

Press Bulletin No. 162

Agricultural Experiment Station

Kansas State Agricultural College

Late Crops

Five years ago the Agronomy Department of this Station published Press Bulletin No. 124 on this subject on the occasion of the great floods of 1903. Again excessive rains and floods have destroyed crops on much of the river bottom-lands all over the State. The uplands have washed badly and some of the fields must be replanted. The continued wet weather has also prevented the planting of some fields.

In spite of the unfavorable conditions which now prevail, by skillful handling the land may still be made to produce a profitable crop. After the floods in 1903, this department undertook several experiments in late planting of crops, which have furnished some data on this subject. The information and suggestions given in this bulletin may assist some farmers to take advantage of the opportunity which remains for planting and growing crops this season.

DATES OF FIRST KILLING FROSTS.

The dates of the first killing frosts have been recorded at this Station by the Department of Physics for the last twenty-eight years. During the twenty-eight years no frost has been recorded earlier than September 13, although a light frost occurred in 1902 on that date, and light frosts occurred in September in 1889, 1893, 1903, and 1904. Nine years out of twenty-eight killing frosts have occurred in September; October 29 is the latest date recorded for the first. October 9 is the average date of killing frosts, while the average date of September frosts is September 25, and of October, the 11th day of that month. It should be noted that many of the frosts recorded as killing frosts were not so severe as to entirely stop the growth of corn and Kafir-corn. By a killing frost is meant frost hard enough to destroy tomato vines, sweet potatoes, melons, etc.

CORN.

Twenty-nine varieties of corn planted June 17 after the flood of 1903, at this Station, made good yields, several varieties yielding over 50 bushels (shelled corn) per acre. Minnesota-grown seed of Triumph flint and University No. 13 dent matured by October 8, but made a less yield than Kansas corn. The following varieties were about mature and out of the way of frost on October 8, 113 days after planting: Early Longfellow, Funk's Ninety-Day, Boone County White, King of the Earliest, Early Mastodon, Pride of the North, Early Cattle King, and Leaming. Other varieties ripe enough to escape much injury by frost were Farmers' Reliance, Golden Row, Nebraska White Prize, Hogue Yellow Dent, and Reid Yellow Dent. Varieties which did not mature enough to make good, sound corn were: Kansas Sunflower, Forsythe Favorite, Mammoth White Dent, Hickory King, and Calico.

The average yields of the ten best producing varieties from late and early planting compare as follows:

DATE PLANTED.	Yield per acre.	
	Corn (shelled), bushels.	Fodder (air dry), pounds.
May 8.....	53.97	8208
June 17.....	49.14	2468

The trials were made in different fields, and soil conditions as regards fertility rather favored the early planted corn.

This trial was repeated in 1904, and again in 1905, with a smaller number of the earlier maturing varieties. Such varieties as Reid, Hogue, Golden Row, Pride of the North, Farmers' Reliance, and Bloody Butcher, planted June 10, 1904, were mature October 8 to 10, but made rather low yields both of grain and fodder. The same varieties planted in 1905, on July 1, were noted as mature enough to escape injury by frost on October 14, but the yields were again low, ranging from 22 to 32 bushels of shelled corn per acre, and one to two tons of stover. The drier season and less favorable conditions for growth account for the lower yields from late planting in 1904 and 1905.

Different dates of planting trials at this Station in 1905 and 1906 with the same varieties of corn favored rather late planting (May 26), both in the production of ears and stover. The varieties tested were Silvermine (medium early), Legal Tender (medium), and Hildreth (late). The seasons were not particularly favorable for late planting. A wet season should favor late planting even more than the average season, as indicated by the 1903 trial.

With a full season for growth, the early maturing varieties do not give so large yields as the medium or late maturing varieties, but for late planting the early corn is preferred in order to insure its maturity before frost. The varieties of corn classed in seed catalogues as 100-day corn, such as the Leaming, Reid, Early Mastodon, Iowa Goldmine, Legal Tender, Silvermine, Boone County White, White Pearl, etc., mature in about 110 to 120 days, and these varieties may be planted as late as June 15 with a fair promise of a good crop. Such varieties as the Pride of the North, King of the Earliest, Dakota Dent, Minnesota King and Early Flint varieties, the so-called 90-day corns, may be planted after June 15 until July 1 with a reasonable promise of a crop, assuming September 25 as being the possible date of the first killing frost. If the frost should hold off until October 9, the average date of killing frosts, June planted corn ought to be a safe crop as far as injury from frost is concerned.

Northern-grown seed may mature earlier than Kansas-grown seed of the same variety, but the home-grown seed will usually give the larger yield. Nebraska- or Iowa-grown corn gives good results from late planting in Kansas.

SORGHUMS.

Kafir-corn really requires a longer period to fully mature seed than many varieties of corn commonly grown in this State. The Black Hulled White Kafir-corn, the common variety, will mature seed in 110 to 125 days, depending upon the season. Red Kafir-corn is somewhat more leafy and may be preferred for fodder. This variety matures a few days earlier than the Black Hulled White, but yields a little less seed. Dry or cool weather may check the growth of Kafir-corn and cause it to mature several weeks later than its ordinary season.

Dwarf Milo is less valuable for fodder than Kafir-corn, but produces good yields of grain similar to Kafir grain, and will mature seed in about 100 days.

Jerusalem corn and brown durra are of less value than Kafir or Milo, both for grain and fodder, but these crops mature early and produce well in the drier western counties of the State.

Such varieties of cane as Early Amber, Black Dwarf and Folger will mature seed in a favorable season in about 100 days. Later maturing varieties, such as the Kansas Orange, Coleman, Red Top, and White sorghum, require 110 to 130 days to mature seed. There is usually a sale at a good price for a limited quantity of cane seed for late planting, for forage, and pasture.

Kafir-corn and cane are not as good crops for late planting for the production of grain or seed as corn. Early Amber cane and Red Kafir-corn planted June 19, 1903, were nearly mature when cut and shocked on October 8, but made rather low yields of seed and stover, due in part to a thin stand. Date of planting trials with Black Hulled White Kafir-corn and Orange cane were carried on at this Station in 1905 and in 1906. Plantings made after June 20 in 1905 did not mature seed fully before frost. The largest yields both of seed and fodder were produced from late May and

early June plantings. The late plantings yielded less fodder and only about half as much seed as the earlier plantings. The average yields by the several plantings from May 19 to June 3 compare as follows:

Kafir-corn, 5.35 tons stover and 47.24 bushels grain per acre.
Cane, 7.36 tons stover and 25 bushels grain per acre.

The average yields by the several plantings from June 9 to June 28 were as follows:

Kafir-corn, 3.89 tons stover and 26.86 bushels grain per acre.
Cane, 5.29 tons stover and 12.61 bushels grain per acre.

Thus it appears that corn is a safer and more profitable crop for planting late for grain production than Kafir-corn or cane. If Kafir-corn fails to make good grain it may make good fodder, but this is true of corn also.

During the past five years corn has outyielded Kafir-corn at this Station, the average yields comparing as follows:

Corn (ten best producing varieties), 66.92 bushels per acre.
Kafir-corn (average yield of Red and White), 53.61 bushels per acre.

Corn has about ten per cent greater feeding value than Kafir-corn. If the grain is desired rather than the fodder, and good seed of an early or medium early maturing variety can be secured, then plant corn after June 15 rather than Kafir-corn or sorghum.

COW-PEAS AND SOY-BEANS.

These crops are valuable for grain and seed as well as for forage. Among the varieties adapted for planting in this State are the Early Yellow, Ito San, Early Green and Early Brown soy-beans and the New Era, Whippoorwill, Black Eye, Warren's Extra Early and Michigan Favorite cow-peas. The Clay and Iron varieties of cow-peas may also be planted for forage.

Date of planting trials carried on at this Station in 1904 and 1905 with Early-Yellow soy-beans and New-Era cow-peas indicate that these crops are not apt to mature much seed planted later than June 25. The largest yields of both hay and grain were produced by early June plantings. The June plantings of these crops were cut for hay in about 80 days after planting, and matured for seed in from 94 to 108 days, depending upon the season and the date of planting. Plantings from the first to the middle of June usually matured seed in a shorter period than earlier or later plantings. The average yields of fodder and grain for the two seasons by the plantings made from June 3 to 25 were as follows:

Cow-Peas, 2.6 tons hay and 14.9 bushels grain per acre.
Soy-beans, 1.7 tons hay and 14.3 bushels grain per acre.

The yield of seed of cow-peas varies greatly in different seasons, the average yield in 1905 being 7.6 bushels per acre, while in 1904 the average yield was 22.2 bushes per acre. Soy-beans are somewhat more regular in their yield. Cow-peas is really a safer crop to grow for forage than for grain.

FORAGE CROPS.

There are few crops which may be planted later or which are superior to corn for forage either for feeding green or cured. Preferably plant rather thickly in rows and cultivate, or sow broadcast the same as sorghum.

Cane or Kafir-corn may be sown broadcast or planted in close drill for fodder production as late as July 15. The early maturing varieties of cow-peas, such as New Era, Whippoorwill, and Black Eye, may make good hay planted as late, while millet, or soy-beans of the earlier maturing varieties, may be planted even later and insure a fair yield of forage if the soil and season remain favorable for growth. Kafir-corn, Orange cane, Whippoorwill, cow-peas and many varieties of corn will mature for fodder in about 90 days after planting; Amber cane, Early Yellow soy-beans, German millet and early varieties of corn in about 80 days with favorable weather for growth, while Siberian, Hungarian and common millet will make hay in 60 to 70 days from seeding.

Corn and cow-peas planted together in rows make excellent forage of higher feeding value than corn fodder, but cane will produce larger yields than any of the other crops mentioned, while Kafir-corn usually ranks second.

A series of experiments in planting late forage crops (plantings made about June 20) was begun in 1903 and repeated each year until 1906. The resulting yields for the four seasons are as follows: millet 1.6, soy-beans 2.1, cow-peas 2.2, cane 7.9. Kafir-corn 6.1, corn (sowed) 5.7, corn and cow-peas (sowed) 5.1, corn (planted in rows) 5.9, corn and cow-peas (planted in rows) 5.4 tons per acre, respectively. These are yields of field-cured hay or fodder. It should be observed that well-cured soy-beans, cow-peas, or millet hay will contain 16 to 20 per cent of water; corn fodder or corn and cow-peas, 25 to 30 per cent; while Kafir-corn or cane fodder will contain from 35 to 40 per cent, even when the crop is well cured, by leaving in the field for several weeks in the windrow and bunch.

AMOUNT OF SEED TO SOW.

The amount of seed of the several crops to sow for forage may be denoted as follows: Cow-peas 4, millet 2 to 3, soy-beans 3 to 4, cane 3 to 4, Kafir-corn 2 to 3, corn 2 to 3, corn and cow-peas 2 and 3 pecks per acre, respectively. If the crops are planted in rows, a less amount of seed may be used, as follows: Corn 8, corn and cow-peas 4 and 8, Kafir-corn or cane 4 to 8, cow-peas or soy-beans 8 to 10 quarts per acre, respectively.

Planted in rows for seed production requires amounts of seed per acre as follows: Corn 4, Kafir-corn 3½, cane 3 to 4, soy-beans or cow-peas 8 to 10 quarts per acre, respectively. All crops planted late for seed or grain production should be planted rather thinner than is the usual practice when these crops are planted early in the season.

PASTURE.

To produce pasture quickly at this season of the year, sow millet, or millet with oats, barley, or emmer, a peck of millet with a bushel and a half to two bushels of the grain per acre. Rape may be planted for pasture as late as August first. Sown broadcast or in close drills requires 5 to 6 pounds of seed per acre, while planted in rows two to three feet apart requires 2 to 4 pounds of seed. Rape makes an excellent and very productive pasture for hogs, and may also be used for sheep and cattle.

Sowed corn, sorghum or Kafir-corn will furnish a large amount of pasture, and plantings may be made as late as August first. Cow-peas and soy-beans will furnish excellent early fall pasture, or better, plant the cow-peas or soy-beans with corn; do not plant with cane or Kafir-corn, as these crops will smother the legumes. For late fall and winter pasture, sow winter rye, wheat or winter barley in the early part of September. This will also furnish early spring pasture the next season.

ALFALFA.

A field which has been flooded should be disked or cultivated as soon as the ground is dry enough. If the crop has not been under water too long, or is not covered too deeply with silt, the alfalfa may start again. It is practicable to reseed alfalfa fields this fall, when the seed-bed may be prepared by disking and harrowing during the summer. A crop of millet, cow-peas or soy-beans may be grown for forage and taken off early enough to prepare the seed-bed by disking and harrowing for fall seeding. On most of the old fields which need to be reseeded, 8 or 10 pounds of good seed per acre will be enough to sow. In case the field has been in alfalfa for six or eight years it may be advisable to rotate with other crops and seed alfalfa on new fields.

SPECIAL CROPS.

Broom corn, buckwheat, navy beans and garden crops may be planted, if time and convenience permits, as side crops to bring in a little extra money.

MANAGEMENT OF FLOODED LANDS.

The question of management of flooded land can hardly be discussed here. Send for Bulletin 121, treating on this subject, published after the 1903 floods. However, this suggestion may be offered, that low-lying lands which are apt to flood and wash had often best be seeded down to grasses for pasture or meadow, rather than to be planted year after year with cultivated crops.

A. M. TEN EYCK, *Agronomist.*

Manhattan, Kan., June 10, 1908.