April, 1922
Revised, March, 1923

Circular No. 255

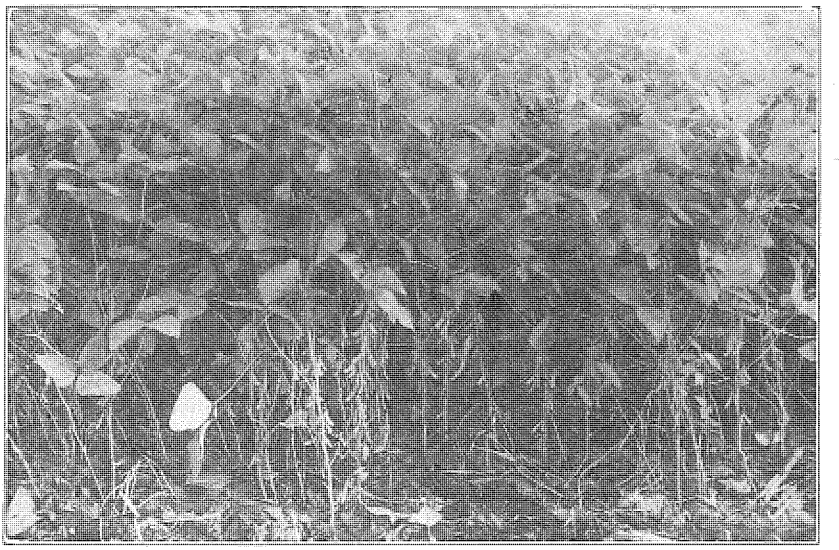
UNIVERSITY OF ILLINOIS

AGRICULTURAL COLLEGE AND EXPERIMENT STATION

URBANA, ILLINOIS

GROWING SOYBEANS IN ILLINOIS

BY J. C. HACKLEMAN



SOYBEANS AT THE RIGHT STAGE FOR HAY

GROWING SOYBEANS IN ILLINOIS

By J. C. HACKLEMAN, Associate Professor of Farm Crops Extension

The importance of the soybean as a valuable, annual, leguminous crop is rapidly gaining recognition in Illinois, and the acreage devoted to its culture has increased remarkably during the past decade. Because of this rapidly increasing acreage, seed has become high in price; which fact has led many farmers to the mistaken notion that the soybean is a crop to be grown chiefly for the production of its seed. As a matter of fact, however, seed production is to be considered of secondary importance when the many actual merits of this crop are taken into account.

There are a number of factors which have contributed to the great increases in the soybean acreage in Illinois. Among the more important are: (1) it is an annual legume; (2) it fits well into corn-belt rotations; (3) it makes excellent hay; (4) it is good for pasture; (5) it furnishes a good silage material; (6) it is subject to few diseases and has few insect pests; (7) it produces seed abundantly; and (8) it is rich in oil, therefore valuable to commerce.

As an Annual Legume.—Red clover, which has been largely depended upon in the corn belt as a soil-improving crop, frequently fails, due to one cause or another; and on account of this uncertainty, farmers—especially tenants—have largely eliminated the growing of clover. Some other legume crops must be found to take the place of clover. The soybean is an excellent crop to substitute in the event of clover failure.

Fits Well into Rotations.—The soybean has found great favor with corn-belt farmers because it fits so well into their rotations. The crop may be seeded just as soon as corn is planted. When grown as a cultivated crop, the first cultivations alternate with those of corn. Aside from the second, and occasionally a third cultivation, soybeans require no more attention until time to harvest. If the proper varieties are chosen, the crop will be harvested just preceding wheat-sowing time. The wheat may then be sown in the soybean stubble without further preparation.

Makes Excellent Hay.—Soybean hay, properly made, is equal if not superior to the hay from other leguminous crops. Its chemical composition, as well as results from feeding experiments with milch cows, indicate that soybeans compare favorably in feeding value with alfalfa. This hay, as a source of protein produced on the farm, can be made to reduce the amount of costly feeds purchased each year.

Good for Pasture.—Soybeans furnish satisfactory pasture for stock of all kinds. For hogs and sheep it has been found to be especially profitable. Soybean pasture gives the best gains when used as a supplement to corn, but it is also valuable when used alone.

Furnishes Good Silage.—Soybeans and corn make a good silage combination. They may be grown together or mixed at the time of being put into the silo. Several experiment stations have conducted feeding trials with this mixture, especially for dairy cows, and all have found it excellent silage.

Has Few Diseases and Pests.—The crop is unusually free of plant diseases and has few insect pests. The bacterial leaf wilt, which causes the leaves to die and drop off prematurely, is the only disease of consequence thus far. The Mexican bean beetle is reported as doing some damage in Mississippi. Grasshoppers destroy the beans occasionally but are not, as a rule, a serious menace. Rabbits, especially the jack rabbit, is the worst pest at the present time.

Heavy Seed Yields.—Yields of seed depend upon the variety, soil, and seasonal conditions. The better varieties may be expected to average from twelve to eighteen bushels of seed per acre, altho yields as high as forty bushels have been recorded in Illinois. During the season of 1921, ten varieties on the South Farm at the University of Illinois averaged 31.5 bushels per acre. The Chas. L. Meharry farms at Tolono, Illinois, have grown 140 acres of soybeans annually during the past four years with an average annual yield of approximately 22.5 bushels per acre.

Valuable Oil Crop.—As a rule the oil content of soybeans is high, averaging approximately 17.5 percent. The demand for this oil has increased remarkably during the past few years. The oil has previously come from the Orient, or has been extracted from seed imported from Manchuria, China, and Japan. The demand for a fresh, pure, soybean oil from native beans has become very active, and mills will be crushing soybeans this season. This will probably remove the fear of an overproduction of soybean seed.

ADAPTATION AND CULTURE

Soil.—The soybean crop does remarkably well on the thin, gray soils of southern Illinois, producing there, proportionately, better than corn. The sandy soils of the Wabash, the Illinois, and the Mississippi rivers are perhaps as poorly adapted for soybeans as any soil types in the state, yet even there the yields run from one to two tons of hay and frequently from ten to twenty bushels of seed per acre.

Temperature.—A low soil temperature at the time of seeding is the greatest source of danger to soybeans. The proper time for seeding is after the ground warms up sufficiently for corn planting. After

developing a good root system, soybeans will stand extremely hot, dry weather, altho seed yields may be reduced by severe, hot weather, or hot winds, when the plants are blooming.

Moisture.—The soybean, after it gets well started, will survive either excessive rains or severe drouths. The most critical period—the germination stage—is the time when excesses of moisture and temperature are most likely to be injurious. Severe drouths in July and August may cause the soybean to practically cease growing; but it seems able to wait for more favorable weather, and when the fall rains come the crop proceeds to maturity, producing an excellent crop considering the handicap.

SEED BED

Soybeans, if they are to be a success, must have a good seed bed. The ideal seed bed is prepared by plowing just as early in the spring as possible, then keeping the soil worked down until seeding time in order to hold the moisture near the surface and thus make shallow seeding possible. Many farmers growing soybeans for the first time make the mistake of neglecting this important step. Proper preparation of the seed bed will largely overcome the seriousness of the weed menace later in the season.

INOCULATION

The soybean is a legume, and therefore will take nitrogen from the air if the proper bacteria are present. The kinds of bacteria that grow on our other common legumes, such as alfalfa, red clover, or cowpeas, will not inoculate soybeans. The first time, and preferably the first two or three times, that soybeans are grown on a field the seed should be inoculated. This may be done in any one of several ways. The more common methods are: (1) applying pure culture of the particular kind of bacteria required; (2) sprinkling dry inoculated soil on seeds that have been slightly moistened with a solution of glue (five or six ounces of carpenter's glue to one gallon of water); (3) sprinkling inoculated muddy water over the seed and then stirring thoroly to make sure that every seed has particles of soil adhering to it. For this purpose the inoculated soil is mixed with water until it reaches the consistency of cream. After the seed is slightly moistened it may be sown immediately without waiting for it to dry.

Care must be taken in inoculating soybeans not to get the seeds soaked; they should be just slightly moistened. If the beans are too wet, the seed coat will wrinkle or come off; and if heaped up while in this condition, the seed will swell and cause trouble at time of sowing.

FIG. 1.—ITO SAN
Most widely grown early variety. Grows short and coarse. Leaves shatter too badly for hay.

FIG. 2.—MANCHU
Rapidly gaining favor. An excellent early bean adapted to the fertile soils of central and northern Illinois. Taller and less woody than Ito San.

FIG. 3.—MIDWEST
Formerly known as Mongol, Medium Yellow, and Hollybrook. Most popular medium-maturing variety. A general purpose bean adapted to most soils and sections of Illinois. A trifle late for seed but good for hay, even in northern Illinois.

SEEDING

Time.—Under Illinois conditions, soybeans should be seeded immediately after corn planting. Very early planting is to be avoided, for the soybeans do not germinate well in a cold soil.

Method.—Soybeans may be seeded with a grain drill, a corn planter, or a sugar-beet drill. The grain drill enables the farmer either to seed the beans solid, in the same manner as wheat or oats, or to space them in rows of any desirable width. The corn planter and the sugar-beet drill seed only in rows. Most corn planters are adjustable, and with some kinds it is possible to seed in rows as narrow as thirty inches. Sugar-beet drills usually seed in 24- to 30-inch rows.

The use to which soybeans are to be put will influence somewhat the method of seeding. When seeded solid with the grain drill, the beans may be grown satisfactorily, if the land has been carefully prepared and if the presence of a few weed grasses at harvest time is not objectionable. Planting in rows 28 to 32 inches apart is preferable if the grower purposes to keep out all weeds or if he desires to use a minimum amount of seed. Soybeans, grown in rows, and seeded somewhat thinly, will produce a seed that is larger, plumper, and of finer quality than will beans that have been drilled in solid or grown in rows planted very thickly.

Rate.—The best rate of seeding depends upon three factors: the variety or size of seed, the method of seeding, and the use to be made of the crop.

The size of seed varies with different varieties. The larger-seeded varieties, such as Mammoth Yellow, Tarheel, Ohio 9035, and Haberlandt, have from 125 to 175 seeds per ounce. Medium-sized seed, from varieties such as Ito San, Manchu, A. K., and Midwest (Mongol or Hollybrook), run from 175 to 225 per ounce, while small-seeded varieties, such as the Peking (Sable), Ebony (Black Beauty), and Virginia, have from 225 to as many as 400 seeds per ounce. This wide variation in size of seed necessitates some consideration when seeding. The following recommendations for rates of seeding are based upon medium-sized seed, such as that of Midwest (Mongol or Hollybrook). Rates for larger or smaller seeds may be proportionately increased or decreased as occasion demands.

Seeding in rows 28 to 32 inches apart requires 25 to 30 pounds of seed per acre. Seeding solid with the grain drill requires from one bushel to five pecks of seed per acre. Seeding in the corn, either for hogging off or for silage, is usually done at the rate of one and one-half to two soybean seeds per kernel of corn. This will require, of the medium-sized seed, approximately 2½ to 3 pounds of seed per acre, thus making one bushel of seed sufficient for about twenty to twenty-five acres.

FIG. 4.—WILSON 5

A good hay variety. A popular black-seeded, tall, slender, vining type. Popular for hay in southern and southwestern Illinois. Holds leaves fairly well.

FIG. 5.—ILLINOIS 13-19

Excellent for hay. Recognized as one of the best hay beans for central and southern Illinois. Fine stem, abundant leaf, good yield of seed, and exceedingly good to hold leaf.

FIG. 6.—VIRGINIA

Tall vining hay bean. An excellent hay variety, especially on thin soils. Lodges badly on fertile soils. Fair amount of leaf, good yield of seed.

CULTIVATION

The importance of cultivation in growing soybeans cannot be overemphasized. The most effective cultivation is done before the beans are planted. The first cultivation frequently is necessary before the beans are up, just as they are attempting to break thru the crust which usually forms following a rain. This is the most critical cultivation, and must be done just as soon as possible after the crust forms. The method of breaking is immaterial. The rotary hoe works admirably for this purpose, the spike-tooth harrow is satisfactory, or the weeder

FIG. 7.—SOYBEANS SHOULD BE CULTIVATED

Regardless of the method of sowing, soybeans need cultivation. The rotary hoe is a good implement to use where beans are drilled solid. Ordinary corn cultivating machinery is used when the soybeans are seeded in rows.

may be used provided it will break the crust. Beans seeded in rows are commonly cultivated with corn cultivating machinery; the ordinary two-horse corn cultivator is probably most satisfactory for this purpose and most commonly used.

Cultivation should be frequent enough to keep down weeds, at least until the beans are well out of danger. As a rule, beans in rows can be cultivated until they are practically ready to bloom, by which time they will be large enough to make considerable shade and thus control the weeds. Two or three cultivations will usually be sufficient.

HARVESTING

The Hay Crop.—Soybeans make good hay any time after the pods form and until the leaves begin to fall. Hay that is cut early is probably richer in protein, but the hay cut after the seeds are well formed and before the leaves fall gives the greatest total yield.

Soybean hay is much more readily cured than cowpea hay. Rains which would ruin a crop of cowpea hay will apparently do no more injury than to discolor soybeans. This discolored soybean hay is probably not so nutritious as that made without exposure to rain, but it is nevertheless of good feeding value, and stock do not seem to object to it. Soybeans yield from 1½ to 3 tons of hay under most Illinois conditions, depending of course upon the fertility of the soil and the variety of beans. The average yield of medium-maturing soybeans should make at least 2 tons of hay per acre.

For cutting, the mower is most commonly used. The binder is favored by some growers but it has some disadvantages. Soybeans cut at the proper stage for good hay contain a large percentage of water; and if they are bound tightly at this stage, there is almost certain to be some loss from molding. When cut with a mower, soybeans are usually allowed to remain in the swath for about a day, this length of time being usually required to thoroly wilt the beans. After wilting, they may be raked into windrows and allowed to complete the curing. After one day in the windrow, the hay is sometimes put in shocks or bunches to cure out thoroly. A good quality of hay, however, can be made direct from the windrow.

The Seed Crop.—The soybean seed crop should be cut when the pods are fully matured, the seed in the hard dough stage, and, with most varieties, when the leaves are practically all off. If cut earlier, the seed will usually be wrinkled, inferior, and difficult to keep from molding.

The grain binder is generally used for cutting, but some varieties, especially when grown on poor soils, grow so short that it is necessary to use the mower in order to save the crop. When cut with a binder, soybeans are handled in practically the same manner as any other grain. The bundles should be comparatively small and not bound too tightly, especially when the beans are cut relatively early, before the leaves are off and the plants thoroly dried. Bundles should be set up in small shocks and allowed to cure in the field.

Soybeans frequently lodge badly on very rich land. This is especially true of tall, slender, vining types such as the Virginia. Harvesting beans which have lodged is a difficult task, and the ordinary binder, even when equipped with the extra guards or "fingers" made for picking up lodged grain, will not completely gather the crop. The device shown in the accompanying illustration was developed by

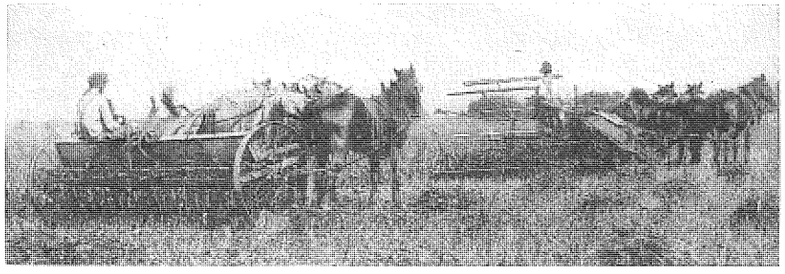


FIG. 8.—SOYBEAN STUBBLE MAKES AN EXCELLENT SEED BED FOR WHEAT

Wheat follows soybeans admirably. By selecting a variety of the proper maturity, an early variety in northern Illinois and a medium early one for central Illinois, the beans may be harvested just at wheat seeding time, the drill following the binder without further seed-bed preparation.

Mr. E. L. Gillham, of Edwardsville, Madison county, Illinois, and has been found to be very satisfactory. This homemade attachment has the advantage of having ''fingers'' much longer than those made for grain, extending out a sufficient distance in front of the sickle bar so that all the beans are straightened out and most of them standing practically erect as the sickle reaches them.

After they have cured in the field, the bundles can be stacked with excellent success. Stacking is done in the same manner as for wheat. Care should be taken to prevent the stack from becoming water soaked while waiting for the thresher.

Machines are now available which harvest the beans from the standing stalks. These harvesters strip the plants, collecting the beans and pods in large hoppers. The beans are later run over cleaning equipment, to get rid of the trash. These harvesters have not

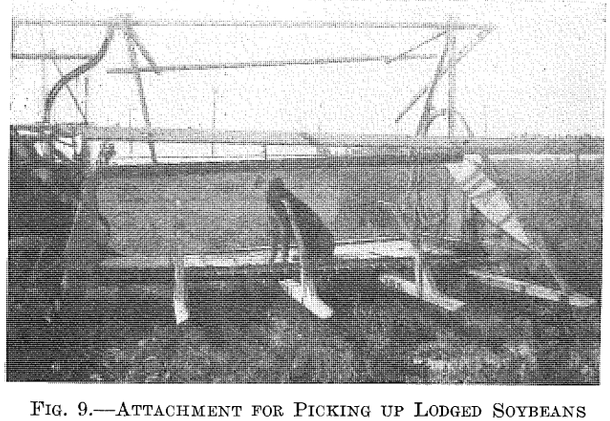


FIG. 9.—ATTACHMENT FOR PICKING UP LODGED SOYBEANS

This homemade attachment was made by E. L. Gillham, of Edwardsville, and proved practically 100 percent efficient.

FIG. 10.—VIRGINIA SOYBEANS HARVESTED WITH A BINDER

These beans were practically flat on the ground, but with the long ''fingers,'' or guards, the grower was able to get all the plants. This crop was produced following alfalfa which had produced 4 to 6 tons per acre for seven years. The soil had been limed and phosphated for alfalfa.

been generally used in Illinois, but they promise to become of great value to the grower who is interested in utilizing the straw for soil improvement only. For successful operation, rather tall, erect-growing varieties must be used, for the machine will not work well in the shorter varieties or where the pods grow too low on the stalk. Neither can the tall, slender, vining types be satisfactorily handled by this mechanical picker. These machines, however, have been improved

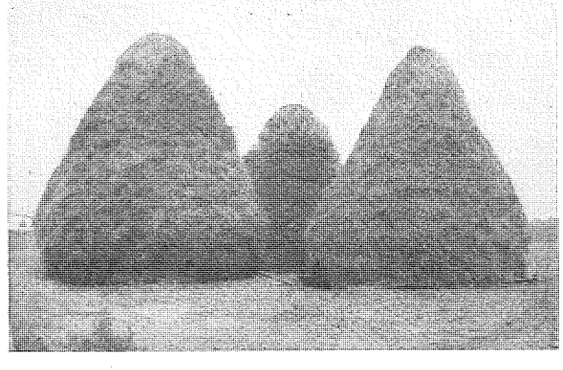


FIG. 11.—STACKS OF SOYBEANS READY FOR THE THRESHER

When cut for seed, they may be stacked like wheat and left for a more convenient time to thresh. They are sometimes left in the stack until well along in winter. If dry when stacked, the seed is usually of excellent quality.

greatly during the past few years and no doubt further improvements will be made.

THRESHING

Some growers have had difficulty in getting their soybeans threshed. An ordinary grain separator will do an excellent job of threshing beans if a few adjustments are made. The cylinder must be slowed down to at least one-half the normal threshing speed, or even to a speed of 300 to 350 revolutions per minute. The first concave should be removed and a wooden blank put in. The wooden blank seems to break fewer beans than the steel blank. The second concave, if not taken out entirely, should have most of the teeth removed, leaving perhaps one-third to one-fourth the usual number. This concave should be set somewhat lower, getting it farther away from the cylinder. These changes will practically eliminate the splitting of the beans. Reducing the speed of the cylinder, however, slows down the remainder of the separator proportionately so that the machine will not clean the grain and elevate the straw. To overcome this, a large pulley should be put on the shaft in order to speed up the remainder of the machine to at least the normal rate.

The special pea and bean hullers on the market work satisfactorily. Some of these are designed primarily for cowpeas, others for navy beans, but all will thresh soybeans if properly adjusted.

The method of handling soybean seed immediately after threshing is important. Improper handling has caused the loss of thousands of bushels. It is not safe to store soybeans in a solid bin that is too deep to allow them to be stirred conveniently. Where only small lots of seed are handled, the threshed grain is sometimes put into loosely woven burlap sacks, about 1½ bushels of seed per sack. These sacks are then set in rows, with space between each row. If the beans begin to heat, they can be stirred by reversing the ends of the sacks, and in this way loss will usually be avoided. When soybeans are kept in stacks until well along in the winter, heating usually does not occur.

VARIETIES

The choice of varieties is an important consideration in soybean production. The use of an unadapted variety (the Mammoth Yellow) in Illinois, probably did more to discourage the wider use of soybeans than all other factors combined.

The statements made here regarding varieties are based, not only upon the results obtained at this Experiment Station and the outlying soil and crop experiment fields, but also upon observations and conclusions drawn from the experience of growers in the various sections of the state. The classification as to maturity will naturally vary somewhat with the strain or source of the seed. The number of days mentioned as required for maturity refers to the amount of time from seeding until the crop is ready to harvest as seed.

Early Maturing Varieties

WISCONSIN BLACK, also known as EARLY BLACK, is a short, rather leafy variety, popular in Wisconsin and good in northern Illinois where an extra-early maturing variety is desired. This variety requires about 100 days for its growing season and is probably best adapted to grow with early corn for hogging off, altho it is a good yielder of seed considering its early maturity.

BLACK EYEBROW is a variety of medium height, stout, and rather erect. It matures in about 105 to 110 days. The seed is medium-large, slightly flattened, and has a peculiar marking, being rather a brownish black in color with a brown saddle and a black seed scar. This variety is well adapted for hogging off and is also fairly good for hay and seed.

MANCHU grows erect, is of medium height, bushy, and has rather stout plants. It matures in about 105 to 110 days. The seed is of medium size, straw yellow in color with a black or slate-colored seed scar. This variety is an excellent seed yielder, especially on fertile soils. It is also good for early hay and pasture.

ITO SAN (MEDIUM EARLY YELLOW) is the most widely-grown early-maturing bean. The plants are erect, bushy, and of medium height. This variety requires about 105 to 110 days to mature. The seed is of medium size, nearly round, and is straw yellow in color; the seed scar is pale yellow with a brown spot just at the base of the hilum. This variety is well adapted for hogging with early corn, and is a good yielder of seed, but is too short and coarse for the best hay.

EARLY BROWN is adapted to practically the same conditions as Ito San. The plants are stout, erect, and bushy, and the seed is cinnamon brown in color. Otherwise this variety is practically identical with Ito San.

Medium Maturing Varieties

A. K. is a popular sort grown very extensively in Illinois. The plants are rather erect, leafy, and have medium-sized stems. There is great variation in maturity, some of the plants maturing in 100 days or less and others requiring as long as 125 days; but the average is about 110 to 115 days. The seeds vary considerably in size and shape; all are yellow, but the seed scar varies from a pale yellow to a black. This variety evidently was first distributed by a paint company from seed which was imported by them from Manchuria. It has always made a favorable yield and has been popular despite its great variability and the fact that it probably is a mixture of many varieties native to that portion of the Orient from which the shipment came.

A. K. is especially adapted for hogging off with the corn and for seed production. It also does well for hay.

MIDWEST (MEDIUM YELLOW, MONGOL OR HOLLYBROOK) is the most widely grown medium-maturing soybean. The plants are rather tall and erect, with medium-sized stem. This variety requires about 115 to 120 days to mature. The seed is pale yellow with a light brown to yellowish seed scar. In the medium-maturing class this is probably one of the best beans for general purposes. It is good for hay, for silage, and for hogging off, and it makes an excellent yield of seed.

Some confusion exists regarding the name of this variety. The Hollybrook of Ohio and Indiana, the Mongol of Illinois, and the Medium Yellow of Missouri and Iowa are practically identical. Seed of these strains from the five states mentioned was secured and seeded side by side at the University of Illinois in 1921. Notes taken at intervals thruout the season, as well as observations made at maturity, indicated that no essential differences existed between these three strains. The Hollybrook of Ohio and Indiana, however, should not be confused with the true Hollybrook of the cotton belt, which is a much later variety.

EBONY, known also as BLACK BEAUTY, is a dependable, standard variety with stout, erect, bushy plants and fine stems. This bean requires about 120 days to mature. It has small, almost spherical, jet black seed. It is excellent for hay and is also a good yielder of seed.

PEKING (SABLE OR ROYAL) is quite generally grown. It has tall, erect, slender stems. It requires 120 to 125 days to mature. It is an excellent variety for hay; it does well in the corn for silage and pasture; and makes fairly good yields of seed.

HAMILTON (OHIO 9035) has strong, bushy plants of medium height, with large, coarse stems. The seed is large, somewhat flattened, and brown in color with a brown seed scar. This bean requires about 120 to 125 days to mature. It is a good seed producer, is good to grow in the corn for pasture, and is fairly good for silage.

Medium Late to Late Maturing Varieties

HABERLANDT is the most widely-grown medium-late bean in Illinois. The plants are stout, rather bushy, and of medium height. This variety requires about 125 to 130 days to mature. The seed is of a rich yellow color, is slightly flattened, and has a brown seed scar. This is an excellent seed producer, is good for pasture and silage, and is grown quite extensively for hay. It is inclined to be somewhat coarse unless seeded rather thickly.

ILLINOIS 13-19, a University of Illinois selection, is one of the most popular hay and seed beans in southern Illinois. It is a tall-growing, medium-erect variety whose plants have a tendency to vine. This bean requires about 125 days to mature. It has small, very much flattened seeds, of a dark brown color with a brown seed scar. This variety is excellent for hay, for pasture, and for growing in the corn for silage. It makes excellent growth on light soils and has the very desirable characteristic of holding its leaves after maturity much better than do most varieties.

VIRGINIA is a tall, slender-growing, vining type. It requires about 130 days to mature. The seed, which in general resembles the seed of Illinois 13-19, is small, brown in color, much flattened, and has a brown seed scar. This variety is excellent for hay and silage, and is fairly good for pasturing off in corn. It makes fair yields of seed but is inclined to lodge, especially on fertile soil, making harvesting quite difficult.

FIG. 12.—VIRGINIA SOYBEANS ON SAND, CLARK COUNTY

Seeded 32 inches apart, these beans made approximately two tons of good hay. Cowpeas alongside made less hay per acre. Virginia on poor soil does not grow so tall as on fertile soil and will not lodge so badly.

WILSON-FIVE is a tall, slender, rather viny type which requires 120 to 125 days to mature. It has a black, much flattened seed with a black seed scar. This variety is probably best adapted for hay production and pasture.

LEXINGTON is a tall, leafy, rather erect-growing bean, with a slight tendency to vine. It requires about 130 days to mature. It has a greenish yellow, rather flattened seed with a brown seed scar. Lexington is apparently primarily adapted for forage, altho it makes fairly good yields of seed.

MAMMOTH YELLOW, the standard bean of the cotton belt, is a stout, erect, bushy variety. It requires about 140 to 150 days to mature. The seeds are straw yellow, with a straw yellow to light brown seed scar. This variety is too late for most Illinois conditions, but in the extreme southern part of the state it may be used with a late corn for silage, or on very thin soils it is sometimes used as a hay bean. This bean is a heavy yielder, but because of its late maturity it is not a safe variety to use as a seed producer in Illinois.

MAMMOTH BLACK, or TARHEEL, is another southern variety which is grown to some extent in Illinois. Seed of this variety is jet black and approximately the same size as the Mammoth Yellow. Plant characters and time of maturity are also similar.

VARIETIES CLASSIFIED AS TO USE

The following table shows the most commonly grown varieties classified as to their best recognized uses. This list, of course, does not include all varieties that are grown in the state, nor does it imply that varieties which are mentioned for only one use are not of some value for other purposes. Wherever a variety seems to have special merit for a certain purpose, that alone is indicated. Certain varieties, for instance, the Manchu, A. K., and Midwest, seem to be almost equally valuable for each of the purposes mentioned.

	VARIETIES RECOMMENDED FOR—			
	Seed	*Hay*	*Pasturing Off*	*Silage*
Northern Illinois	Manchu Ito San Black Eyebrow	Manchu Midwest Ebony Peking	Black Eyebrow Manchu A. K. Midwest	Manchu A. K. Midwest
Central Illinois	Manchu A. K. Midwest Hamilton Ebony	Ebony Peking A. K. Midwest Illinois 13-19	Ito San A. K. Midwest Ebony Hamilton Peking	A. K. Midwest Ebony Peking Hamilton Illinois 13-19
Southern Illinois	Haberlandt Illinois 13-19 Midwest Hamilton	Illinois 13-19 Virginia Peking Lexington	Midwest Hamilton Haberlandt Illinois 13-19	Haberlandt Illinois 13-19 Virginia Mammoth Yellow

NOTE—The following names of common Illinois varieties were adopted by the National Soybean Growers' Association on September 1, 1922, as recommended by the Committee on Nomenclature:

Ito San, sometimes called Early Yellow, Medium Early Yellow.

Ebony, also called Black Beauty and Walker.

Peking, also called Sable, Royal, and Essex.

Midwest, also called Medium Yellow, Mongol, Hollybrook (Indiana and Ohio types), Roosevelt, etc.

Printed in furtherance of the Agricultural Extension Act of May 8, 1914. H. W. Mumford, Director.