

SEED QUALITY DYNAMICS OF SOYBEAN GROWN UNDER COMPETITION.

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It is well known that increasing weed competition adversely affects soybean yield; however there is a lack of information regarding how weed competition alters seed oil and protein. A two-year field experiment investigated the impact of competition on seed quality for five soybean cultivars (Asgrow 4603, Asgrow 4403, and Asgrow 3903, Forrest, and Essex). The different cultivars were planted under three levels of competition, which were established through application of the pre-emergence herbicides, s-metolachlor and cloransulam, at three different rates. Weed competition impacted seed protein (2004) and seed oil (2005). Seed oil and protein were measured using NIR spectroscopy. Seed protein increased (between 0.7 and 1%) and seed oil decreased (between 0.29 and 0.5 %) under the most intense competition. There were cultivar differences with respect to oil and protein production, but interaction of cultivar and weed competition was evident for seed protein content in 2005. The Essex cultivar produced the greatest protein and the lowest oil content across both years. Asgrow 4403 produced the highest oil amongst all cultivars both years, but produced seed protein content similar to the other Asgrow varieties. Total seed yield was also measured and decreased under increasing weed competition. This study indicates the importance of biotic stress on seed production and quality and future studies should investigate the mechanism whereby seed quality is altered under competition.