

IOWA STATE UNIVERSITY

Iowa State University Research Foundation and The Committee for Agricultural Development

Germplasm lines being released for research and breeding purposes

AR11SDS/SCN is highly resistant to *Fusarium virguliforme*, the fungus that causes Sudden Death Syndrome (SDS) in soybean. The germplasm line has adequate yield and agronomic traits which sets the line comparable to other public soybean cultivars of similar maturity. The most important characteristic of the line is that it has proven SDS-resistance by all current existing screening procedures. It is also resistant to soybean cyst nematode (SCN) another important pest present in soils in the Midwestern Region. Its SCN resistance derives from PI 88788. AR11SDS is of early to mid-MG II. It has purple flowers, gray pubescence, brown pods, seed with buff hila, yellow seed coat, and dull seed coat luster. The line is adapted to environmental conditions in the state of Iowa, and may be used in breeding to develop cultivars with dual resistance to SDS and SCN. Depending on the environment, it is of similar maturity than IA2068, or three to four days later than IA2068.

AR4SCN, AR5SCN, AR6SCN, AR7SCN, AR8SCN are five germplasm lines developed by Iowa State University for breeders seeking to develop early maturity groups of soybeans including SCN resistant cultivars, germplasm lines or genetic stocks.

AR9BSR is highly resistant to *Phialophora gregata*, the fungus that causes Brown Stem Rot (BSR) in soybean. The line is adapted to environmental conditions in Iowa and may be used in breeding to develop BSR-resistant cultivars.

AR10SDS is highly resistant to *Fusarium virguliforme*, the fungus that causes Sudden Death Syndrome (SDS) in soybean. The line is adapted to environmental conditions in Iowa and may be used in breeding to develop SDS-resistant cultivars.

A95-684043 SCN Resistant

Flower	Pod	Pubescence	Hilum	Coat
Purple	Brown	Tawny	Black	Dull

A95-684043 is resistant to SCN phenotypic races 1,3, and 5.



AR1, AR2, AR3

ISURF is pleased to announce that three soybean germplasm lines are being released for research and breeding purposes. AR1 has dual disease resistance, and AR2 and AR3 are highly Fe-efficient. Use of each or any of the three new germplasm lines might be beneficial in further breeding efforts.

AR1 is resistant to soybean cyst nematode and Phytophthora root rot. The specific resistance to Phytophthora root rot is conferred by the gene Rps1-k which protects the soybean from numerous Phytophthora root rot races present in the state of Iowa. Rps1-k provides resistance to Races 1-11, 13-15, 17, 18, 21-22, 24, and 26. It is also resistant to SCN phenotypic Race 3 (H.G. Type 0) and moderately resistant to Race 4 (H.G. Type 2.5.7). AR1 has purple flowers, tawny pubescence, tan pods at maturity, and seeds with black hila in its majority (95% black hila and 5% brown hila) and dull seed coat.

Resistance of AR1 to Phytophthora root rot and to SCN has been extensively evaluated and confirmed by different means, i.e. greenhouse inoculations for Phytophthora root rot. For SCN, plantings on SCN-infested soil were conducted to determine the H.G. type, and molecular analysis has been done to determine QTL associated with SCN resistance. It possesses QTL N, as determined by molecular analysis which is different from the Peking allele that also confers resistance to SCN.

It is a Maturity Group II. AR1 has adequate yield and it is adapted to environmental conditions in the state of Iowa and other states in which soybeans of MG II are planted. Because of its dual-disease resistance (SCN and Phytophthora root rot) and its adequate seed yield, it may be used in breeding to develop SCN- and Phytophthora root rot-resistant soybean lines with improved yield potential.

AR2 and AR3 are soybean germplasm lines which are highly Fe-efficient when planted on calcareous soils in Iowa. The Fe-efficiency score has been proven to be associated with molecular marker Satt481 that may be used in further breeding efforts as a molecular marker. The lines may be used in breeding to develop IDC-resistant lines with improved yield potential. AR2 is of Maturity Group II, similar in maturity to Century 84, and AR3 is eight days earlier than Century84

If you are interested in obtaining seed of these lines, packets of 50 seeds will be available for \$200.00 and distributed on a first come basis for research and crossing. A license agreement must be signed with the Iowa State University Research Foundation Inc. and payment must be received prior to receiving seed.

Website:

www.agron.iastate.edu/cad

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