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Northeast Missouri Crops Experiment Field

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C. A. HELM

The Northeast Missouri crops experiment field of the Missouri Experiment Station is located on the farm of Mr. Fred Burckhardt, seven miles north of Shelbyville, in Shelby County. The purpose of the Missouri Agricultural Experiment Station in establishing this field is to find out by careful experimentation the most productive cropping systems for the flat prairie land of Northeast Missouri. Beginning with a variety test of wheat in 1923-24, the search for the best varieties of all crops suitable for the prevailing soil type of the northeast section has been continued. How these varieties with good treatment can be best combined for profitable farming is now being studied.

The wheat yields for the crop seasons 1924 and 1925 and the yields of corn, grain sorghum, soybeans, oats and barley for 1925 are included in this report. The wheat yields and crop conditions for 1924 are reported in detail in Missouri Experiment Station Circular No. 128 which may be had upon request.

PLAN OF THE FIELD

The field is divided into two ranges 1 and 2.

Range 1.—On Range 1 a rotation of corn, soybeans, wheat and clover is followed. In this rotation one-half the clover sod is manured before plowing for corn which permits a direct comparison of the effects of manure on the yield in the rotation. The corn stalk land is plowed for soybeans and the stubble of this crop is double-disked for wheat sown after the beans are harvested. The wheat ground is limed each year with the amount required for this particular soil. In addition a standard quantity of phosphate fertilizer is applied when the wheat is sown.

Red clover and sweet clover are sown on the wheat in the spring and allowed to remain one full season after wheat before plowing under for corn.

Range 2.—On Range 2 a rotation of grain sorghum, oats and barley, and two years of grass and clover is followed. In this rotation one-half the sod is manured before plowing for grain sorghum, which permits a direct comparison of the effects of manure on the yield of grain sorghum in the rotation. No lime or commercial fertilizers are used in this rotation in contrast with Range 1 where both lime and phosphate are applied before wheat.

On each block in the two ranges different varieties of the same crops are being tested for their comparative yields under the same treatment. Under this plan the best varieties for the section are found and their response to certain well established practices in crop production is determined.

Since the field is now in its second year, the grass and clover stands are just now becoming established and as yet no data on their yields have been obtained.

The following diagram shows clearly the cropping system used and varieties now under test.

RANGE 1

Red Clover Sweet clover	Poole Fulcaster Harvest Queen Michigan Wonder	Virginia soybeans	Reids Yellow Dent 90-Day Yellow Dent

Half of the clover sod was manured at the rate of 6 tons per acre for corn; 3 tons of lime were applied before wheat and 200 pounds of 16% acid phosphate was applied at wheat seeding.

RANGE 2

Orchard grass and alsike clover. Timothy, red-top and alsike clover	Orchard grass and alsike clover. Timothy, red-top and alsike clover	Fulghum oats Burt oats Spring barley Winter barley	Sunrise kafir for grain

Half of the grass land was manured at 6-ton rate for grain sorghum. No lime nor commercial fertilizer was used.

CORN AND GRAIN SORGHUM

The comparative yields for corn and grain sorghum for the season of 1925 were:

TABLE 1.—YIELDS OF CORN AND GRAIN SORGHUM, MANURED AND NOT MANURED

Crop	Bu. per acre
Reids Yellow Dent manured at 6 ton rate	32.5
90-Day Yellow Dent manured at 6 ton rate	31.6
Sunrise kafir manured at 6 ton rate	36.8
Reids Yellow Dent no manure	21.5
90-Day Yellow Dent no manure	24.7
Sunrise kafir no manure	27.2

WHEAT

The varieties used in the tests of wheat for 1924 and 1925 include Poole, Fulcaster, Michigan Wonder and Harvest Queen.

The land was plowed for wheat each year early in August and was worked to a finely pulverized, well packed seedbed. The land being flat and poorly drained, dead furrows were plowed every 35 feet to improve the drainage. Each year the varieties were sown after October 10, the fly-free date for the section.

The 1924 crop was fertilized with 16 per cent acid phosphate at the rate of 400 pounds to the acre, but only 200 pounds to the acre was used in 1925.

TABLE 2.—YIELDS OF WHEAT ON THE NORTHEAST MISSOURI EXPERIMENT FIELD

Variety	Bu. of grain per acre (Average of 1924 and 1925)
Poole	29.4
Fulcaster	26.3
Harvest Queen	23.8
Michigan Wonder	23.4

Unfavorable weather conditions during May and June, 1924, caused wheat to lodge very badly in this section. The Fulcaster variety showed a marked weakness in this respect. On the other hand, the remaining three varieties reported in Table 2 stood up well. The 1925 crop of Fulcaster was very thin, having been extensively winter killed.

The results of the test for the two seasons warrant the following conclusions (1) that the use of good seed, good seed-bed preparation,

and the liberal use of fertilizer will return profitable yields of wheat on land not generally considered entirely suitable for this crop. (2) Poole was the best variety and probably is generally superior to the other varieties tested for the flat prairie sections of Northeast Missouri.

OATS AND BARLEY

The Burt and Fulghum varieties of oats are generally considered superior to all others for the level prairie soils of Northeast Missouri. Their comparative yields, however, have not been determined definitely in this section. In view of the possibility of both winter and spring barley as a partial substitute for oats, barley has been included in the test with oats. The yields for the season 1925 were:

TABLE 3.—YIELDS OF OATS AND BARLEY

Crop and Variety	Yield Bu.	Per Acre Pounds
Fulghum oats	20.4	652.8
Burt oats	18.9	604.8
Spring barley (Oderbrucker)	10.3	432.6
Winter barley (Tennessee)	*	*

*Winter-killed completely.

SOYBEANS

The merits of Virginia soybeans over all other varieties on the Northeast level prairie soils have been demonstrated so often that a variety test of soybeans was not considered necessary.

The Virginia soybeans in Range 1 were planted in rows, at 20 pounds per acre. The crop harvested for seed gave a yield of 14.1 bushels or 846.0 pounds per acre. Their yield can be compared directly with that of oats and barley.