. 1,—all late varieties. The following, which are generally recommended for spring planting in Missouri, have been fairly satisfactory as a fall crop: Irish Cobbler, Early Ohio, Beauty of Hebron, Spaulding Rose No. 4, and Early Rose. It should be stated that most of the varieties tested for late crop purposes, have produced at least fair yields. If the object is to produce eating potatoes, probably this can be done most certainly by planting McCormick, Banner or Peachblow. If the object is to produce potatoes for both table use and seed purposes the following spring, one of the early varieties mentioned should be selected.

Preparation of soil for planting.—Land intended for late potatoes should be plowed as early as possible, then disked several times to get it in fine physical condition, and to keep down grass and weeds until planting time. In home gardens, it is usually possible to remove some of the early vegetable crops, in time to plant late potatoes on the same land. Rotted manure may be applied to potato land in moderate quantities before plowing. Unless the land is already in a good state of fertility, commercial fertilizers should be used for late potatoes. A satisfactory mixed commercial fertilizer for potatoes is one containing 2 per cent nitrogen, 10 per cent phosphorus, and 4 per cent potash. However, under present conditions of the fertilizer market,

it may be best to use acid phosphate alone. A safe amount of commercial fertilizer to use is 250 pounds per acre.

Rows should be opened with a one-horse plow, from 3 to $3\frac{1}{2}$ feet apart. If commercial fertilizer is used, it should be drilled into the open furrow and mixed with the soil before the seed are dropped. The seed pieces should be dropped about 15 inches apart, as soon as the rows are opened, and should be covered promptly to avoid drying out, throwing a light furrow over the row from each side. A few days after planting, the field should be gone over with a spike-tooth harrow, working down the ridges over the rows until the field is nearly level. In the home garden this harrowing may be done with a hand rake. Harrowing the whole surface of the ground in this way before the potatoes come up, puts the soil in fine condition, and destroys weeds, practically eliminating hand hoeing later on. It should be remembered that late potatoes sprout more quickly than potatoes planted early in spring. As soon as the sprouts are well above the surface, row cultivation should commence, throwing the soil toward the plants so as to make a slight ridge.

There may be some difficulty in obtaining a full stand of potatoes for the late crop. However, most of the varieties tested at Columbia have given a fair to good stand. In 1918, the season was very hot and dry, and the stand ranged from 50 to 90 per cent. In 1919, the season was somewhat more favorable, and the stand ranged from 75 to 100 per cent. If the soil and seed are both in good condition a fair stand should be obtained. It is advisable to cut the seed pieces for the late crop somewhat larger than is customary for the spring crop.

Potato Pests.—The late potato crop is less subject to damage than the spring crop. Should the Colorado beetles, or either of the two common kinds of blister beetles attack the plants, these insects may be controlled successfully by spraying the plants with arsenate of lead powder, two pounds to fifty gallons of water. When the Colorado beetles alone attack plants, perhaps the cheapest and most convenient way to control them on a small scale is by dusting. For this purpose, one part arsenate of lead powder to 20 parts of slackened lime or one part of paris green to 40 parts of slackened lime may be used. The dusting material should be applied liberally to plants where insects are feeding, early in the morning.

Spraying late potatoes with bordeaux mixture is probably advisable, for control of leaf diseases which may attack the plants toward the end of the growing season. If the potato seed for the late crop is to be treated for scab, this treatment should be given in the early spring, and the treated seed replaced in storage until the proper planting time for the late crop. Disinfection of seed which have sprouted at all would do more harm than good.

Harvesting and storage.—The late crop is allowed to continue growing until

the plants are killed by frost. This may be as late as November first, in the southern half of the state, altho generally somewhat earlier. The potatoes should be dug and stored promptly after the plants are killed, for if potatoes are frozen in the ground they decay quickly. If possible, potatoes should be dug on a clear, breezy day, when the ground is fairly dry. Under these conditions the tubers will come out clean and will dry off slightly before being gathered and placed in storage.

Late potatoes should be carefully and promptly stored. They keep very well in bins holding 10 to 15 bushels, in a cool house cellar, or in an outdoor cellar. Probably the latter is preferable, because cooler. Banks or pits are also satisfactory for storing potatoes where no cool cellar is available. The pit is prepared very simply. Select a well drained spot located under a tree or other shelter where it will be shaded from the sun. Scoop out several inches of soil, from an area large enough to receive the potatoes. The potatoes shou'd not be piled more than 4 or 5 feet deep, then the pile should be covered only with a layer of straw for a few days. An opening should be left at the top to provide ventilation and to permit the escape of moisture and heat from the pile of potatoes. If the location is such that surface water will not drain readily, dig a shallow ditch around the pit, and provide on outlet so that water can run off. The pit should be covered with about ten inches of soil before freezing weather.

Late potatoes for seed purposes.--Late potatoes will be somewhat immature when dug, because the growing season is cut short by cold weather. Such potatoes are excellent seed stock, and when of desirable variety they should be saved for next year's seed. Experiments have shown the superiority of such immature, fall, home-grown tubers for seed purposes, and if these potatoes are planted the following spring, they will generally excel plantings from spring, home-grown or Northern seed in yield. If desired, the tubers more than two and one half ounces in weight may be sorted out and used for table stock, saving the smaller tubers for seed. The smaller sizes are excellent for seed, if planted whole. Early varieties, such as Cobbler and Ohio, should be saved for spring planting the following season. Late varieties, such as McCormick, Peachblow, and Banner should be saved for planting the late potato crop of the succeeding year.