Development of Near-Isogenic Lines of Soybean Varying in Seed Protein and Oil Content. (C01-westgate125607-Poster)

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Abstract:

Many developmentally- and environmentally-regulated genes likely control soybean seed composition. As such, studies aimed at identifying physiological mechanisms controlling variation in seed composition are hampered by complex genetic X environmental interactions. To simplify this complexity, we have developed a set of near-isogenic lines that vary widely in seed protein content. Two crosses were made in 1989 to an adapted line Evans (MG0: seed protein 36% dwb) using PI153.296 (MG000: seed protein 48%) and PI438.472 (MG00: seed protein 37%). Divergent selections for high or low seed protein were made among approx. 350 F3-derived F5 recombinant inbred lines (RIL) from each cross. Selected RILs at F6 were used for BC1; BC2 was made onto selected BC1F4 progeny. BC3 was made using BC2F6 lines. At each generation, progeny were ranked for protein content and scored for favorable agronomic characteristics. Protein content of the near-isogenic lines (94% isogenic to Evans) ranges from 33 to 46% dwb. These lines provide a unique genetic resource for expression profiling, metabolic studies, and developing molecular markers associated with variation in soybean seed composition.

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