

# **Evaluation of Intercrops for Snap Beans, Plateau Experiment Station, 2000**

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## **Interpretative Summary**

Production of snap beans was not greatly affected by the use of crimson clover or Kobe lespedeza intercrops. The use of intercrops provided good soil cover which should be useful in reducing erosion in snap bean production.

## **Introduction**

No-till production of snap beans has not been consistently successful in Tennessee. Some research trials have been very successful, but attempts to repeat the same trial procedures have failed. Preparation of a nice smooth seedbed for planting snap beans can lead to erosion with the heavy rainfall levels in Tennessee. Since no-till has not been fully successful, intercropping trials have been conducted in recent years to evaluate crops and weed control procedures for use with snap beans. Kobe lespedeza and crimson clover were selected as the most suitable intercrops for snap beans. Certain herbicides are labeled for legume intercrops and snap beans. An experiment was conducted at the Plateau Experiment Station at Crossville, TN in 2000 to evaluate performance of snap beans with intercrops.

## **Materials and Methods**

The site was prepared for planting using conventional tillage in early June. Fertilizer was broadcast at 300 lb/A of 15-15-15 before final disking on July 13. Plots were direct seeded with 'Hialeah' beans on July 13. Plot size was two rows, 20 ft long and 160 seeds were planted per row. Rows were spaced 30 inches apart. Experimental plot design was a randomized complete block with four replications. EPTC (Eptam) at 3 lb ai/A was applied PPI for weed control before final disking on July 13. Intercrops of crimson clover or Kobe lespedeza were seeded after planting on July 13. The conventional plots were cultivated on August 11. Esfenvalerate (Asana) was applied for insect control on August 31.

Plots were mechanically harvested on Sept 13. Plant height and width were recorded at harvest. The percentage of ground covered with vegetation was rated at harvest. A 2 lb sample of harvested pods was collected from each plot. The number of pod clusters was counted for each sample. The sample was separated into trash, broken, pin beans and marketable beans and the percentage of each was calculated. A sample of 25 whole pods was measured for length, and rated for smoothness, straightness and color. Ratings were on a scale of 1 to 5 with 5 being smooth, straight, or dark color. All data were analyzed by analysis of variance methods, and means were separated by Duncan's multiple range tests at the 0.05 level of probability.

## Results and Discussion

Intercrops had little effect on production and plant growth of snap beans (Table 1). Soil cover percentage was higher with crimson clover than with Kobe lespedeza and was very low for the cultivated plots. It was noted that crimson clover was more vigorous than Kobe lespedeza and covered the soil much faster. Neither crop grew sufficiently to interfere with the snap beans in the relatively dry fall season. Pod characteristics (Tables 2 and 3) were not greatly affected by the use of intercrops.

Weed control was not fully adequate with Eptam. Common Purselane was the only weed present, and it developed in a good cover in the plots. Cultivation controlled purselane in the cultivated plots, but no control was proved in the plots planted in intercrops.

Table 1. Plant characteristics and yield of 'Hialeah' snap beans evaluated with different intercrops at The University of Tennessee Plateau Experiment Station at Crossville, 2000.

Intercrop	Plant height - inches	Plant width- inches	Soil cover- %	Plant lodging - %	Pod yield - bushels/A.
None	15.8 a <sup>2</sup>	20.5 a	5 c	10 a	143 a
Crimson clover	16.0 a	21.5 a	100 a	10 a	141 a
Kobe lespedeza	15.2 a	21.2 a	89 b	10 a	143 a

<sup>2</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability. Duncan's Multiple Range Tests.

Table 2. Pod characteristics of 'Hialeah' snap beans evaluated with different intercrops at The University of Tennessee Plateau Experiment Station at Crossville, 2000.

Intercrop	Clusters - no./lb	Trash - %	Broken pods-%	Rotten pods-%	% immature pods	% market pods
None	5.8 a <sup>2</sup>	3.0 a	9 a	0 a	1.9 b	87 a

Crimson clover	3.8 a	2.8 a	11 a	0 a	3.3 a	84 a
Kobe lespedeza	3.8 a	1.2 a	10 a	0 a	2.3 ab	86 a

<sup>z</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability. Duncan's Multiple Range Tests.

Table 3. Pod characteristics of 'Hialeah' snap beans evaluated with different intercrops at The University of Tennessee Plateau Experiment Station at Crossville, 2000.

Intercrop	Pod length - inches	Pod curvature rating <sup>x</sup>	Pod smoothness rating <sup>x</sup>	Pod color r
none	5.7 a <sup>z</sup>	4.4 a	3.5 a	3.5 a
Crimson clover	6.0 a	4.5 a	3.6 a	3.5 a
Kobe lespedeza	5.6 a	4.5 a	3.5 a	3.5 a

<sup>x</sup> Ratings on a scale of 1 to 5; 5 = straight pods, smooth pods, or dark colored pods.

<sup>z</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability. Duncan's Multiple Range Tests.

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This research represents one season's data and does not constitute recommendations. After sufficient data is collected over the appropriate number of seasons, final recommendations will be made through research and extension publications.