

**Dr. Arnold Matson, photo in seed
lab**



Dr. Arnold Matson

“early years”

- Born on a farm in SE Missouri near Gideon
- Completed BS degree in Agronomy
- Served in World War II
- Returned home and taught Vocational Agriculture for 7 years in Gideon MO
- At the same time was conducting soils experiments for Univ. of MO Soils Depart.

Dr. Arnold Matson

“early years, con’t”

- Planned to work for the U. of Missouri Soils Department
- Instead was persuaded to work for a USDA-ARS soybean breeder, Dr. Leonard Williams
- Completed his MS and PhD (1961) under Dr. Williams
- Dr. William’s other PhD students included Dr. Chuck Caviness and Dr. Detroy Green

Dr. Arnold Matson

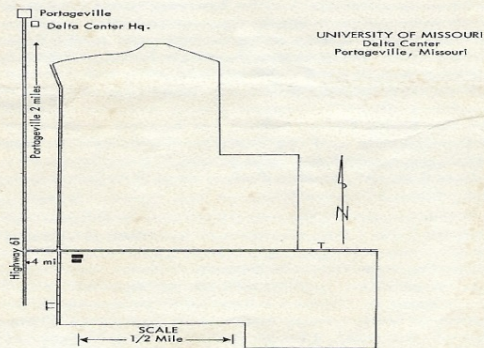
“University of Missouri years”

- Initial soybean breeding work at the U. of Missouri Exp. Station at Sikeston, MO
- Moved his work to the Delta Center near Portageville, MO when it opened
- While at the Delta Center conducted research that broke the linkage between the *Rhg4* and *i* locus (Matson and Williams. 1965. *Crop Sci.*)
- Released the MG IV yellow seeded, SCN resistant variety, Custer
- Worked a U. of Missouri for 10 years

Dr. Arnold Matson crossing soybeans



Selected plants are crossed to produce new, superior strains of cotton and soybeans (pictured). Scientists at this Center were the first to break linkage between nematode resistance and colored seed coat in soybeans.



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DELTA CENTER

Portageville, Mo.

8/64/2M

Dr. Arnold Matson

“SRF years”

- In 1965 was approached by representatives of 17 seed companies to start a soybean breeding company – SRF; Soybean Research Foundation (they believed the United States was going to pass the PVP law)
- By the time the PVP law was passed in 1970 SRF had 27 member companies
- SRF was located in Mason City, Illinois
- SRF and Coker Pedigreed Seed Company (Hartsville SC) were transformative organizations in our soybean breeding community

Article from the Peoria Journal Star

Crossbreeding Promises Better Soybean

By JAMES E. FOSIER
Staff Writer

MASON CITY — They're growing a new breed of soybeans in the old Mason City High School.

Soybean Research Foundation has taken over the west section and agricultural building of the school which burned in 1963, and the foundation's director of research, Dr. Arnold Matson, has about 2,000 bean plants growing in a greenhouse there.

He cross-pollinates them in hopes of turning up a bean with more protein and no less oil.

COMMERCIAL SOYBEANS contain about 20 per cent oil and 40 per cent protein. Until about two years ago, breeders were primarily interested in the oil, which is protein free.

Oil continues to be an important commercial product of the soybean industry, but the market for protein is increasing.

"Since 40 per cent of the bean is neither protein nor oil, our aim is to reduce that excess baggage by increasing protein content," Dr. Matson said.

"We know we cannot expect a bean to consist only of protein and oil, but there is no specific limit on its protein content. Some varieties have as high as 48 per cent protein, but aren't commercially useable. Some produce dwarf plants. Others have low oil content. Others produce a small harvest of beans. Crossing them with commercial varieties may result in a strain that has a high protein content without the disadvantages of these non-commercial

the end of this sentence, and Dr. Matson has to remove the pollen from one blossom, and place in its stigma the pollen from another variety of soybean.

The greenhouse is lit by sunlight plus fluorescent lights which include the blue-red spectrum. By using the greenhouse, three generations of seed can be produced in 12 months.

Seeds from artificial crossings are grown under field conditions—some in Chile, on South America's west coast, where two generations of plants can be produced in a growing season while it's winter in central Illinois. Dr. Matson was there in November to supervise planting and will return there in April, at the end of the growing season.

Seeds from the fourth and

fifth generations of a laboratory-produced hybrid are tested for protein and oil content. The oil is removed from the seed with a solvent, then separated from the solvent. Protein content is calculated through a sort of Rube Goldberg process. The seeds are ground into a fine meal, which is dissolved in water. The solution is then mixed with a water-soluble dye. The more protein in the solution, the less dye. A photometric process determines the amount of protein in the sample.

SIGNIFICANT increases in the protein content of soybeans can affect not only the soybean industry, but also the national economy, and could be a major factor in the world fight against hunger, according to Dr. Matson.

"The United States produced 931-million bushels of soybeans

last year," he said. "They are our leading export commodity. While there has been a surplus of soybean oil, there has never been one of bean meal, which is the source of its protein.

"While the meal has many industrial and chemical uses, its principal value is a food-stuff. Since the soybean provides protein in a concentrated form that can be shipped and preserved relatively easily, any increase in that protein content can have a major effect on the welfare of the world.

The Soybean Research Foundation is supported by 22 seed companies supplying growers in Ohio, Indiana, Illinois, Iowa and Missouri. These are the country's first, second, third, fifth and sixth largest soybean producing states, according to World Book En-

cyclopedia. (Illinois ranks first, followed in order by Iowa, Indiana, Minnesota, Missouri and Ohio in national production.) Two area firms support this program—Ainsworth Seed Co. of Mason City and Sommer Bros. Seed Co. of Pekin.

The location of the foundation in Mason City may be a by-product of the March 5, 1963, fire which destroyed the east section of the Mason City High School. The west section and an agricultural building to the north of it survived the fire. The Board of Education decided to rebuild at another location and put the old school site up for sale. Roy Hess, a retired farmer living in Mason City, purchased it. The west section of the old building was renovated, and has become the institute's offices and laboratories. A greenhouse has been built immediately east of it.



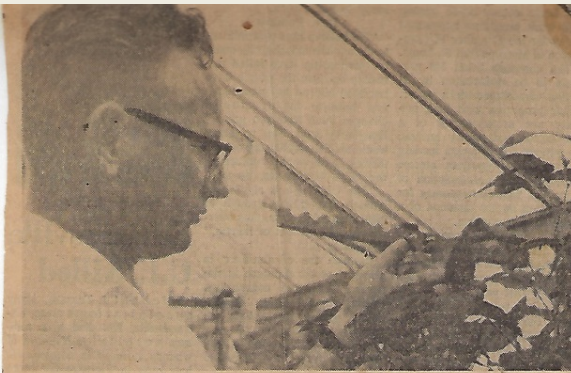
DR. ARNOLD MATSON artificially pollinates a blossom on a soybean plant in Soybean Research Foundation's greenhouse in Mason City to produce a hybrid strain.

Dr. Arnold Matson

“SRF years, con’t”

- Dr. Matson was a very progressive soybean breeder
 - Employed lighted greenhouses for crossing
 - Employed off-season nurseries (Chile) for generation advancement
 - Released SRF’s first variety in 1970, SRF300
 - Branded the SRF product line by marketing narrow-leaflet soybean varieties
 - Worked for SRF for 20 years and retired in 1985

Article from the St. Louis Post-Dispatch



Arnold L. Matson, director of research for Soybean Research Foundation, Inc., Mason City, Ill., points out the distinctive leaf characteristic of a new soybean variety, SRF 300, developed by the foundation. The narrow leaves admit more light and permit better air movement around the lower part of the plant.

New Soybean Variety, Developed In Illinois, Has Narrow Leaves

By a Special Correspondent of the Post-Dispatch
MASON CITY, Ill., Jan. 14—A new soybean variety, SRF 300, with a narrow leaf that permits more light and air to reach the lower part of the

plant, has been developed by commercial firm here. Arnold L. Matson, director of research for Soybean Research Foundation, Inc., said the seed will be available to farmers in 1970.

Matson, former researcher at the University of Missouri College of Agriculture, said the new variety is a distinct departure from the wide leaf varieties.

"With the additional light and with the better distribution of carbon dioxide in the air around the leaves, the plant is more efficient, stronger and healthier and higher yields are the result," Matson said.

Matson also reported that plants of the SRF 300 variety produce a preponderance of four seeded pods with an occasional five seeded pod, whereas other varieties produce mainly two and three seeded pods.

The SRF 300 variety is not resistant to cyst nematode, Matson said. Cyst nematode is a soybean disease that has caused extensive damage to the crop in Southeast Missouri. The University of Missouri Extension Center in St. Louis also reports that the cyst nematode has been discovered in the Missouri river bottoms, including some cases in St. Louis county.

The new variety also matures too early for practical use in Southeast Missouri, Matson said. He said it has about the same growing period as the Wayne variety.

The foundation claims it may be the first commercial firm to develop a new soybean variety without the assistance of federal funds.

Frank Haston of the Extension Center confirmed the firm's claim. Haston said he knew of no soybean variety developed in recent years by anyone other than federal or state researchers.

The Soybean Research Foundation is sponsored by 27 midwestern seed firms, including three in Missouri and eight in Illinois. It was formed in 1965 for the purpose of developing new varieties of soybeans without the aid of public funds.

The foundation's accelerated program involves multiple generations of breeding and testing in the field and greenhouses at Mason City, plus early establishment of winter breeding and testing facilities in Chile in South America, Matson said.

Matson and his staff developed and proved and will release the new variety almost



Dr. Arnold Matson (his legacy)

- He cleared the path for all private soybean breeders in our community
- He instilled a love of soybean breeding in his son, Dr. Kevin Matson, a highly accomplished, 35-year soybean breeder and geneticist at Monsanto
- His legacy continues to grow with his granddaughter, Gretchen (Kevin's oldest daughter) who recently started her career with Monsanto
- He is proof there is life after a robust and highly successful career in soybean breeding

