

REVIEW OF ‘AU EARLYCOVER’ HAIRY VETCH

INTRODUCTION

Since the middle of the 20th century, agriculturists have studied numerous cool season legumes for cover crops, conservation tillage, green manure, forage, and wildlife food. Many agronomists recognized the value of incorporating early developing legumes into modern farming practices. Since much of the beneficial nitrogen produced by cool season legumes is assimilated by flowering time these early developing legumes could provide added flexibility to farmers and land managers in their effort to design plans to meet the challenges of the 21st century.

In 1994, the USD–Natural Resources Conservation Service’s (NRCS) Jimmy Carter Plant Materials Center (PMC), Americus, Georgia; Auburn University, and the Alabama Agricultural Experiment Stations released ‘AU EarlyCover’ hairy vetch (*Vicia villosa* Roth) an early developing cultivar (Mosjidis et al., 1995).

It is anticipated that the utility and importance of ‘AU EarlyCover’ and other cool season legume sources and cultivars will increase with the continued rise in energy costs. When used as a cover crop, ‘AU EarlyCover’ can provide partial or all of the nitrogen requirements for the subsequent crop.

The increased cost of manufacturing and transporting nitrogen fertilizer is expected to continue, forcing the manufactures to pass the increase onto the consumer. This trend of increased fertilizer costs and perhaps fertilizer shortages may continue for the immediate future. The use of cool season legumes such as ‘AU EarlyCover’ can provide a source of renewable nitrogen for conventional farmers, organic farmers and other land managers and may become a vital link in a future energy saving policy for the United States. In addition ‘AU EarlyCover’ provides excellent habitat for pollinator insects like bumble bees.

The following is a history of the methodology used by NRCS, Auburn University and the Alabama Agricultural Experiment Station in developing ‘AU EarlyCover’ hairy vetch.

GERMPLASM DEVELOPMENT

In 1987, an early blooming hairy vetch line, accession 9053961 from Henry County, Alabama, was observed growing in the Jimmy Carter Plant Materials Center hairy vetch initial evaluation block. Seed from this accession were grown in an observation trial. Thirty-three plants were selected from this trial based on early bloom date. Seed from these plants were entered into a legume breeding program from 1998-1990. The main selection criterion during the three cycles of recurrent selection was early flowering date. Other important criteria were vigor, pest resistance, and uniform morphological traits. From the original 33 lines, 3 selected lines (8,12 and 26) were increased. These lines were combined to produce ‘AU EarlyCover’ hairy vetch.

COMPARATIVE EVALUATIONS IN ALABAMA AND GEORGIA

Testing for yield, canopy height, and maturity of the selected hairy vetch lines were conducted in Alabama and Georgia. The tests were conducted at Auburn University Experiment Stations in Tallassee, Winfield, Belle Mina, Marion Junction, and Monroeville, Alabama and the PMC. These test sites range from northern and central Alabama, and southern Alabama and Georgia. Test locations include Major Land Resource Areas (MLRA) of Southern Appalachian Ridges and Valleys (128), Black Belt Prairies (135), and Southern Coastal Plains (133 A). All locations utilized a randomized complete block design with four replications. Plot size was 5' x 20' and seed was broadcast applied at 20 lb/acre.

RESULTS

'AU EarlyCover' appears to be an outstanding cover crop because of its early growth. By mid-February, when commercial hairy vetch has produced little growth 'AU EarlyCover' can have 17.2 g m⁻² to 23 g m⁻² or about 150 to 200 lb/acre of dry matter production (Table 1). Therefore, it can be utilized for green manure earlier than commercial hairy vetch. In early April it has a dry matter yield comparable or superior to commercial hairy vetch (Tables 2 and 3). 'AU EarlyCover' blooms 30-37 days earlier than commercial hairy vetch (Table 4). In addition to utilization as a cover crop and green manure crop these characteristics could also make it a good choice for forage producers seeking an early grazing option (Ball, 2001).

Since the release of 'AU EarlyCover' researchers have conducted work utilizing this material as a cover crop and for soil conservation. 'AU EarlyCover' is the only early flowering hairy vetch cultivar commercially available (Mosjidis, 2001). Mosjidis et al. (1994) reported the benefits of 'AU EarlyCover' for cover crop use. Pleasant (2008) recommended planting 'AU EarlyCover' as a nitrogen source for sweet corn.

Table 1. Canopy height and dry matter yield of hairy vetch cultivars harvested at Tallassee, Alabama and Americus, Georgia, February 15, 1993.

Cultivar	Tallassee		Americus	
	Canopy height cm	Dry matter yield g m ⁻²	Canopy height cm	Dry matter yield g m ⁻²
Commercial	14	1.3	10	5.4
AU EarlyCover	27	23.1	33.7	17.2
MSD (P<0.05)	7.6	9.2	4.1	6.2

Table 2. Dry matter yield of hairy vetch cultivars harvested at six locations in early April 1992.

Cultivar	Tallassee	Americus	Winfield	Belle Mina	Marion Junction	Monroeville	Mean
	----- g m ⁻² -----						
Commercial	85.4	122.0	48.3	287.9	90.2	220.0	142.3
AU EarlyCover	90.5	144.2	65.2	174.7	149.9	343.9	163.0
MSD (P<0.05)	ns*	ns*	12.9	57.9	30.6	ns*	

* Not significant

Table 3. Dry matter yield of hairy vetch cultivars harvested at six locations in early April 1993.

Cultivar	Tallassee	Americus	Winfield	Belle Mina	Marion Junction	Monroeville	Mean
	----- g m ⁻² -----						
Commercial	67.7	80.8	**	297.1	93.4	306.8	161.9
AU EarlyCover	101.9	125.2	**	303.0	138.2	233.4	180.4
MSD (P<0.05)	ns*	ns*	**	57.9	42.8	ns*	

* Not Significant

** Plants were killed by frost

Table 4. Number of days (counted from March 1) to 75% bloom of hairy vetch cultivars in Tallassee, Alabama and Americus, Georgia in 1992 and 1993.

Cultivar	Tallassee		Americus		Mean	
	1992	1993	1992	1993	1992	1993
Commercial	69.5	74	68.8	**	69.1	74
AU EarlyCover	46.4	42.3	32.3	32.5	39.4	36.7
MSD(P<0.05)	5.9	11.0	10.8	ns*		

* Not Significant

** Plots were lost

Literature Cited

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