ADEQUATE amounts of nitrogen for the maximum production of non-leguminous crops can be added to the soil by plowing under sufficient quantities of summer or winter legumes in the southern United States. However, unless care is taken to plow under the summer legumes at the right time of the year, large amounts of nitrogen released from the decaying legumes may be lost by leaching. High temperatures and moderately high rainfall in the late fall and early winter in this region favor rapid decomposition of organic matter plowed under in the fall. Winter rains then leach the liberated plant food, especially nitrogen, into the subsoil and out of reach of the spring crop.

Mooers (3) found that wheat planted on plots where cowpeas had not been grown, or grown and removed as hay, or grown and plowed under produced yields of 15.5, 16.8, and 22.3 bushels per acre, respectively, for a 20-year period. In a later publication he (4) presented data to show that cowpeas plowed under in the fall resulted in lower yields of corn than where the legume was not plowed under until spring.

In his work with lysimeters, Jones (1) found that the time of plowing under the various kinds of green manure crops was extremely important in terms of nitrogen lost, rate of decomposition of the plant residue, and the effect on the following crop.

The experiment, the results of which are reported herein, was undertaken for the purpose of studying under field conditions the effect of spring and fall plowing under of soybeans on the conservation of the legume nitrogen and on the yields of succeeding crops.

**PLAN OF THE EXPERIMENT**

Twenty-four 1/600-acre concrete bins were built with side walls extending 18 inches into the ground. The soil within the bins was removed and was replaced with a well-composted Norfolk fine sandy loam. Plot treatments were replicated four times.

The following six cropping systems were used: (a) Corn followed by cotton. The cotton and corn stalks were not removed but were plowed under in the spring. (b) Corn interplanted with soybeans and followed by cotton. The soybeans and corn stalks were left on top of the ground and were plowed under in the spring before the cotton was planted. Cotton stalks were plowed under in the spring before the corn and soybeans were planted. (c) Corn interplanted with soybeans and followed by cotton. The corn stalks and soybeans were plowed under.

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2Former Head of the Department, now deceased, and former Head of the Department now Head, Department of Agronomy, Purdue University, Lafayette, Ind., respectively.

3Numbers in parenthesis refer to "Literature Cited", p. 1010.