Soybean Breeding Program Update

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The Iowa State soybean breeding program started in 2014. The focus of this program is to develop soybean varieties for Iowa and Midwest farmers. Additionally, researchers are active in scientific discovery and tool development related to breeding and crop production. The group consists of graduate and undergraduate research students who are going to become the next generation scientists and breeders capable in agriculture, engineering, and data sciences-related topics. The work this group does at Iowa State farms is critical for their success, as this generates valuable research and breeding data. Since inception, this group has commercialized four soybean varieties that are suitable for food-grade market, giving high premiums to farmers. The group is very appreciative of the support received from farm staff and managers. In 2022, there were over 40,000 variety plots on various research farms across Iowa. These research plots supported several graduate students and fellows.

Group mission. To educate the next generation of breeders in agriculture, engineering, and data science to develop tools and technologies that advance science and empower farmers to increase profitability and sustainability.

Group research goals. To improve agricultural production and positively impact farmers and the agriculture industry through the development of new products (cultivars, germplasm, methods, tools), gene discovery, and research insights on pertinent topics. Specifically, breeding non-GM and food grade soybean.

Update. The group is preparing to commercialize one new variety in 2022-2023, and foundation seed production was completed in fall 2022. This new variety combines good seed yield with high protein, higher sucrose, low raffinose, low stachyose, and larger seed size. It has a maturity rating of mid-MGII and will meet the need of companies and farmers interested in growing a food-grade soybean due to clear hilum color along with combination of yield, protein, carbohydrate, and seed size traits. Previously, three varieties IAS19C3, IAS25C1 and IAS31C1 were commercialized. IAS19C3 is a high yield and high protein line with yellow hilum, while IAS25C1 and IAS31C1 are high yielding yellow hilum varieites with soybean aphid tolerance. A continuous output of new varieties catering to the need of soybean farmers is expected. Twenty-two research papers were published in the past two years on soybean, helping advance digital and precision agriculture, disease and stress protection, yield enhancement and development of better methods, tools, and breeding approaches. Ten graduate students have completed their degrees, and are pursuing various jobs in public or private sector or continuing their education.

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