ONE of the most important factors in connection with breeding soybeans is the accurate evaluation of new strains in the yield-testing program. This is especially true when testing strains in which there is not much spread in the yields. Published data on plot technics with this crop are very limited.

In an effort to evaluate some of the present plot technics used in soybean testing, a study of border effect was undertaken at Lafayette, Ind., by the U. S. Regional Soybean Industrial Products Laboratory and Purdue University Agricultural Experiment Station cooperating, with four varieties of soybeans. The work was conducted over the 4-year period from 1938 to 1941, inclusive.

The data of Arny and Hayes (1) show increases in yield resulting from border effect from only the sides of plots which varied from 7.9 to 15.3% with an average of 12.5% in oats, from 14.1 to 23.7% with an average of 18.4% in wheat, and from 21.1 to 45.8% with an average of 26.3% in barley. They observed a rearrangement in yield rank due to border effect and decided to remove the plants from an area at least 1 foot wide within the margins of variety test plots to obliterate border effect.

Love and Craig (3), in discussing cereal breeding methods, state that, "It is obvious that if the end of each row is cut off, more nearly uniform conditions may be obtained and the effect of increased nutrition which occurs at the ends will not enter into the calculations and modify the results."

McClelland (4) shows increases in yield of 8.3%, 8.5% and 7.4%, respectively, for winter oats, winter wheat, and spring oats due to border effect. He concluded that removing or including the border rows made little difference in the comparison of yields.

From the data obtained by McRostie and Hamilton (5) with grasses and legumes they concluded that, "The inclusion of the border foot in plots surrounded by cultivated paths is associated with inaccuracy of result". Their data on yields of individual plants of western rye grass show increases ranging from 5.87 to 54.11% attributed to border effect.

1Contribution from the Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, and Bureau of Agricultural and Industrial Chemistry, U. S. Regional Soybean Industrial Products Laboratory, U. S. Dept. of Agriculture, and Purdue University Agricultural Experiment Station, Lafayette, Indiana, cooperating. Received for publication September 4, 1942.

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3A cooperative organization participated in by the Bureaus of Agricultural and Industrial Chemistry and Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, of the U. S. Dept. of Agriculture, and the Agricultural Experiment Stations of the North Central states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

4Journal paper No. 22, Purdue University Agricultural Experiment Station.

5Figures in parenthesis refer to "Literature Cited", p. 666.