

SETTING A STANDARD FOR SEED

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Inspecting Red Rock Wheat

Michigan Agricultural College

Extension Division

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The crops of hay, corn, oats, wheat, rye, beans, and barley represent in Michigan an industry valued at nearly \$150,000,000. Not only is this industry vital to the welfare of the consumers of agricultural products, but, controlled as it is by the 200,000 different individual Michigan farmers, it represents the backbone of the livelihood of these 200,000 growers and their families.

MICHIGAN'S GREATEST SEED INVESTMENT

While successful crop production is dependent upon season, soil, fertility, and intelligent cultural methods, of very vital importance is that real foundation of crop life, the seed. It is very conservatively estimated that this seed factor alone in the production of the above crops represents a Michigan investment of more than \$7,000,000 annually. Since the character of the seed used in no way alters most of the acre costs of production, such as land rental, labor, and time of seed bed preparation and of later culture; but does influence materially the bushel cost of production, because of its effect upon the yield, it is essential that only seed of maximum efficiency find favor with the planter.

ATTRIBUTES OF QUALITY SEED

Seed of merit possesses these characteristics:

It shows a strong vigorous germination. Seed of low vitality brings poor, unclean stands and frequently produces diseased crops of inferior quantity. Viable seed utilizes all the forces of its environment to reproduce vigorously its kind.

Good seed is pure. That containing noxious weeds brings certain loss and potential ruin. It is never cheap at any price. Mixtures of other crop seeds, as, for example, rye in wheat, lower seriously the market value of the crop and must be avoided.

Dependable seed is adapted. It is known to have been grown under climatic conditions in keeping with the locality in which it is to be used. Seed, especially of alfalfa, the clovers, soybeans, and corn, is not an assured safe investment unless it is labeled as to its origin by reliable persons or organizations.

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Unlabeled alfalfa seed may likely be a southern grown, common variety, where hardy northern grown seed, preferably of a variety like Grimm, is needed. Unlabeled red clover seed may come from Italy and be incapable of withstanding Michigan winters. Seed properly labeled as to origin permits the purchaser to only that adapted to his climate. The reliable labeling of seed as to the place where it was grown should be insisted upon.

Quality seed is productive. It is advisable wherever possible to have seed labeled as to variety, with assurance that it is genuine. The grower can then familiarize himself with the most productive varieties for his needs and make his choice accordingly.

The careful grower, therefore, looks for good-appearing, quality seed of a proved productive variety. It must be free of impurities and must have been grown under conditions which make it adapted to his needs. On test it has shown a high, vigorous, and healthy germination. Quality, purity, proper origin or adaptation, productivity, vigor and vitality,- these are the characteristics of dependable seed.

APPEARANCE ONLY PARTIALLY DETERMINES SEED'S VALUE

It will be readily noted that many of the seed requirements just listed are not ordinarily met by seed coming through the usual channels. While seed may be pure and have all of the appearance of merit, there is no way of telling from this appearance where the seed was grown or whether or not it is properly adapted. Very frequently, too, the different varieties cannot be distinguished in the seed. A knowledge of the plant in the field, and of its history, is necessary in order to be assured of the seed's varietal purity.



Adapted Quality Seed is an Important Factor in Securing Profitable Corn Yields

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HOW QUALITY SEED IS MAINTAINED

It is not the purpose of this circular to hold out an unattainable ideal. While it may seem difficult to secure seed which meets the standards herewith enumerated, the Michigan Agricultural College and organizations working with it are making it possible for farmers of this State to plant seed which conforms to every one of the standards set forth.

BREEDING, TESTING AND RELEASING NEW VARIETIES

Plant Breeders at the Agricultural College are constantly at work selecting and breeding up improved crops varieties. Their work involves the careful study of the characters of thousands of individual plants. The seed of these plants is carefully increased and tested on the College farm, and when seed of strains of promise has been increased sufficiently it is included in varietal tests, not only on the College farm but also under field conditions on farms in every section of the State. The particular soil and climatic adaptability of a variety is thus determined.

When a variety has demonstrated its merit through all of these tests, it is ready for release to farmers. The Michigan Agricultural College has adopted the policy of making this release to tried individual growers in quantities sufficiently large so that the resulting crop may be handled with the usual farm equipment and, with reasonable caution, may be kept pure. In order to make the increase of such seed effective, so that the good characters of a variety will not be lost through contamination and mixture, there is in this State an organization of farmers known as the Michigan Crop Improvement Association, which produces pure seed of the varieties developed or recommended by the Farm Crops Department of the Agricultural College, under a very rigid inspection system assuring the conformity of the seed to those standards emphasized herewith as characterizing seed of greatest merit.

This first increase of seed, released by the Michigan Agricultural College for field production, is known by the Michigan Crop Improvement Association as Elite stock seed. It may be defined as seed of a pure line selection, or seed of exceptional merit which has demonstrated its superiority in tests conducted or approved by the Farm Crops Department of the Michigan Agricultural College. Elite stock seed may be produced by an individual grower whose work fulfills these conditions. It does not ordinarily pass through commercial channels, being used almost entirely for the purpose of introducing new varieties or improved strains in old ones.

KEEPING FIELD INCREASES PURE

The field production of seed of a variety thus introduced to agriculture is conducted by the Michigan Crop Improvement Association under a very rigid inspection system supervised by the Farm Crops Department of the State Agricultural College. The first inspection takes place in the field within three weeks of harvest. At this time inspectors have two methods of checking up on the varietal purity of the field inspection. In the first place, only fields coming through channels of regularly inspected seed, from original Elite stock, are eligible for inspection. The history of each field inspection is recorded in the pedigree files of the Association. The inspectors' second check on purity is the character of the growing plants in the field itself. No field may pass the inspection of the Association which contains noxious weeds or mixtures not readily removable in cleaning. In order to meet these standards the growers working under this supervision rouse out all mixtures and impurities from their fields.

The field inspection thus gives the Michigan Crop Improvement Association an opportunity to assure all of its customers that its seed is of a variety of known productivity which can be truly labeled as to origin and varietal purity.

CERTIFYING SEEDS OF MERIT

The other characteristics of dependable seed are assured through a final inspection of the seed. Each grower whose field passes the first inspection submits to Association head-quarters a sample of his crop just as it comes from the thresher. This uncleaned sample is given a practical cleaning over a farm-size mill with screens readily available to any seed grower. Analysis is made of the clean seed and representative samples are tested for germination. Seed which passes both the field and this final inspection becomes the *Certified seed* of the Michigan Crop Improvement Association.

The Certified seed grower labels each lot of seed he sells with Association tags which give the varietal name, purity, germination, locality where grown, and any other information of value to seed users. In addition he guarantees, to the full extent of the purchase price, that the seed which he sells will accurately conform to the analysis given on his certification tags.

Thus the system of the development of seed by the Agricultural College and the production on a field scale by the Michigan Crop Improvement Association under its rigid system of inspection, points out every factor which the purchaser must consider in buying seed wisely.

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CHANNELS FOR QUALITY SEED DISSEMINATION

This system of crop improvement and seed dissemination is already exerting a very potent influence on crop production in Michigan. Certified seed passes through every one of the channels through which farmers ordinarily secure seed. A large portion of it is sold directly from one farmer to another. Some growers sell their Certified seed to local dealers and elevators who remarket it to their customers. Others have standing relations with large wholesale seed houses in the State, and from these Certified seed passes through the various channels leading to the ultimate user.

The Seed Department of the Michigan State Farm Bureau, a cooperative organization for seed dissemination, has been by far the largest individual handler of Michigan Certified seeds. It conducts co-operative marketing pools of the various varieties certified, and many of the growers find it profitable and desirable to consign their seed for sale to this organization. Relations have been established between the Farm Bureau Seed Department and co-operative elevators throughout the State, and also similar organizations in several other states which find Michigan seeds desirable. The market for the Michigan grower of Certified seed is thus greatly widened.

THE RAPID SPREAD OF A NEW VARIETY

The efficiency of seed dissemination work in Michigan has been greatly increased by this mobilization of the various forces interested. For example, in the space of but six years' time Robust beans have been increased from their initial release by the Michigan Agricultural College to a point where they today seed from 12 to 15 per cent of Michigan's great bean acreage. In addition, the variety plays an important part in the bean culture of states like New York, Minnesota, and California. This quick increase of pure seed, together with the known productive merit of varieties thus handled, exerts an influence on crop production in the State which annually adds wealth running in the millions.

STARTING OUT NEW CERTIFIED SEED GROWERS

With the ever increasing demand for Certified seed, there has been need for an increasing number of good seed producers. More new growers are required each year than can be started with seed from College increase fields. The choicest lots of regularly inspected seed are therefore set aside in a special grade of merit known as Registered seed. The Registered seed consists of a limited amount of the most desirable lots for seed increase. New growers who desire to produce seed under the inspection and certification of the Michigan Crop Improvement Association must make their start with seed coming directly from the College or with seed of this Registered grade.

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Their fields are then eligible for inspection, as long as they meet the standards laid down by the Michigan Crop Improvement Association.

THE SEED GROWER'S OPPORTUNITY

The growers of Certified seed have been securing prices from 50 to 100 per cent higher than the ordinary commercial price which would be obtained for their crop. Growers throughout the State, who have the soil and facilities for producing quality seed, and who are willing to give it the added attention required in keeping it pure, may find added profit in this rapidly growing enterprise of the production of Michigan Certified seeds.

INSPECTED VARIETIES, THEIR ORIGIN AND DATE OF RELEASE

ROSEN RYE-M. A. C., 1912. The most productive rye for Michigan.

RED ROCK WHEAT-M. A. C., 1913. A bearded soft red winter type of excellent milling quality suited to well-drained fertile loams and heavy soils.

BERKELEY ROCK WHEAT-M. A. C., 1922. A bearded hybrid wheat resulting from a cross between hard and soft winter types. Of good quality, and very winter-hardy.

AMERICAN BANNER WHEAT-M. A. C., 1906. A very dependable bald white winter wheat suited to the lighter loams and less well drain heavy soils.

WOLVERINE OATS-M. A. C., 1917. A very productive variety for lighter loams and upland soils.

WORTHY OATS-M. A. C., 1911. Stiff-strawed. Adapted to very heavy soils.

WISCONSIN PEDIGREE BARLEY-Developed by University of Wisconsin. A six-towed barley well-suited to Michigan.

MICHIGAN BLACK BARBLESS BARLEY-M. A. C., 1918. A short stiff-strawed, smooth-bearded barley. Should be grown only on heavy fertile soils. Best barley for muck.

ROBUST BEANS-M. A. C., 1915. Improved strain, 1922. A very ,vigorous, disease resistant, and productive variety of white navy beans. They require a slightly longer growing season than the usual Michigan common bean.

MANCHU and ITO SAN SOYBEANS-Too early and productive varieties well suited to the needs of Michigan farmers.

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CORN FOR SOUTHERN AND LOWER CENTRAL MICHIGAN

DUNCAN YELLOW DENT-Originally bred by J. R. Duncan at Vicksburg and later improved by him at the Michigan Agricultural College. A leafy, vigorous stalk, and a cylindrical, clear yellow ear. Excellent for both silage and grain.

LAUGHLIN YELLOW DENT-Bred by Charles Laughlin of Dansville and accepted for inspection in 1923. A very productive corn with richly golden-hued ears of excellent type.

CORN FOR CENTRAL MICHIGAN

M. A. C. YELLOW DENT-M. A. C., 1922. Suited for both grain and silage. This variety is a very vigorous corn resulting from a field cross between the Duncan and Golden Glow varieties.

PICKETT YELLOW DENT-A Michigan variety of long standing, developed by Jesse Pickett in Kent county. Earlier than M. A. C. Yellow Dent and not so well suited for silage.

GOLDEN GLOW-Originally bred by the University of Wisconsin. Present Michigan strains have been further improved by ear-to-row work under supervision of the Michigan Agricultural College. Golden Glow has a rather smooth tapering ear and a growthy, leafy stalk.



The Robust Bean, an M. A. C. variety, has proved to be the most productive white navy bean wherever such beans are grown

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CORN FOR NORTHERN MICHIGAN

Northern grown seed of the Pickett or Golden Glow varieties is adapted to the corn-growing sections of the more northerly districts.

HARDIGAN ALFALFA-M. A. C., 1920. A very winter hardy, disease resistant strain of variegated alfalfa. It is a vigorous forage producer and has also been bred with the idea of securing a dependable seed producer for Michigan

CERTIFIED SEED POTATOES-Seed of the better varieties of potatoes is carefully produced under inspection by the Michigan Potato Producers' Association, Secretary H. C. Moore, East Lansing, Michigan.

THE MICHIGAN CROP IMPROVEMENT ASSOCIATION

An open organization of Michigan farmers co-operating with the Michigan Agricultural College in the development, production, and dissemination of quality seed from improved crops varieties.

| Officers elected annually from membership | Officers ex-officio acting as directors | Officers appointed by Board of Directors from Extension Staff of the Michigan Agricultural College |
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| President | Professor of Farm Crops, Michigan Agricultural College | Secretary-Treasurer |
| Vice-President | Plant Breeder Michigan Agricultural College | Clerk |
| Six Directors | Manager Seed Department Michigan State Farm Bureau | Superintendent of Introductions and Inspections |

FEES

- (a) Annual membership in Michigan Crop Improvement Ass'n. \$1.00
- (b) Inspection fee for each variety, any acreage up to 20..... 8.00
- (c) Additional fee for each acre over 20 .20

Special

(a) In case four or more in one community arrange to send in their applications together so that one trip will cover all these inspections, the \$8.00 fee for each variety is reduced to \$6.00. No such reduction, however, will be made for corn inspection, and the lower rate will apply for other crops only in cases where transportation within the community is furnished by a local agency.

(b) A closing date will be announced in a letter to all persons on

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record as having crops eligible for inspection, announcement to be made at least two weeks prior to the date established. When application is received later than this closing date, a delinquent fee of \$2.50 will be charged for each inspection. The association reserves the right to refuse all applications received one week after the closing date.

(c) Fees cover both field and threshed seed inspection.

AVAILABLE CROP BULLETINS

Available bulletins relating to farm crops, published by the Michigan Agricultural Experiment Station, include:

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| Regular Bulletin - | No. 289, Corn Growing in Michigan. |
| Special Bulletins - | No. 97, Alfalfa in Michigan. |
| | No. 100, Soy Beans. |
| | No. 101, Oats in Michigan'. |
| | No. 105, Rosen Rye. |
| | No. 106, Sugar Beet Growing. |
| | No. 109, Dependable Michigan Crop Varieties. |
| | No. 117, Potato Culture in Michigan. |
| Circular Bulletins- | No. 31, Red Rock Wheat. |
| | No. 32, Barley Improvement. |
| | No. 42, Short Season Hay Crops. |
| | No. 46, Sweet Clover. |