

INFLUENCE OF AGE ON THE VALUE OF SEED CORN

GEORGE H. DUNGAN

University of Illinois, Urbana, Illinois

In a rapidly expanding business like the hybrid seed corn industry overproduction may be expected in some seasons. The question naturally arising is "How valuable is seed corn held over from one year to the next, and through how many years is it practical to hold seed corn."

The corn used in an experiment to test the value of old seed was Station Yellow Dent, an open-pollinated variety that has been in production at the Illinois Agri-

cultural Experiment Station for about twenty years. The seed of this corn represented the highest quality obtainable. It was plant selected, stored on hangers where rapid drying would take place and was germinated for the selection of ears carrying vigorous and nearly disease-free kernels.

Lots of seed corn produced in different years were planted in plots two rows wide and ten hills long, and replicated

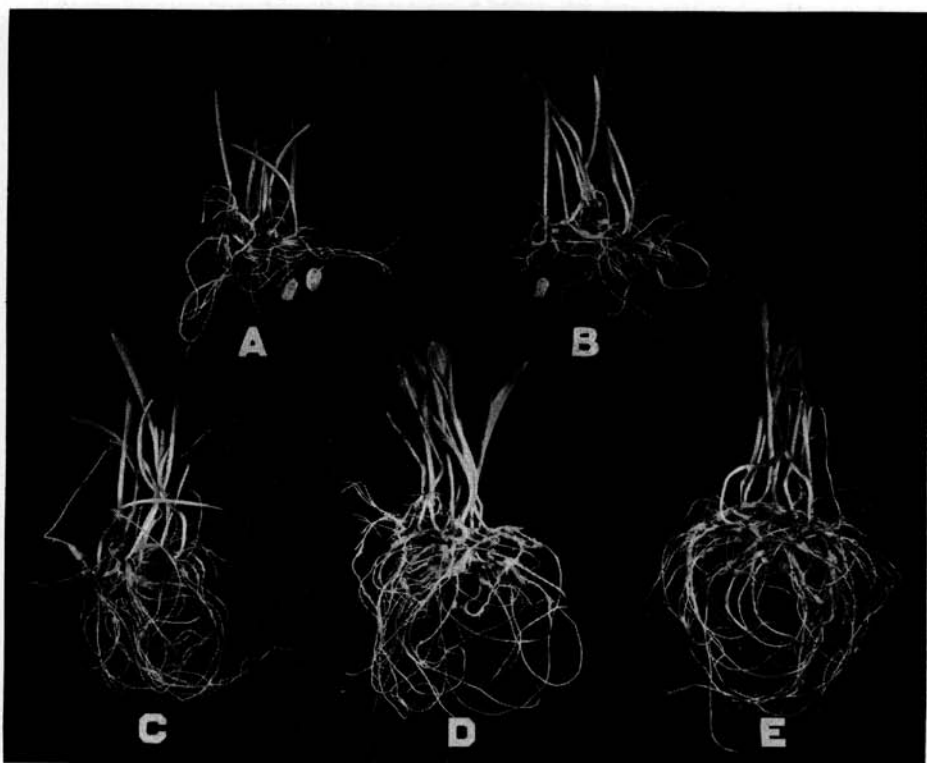


Fig. 1.—Six-day old seedlings produced by 10 kernels of Station Yellow Dent seed corn of different ages: A—8 years old; B—6 years old; C—4 years old; D—2 years old; E—1 year old or new seed.

TABLE 1.—GERMINATIONAL BEHAVIOR, SEEDLING CHARACTERS, AND YIELD PER ACRE AS INFLUENCED BY AGE OF STATION YELLOW DENT SEED CORN

Age	Viability	Plumule length ¹	Sprout value ²	Weak seedlings and dead kernels	Average yield per acre
Years	perct.	mm.	perct.	perct.	perct.
1.....	99	140	43	12	100.0
2.....	100	120	43	29	102.0
3.....	98	120	37	34	96.8
4.....	99	120	41	31	93.1
5.....	92	136	40	29	91.0
6.....	94	109	32	45	91.5
7.....	85	83	21	72	76.4
8.....	73	90	19	68	-----

¹ Plumule length was obtained at the end of a 6-day germination test at a temperature of 80-85° F.

² Sprout value represents the dry weight of plumules and roots expressed as a percent of the total dry weight of the entire seedlings.

nine times. Data on viability, vigor of growth, and yield per acre were obtained.

Size of seedling development at the end of a six-day germination test is shown in Fig. 1. Data on germination and yield per acre are presented in Table 1.

A drop in viability occurred in the case of five-year old seed, but in plumule length, in sprout value, and in percentage of strong seedlings the decided drop did not show up before the sixth year. Yield decline after the second year was gradual but it did not fall off sharply until after the sixth year. Reduction in yield was apparently the result of both lowered viability of the seed and a falling off in vigor of the surviving plants.

Deterioration in seed corn probably varies with the quality of the original seed, its inherited capacity to survive long periods of storage, and the conditions under which it is stored. Some inbred strains lose their viability very rapidly. In 1939 tests seed of Illinois Hybrid 751, grown in 1937, produced a yield only two bushels less than 1938 seed of this hybrid, whereas, a similar test with Illinois Hybrid 877 showed a yield reduction for two-year old seed of 13.8 bushels an acre. In the light of these results with hybrids, Station Yellow Dent seed of good quality retained its value for planting to a remarkable degree.