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Soybean composition variance in fields

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Abstract
Much attention has been given to determining the causes of soybean yield variability across fields. However, little attention has been given to whether seed composition may contribute to the variability. In 1998, researchers at Iowa State University measured soybean protein and oil variability across a 50-acre field in central Iowa. The field contained a single variety, and approximately 10 soybean plants were collected from 50 points uniformly distributed across the field. The seeds were sampled for oil and protein content. Protein ranged from 34.4 to 37.9 percent, whereas oil ranged from 18.1 to 19.8 percent.

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In 1998, researchers at Iowa State University measured soybean protein and oil variability across a 50-acre field in central Iowa. The field contained a single variety, and approximately 10 soybean plants were collected from 50 points uniformly distributed across the field. The seeds were sampled for oil and protein content. Protein ranged from 34.4 to 37.9 percent, whereas oil ranged from 18.1 to 19.8 percent.

Although patterns are evident in the field (Figures 1 and 2), they do not appear to follow topography or soil type. Additional work is planned to unravel the causes of composition variability. The sum of oil plus protein is important in determining processing value of soybeans. If we can understand the site-specific factors that influence composition, we can select for varieties that maximize processing value. This approach will become more important if we move toward selling soybeans based on processing value, rather than on bushels per acre.

Figure 1. Distribution of protein content in a 50-acre soybean field near Perry, IA (1998).
Figure 2. Distribution of oil content in a 50-acre soybean field near Perry, IA (1998).

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