

# Yield and Quality Characteristics of Food-Type Soybeans

Greg La Barge, Extension Agent, Agriculture and Natural Resources

## Objective

To determine yield, protein and oil characteristics of food-type soybean varieties.

## Background

|                |  |                |                              |
|----------------|--|----------------|------------------------------|
| Cooperator:    | Bill Shininger   | Fertilizer:    | None                         |
| County:        | Fulton   | Herbicide:     | Dual 2 pts/A                 |
| Soil Type:     | Mermill loam   |                | Raptor (4 oz/A)              |
| Tillage:       | Chisel plow fall,<br>field cultivator (spring)               | Variety:       | Select (6 oz/A)<br>See table |
| Previous Crop: | Corn   | Planting Date: | May 31, 2001                 |
| Soil Test:     | pH 7.1, P 53 ppm,<br>K 230 ppm, OM 2.2%,<br>CEC 8.1 meq/100g | Seeding Rate:  | 180,000 seeds/A              |
|                |  | Harvest Pop:   | Average 145,000 plants/A     |
|                |  | Harvest Date:  | October 13, 2001             |

## Methods

The plot design was a randomized complete block with three replications. Plots were 14 ft x 22.5 ft. The plots were planted with a planter in 15-inch row spacing. Varieties were solicited with clear or yellow hilum from several companies that donated the seed. The growing season started wet in May after planting and was dry during July and August. Samples were collected at harvest for analysis of protein, oil, and seed size with analysis performed by the PSL Genetics, Tipton, Ind., using standard analytical procedures.

**Table 1. Variety Characteristics**

| Variety   | Maturity | Hilum Color | Company Providing Seed               |
|-----------|----------|-------------|--------------------------------------|
| OSIA 3136 | 2.6      | Clear       | Ohio Seed Improvement Association    |
| OSIA 3850 | 2.6      | Clear       | Ohio Seed Improvement Association    |
| OHFG3     | 2.7      | Clear       | Ohio Seed Improvement Association    |
| OHFG1     | 3.3      | Clear       | Ohio Seed Improvement Association    |
| Beeson    | 2.6      | Light Black | Ohio Seed Improvement Association    |
| Thorne    | 3.1      | Black       | Ohio Seed Improvement Association    |
| OSIA 3818 | 2.7      | Black       | Ohio Seed Improvement Association    |
| OSIA 3145 | 2.7      | Clear       | Ohio Seed Improvement Association    |
| SQC 2900F | 3.1      | Clear       | Shininger Quality Seeds, Delta, Ohio |
| Rupp 272  | 2.7      | Clear       | Rupp Seeds, Inc., Wauseon, Ohio      |
| Rupp 271  | 2.7      | Clear       | Rupp Seeds, Inc., Wauseon, Ohio      |
| Rupp 274  | 2.7      | Clear       | Rupp Seeds, Inc., Wauseon, Ohio      |
| Rupp 281  | 2.8      | Clear       | Rupp Seeds, Inc., Wauseon, Ohio      |
| Rupp 282  | 2.8      | Clear       | Rupp Seeds, Inc., Wauseon, Ohio      |
| SQC 2803F | 2.8      | Black       | Shininger Quality Seeds, Delta, Ohio |
| OSIA 3140 | 3.4      | Clear       | Ohio Seed Improvement Association    |

## Results

**Table 2. Soybean Yield and Quality.**

| Variety    | Yield<br>(bu/A) | Seed Size<br>(#/lb.) | Oil<br>(%) | Fiber<br>(%) | Protein<br>(%) |
|------------|-----------------|----------------------|------------|--------------|----------------|
| Rupp 272   | 41.3            | 2277                 | 20.7       | 5.3          | 43             |
| OHFG1      | 40.3            | 2145                 | 21.8       | 5.3          | 41.2           |
| OSIA 3140  | 38.5            | 2520                 | 22.3       | 5.5          | 41             |
| SQC 2803F  | 37.7            | 2322                 | 20.9       | 5.5          | 42.8           |
| OHFG3      | 37.3            | 2043                 | 21.3       | 5.4          | 42.5           |
| Rupp 274   | 37.1            | 2115                 | 21.1       | 5.2          | 42.8           |
| SQC 2900F  | 36.9            | 2657                 | 22         | 5.6          | 39.5           |
| Rupp 271   | 36.6            | 2223                 | 21.2       | 5.2          | 42.3           |
| Rupp 282   | 36              | 2180                 | 21.4       | 5.3          | 42.2           |
| Beeson     | 34.6            | 2313                 | 21.8       | 5.3          | 41.4           |
| OSIA 3818  | 34.5            | 2190                 | 21.4       | 5.4          | 42.1           |
| OSIA 3145  | 34.3            | 2270                 | 21.3       | 5.4          | 42.1           |
| OSIA 3850  | 34.3            | 2497                 | 22.4       | 5.2          | 41.7           |
| OSIA 3136  | 33.7            | 2313                 | 21.3       | 5.3          | 42.4           |
| Thorne     | 32.6            | 2740                 | 22         | 5.5          | 41.9           |
| Rupp 281   | 32              | 2125                 | 21.2       | 5.2          | 42.7           |
| LSD (0.05) | NS              |                      |            |              |                |
| F test     | <1              |                      |            |              |                |

## Discussion

Beeson and Thorne are standard varieties found desirable by Japanese markets for food uses other than tofu. They were included for comparison of yield and quality factors. The OSIA 3818 line is not really a food-type line; however, its special trait is low linolenic acid in the oil. Desirable food-type beans for export markets tend to have a higher protein and larger seed characteristics.

For additional information, contact:

Greg LaBarge  
The Ohio State University  
labarge.1@osu.edu