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Jamie L. Whitten Plant
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Hairy Vetch (*Vicia villosa* L.): When to plant and terminated in the Mid-South?



Figure 1. 'Purple Bounty' hairy vetch planted on October 1, 2022. Picture was taken on April 17, 2023.

Acknowledgements

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Plant Materials Technical Note No. 115 prepared by:

Jonathan Vollmer, Study Leader, NRCS Plant Materials Center, Coffeerville, MS; Jon Allison, Farm Manager, NRCS Plant Materials Center, Coffeerville, MS.

Plant Materials Technical Note No. 115 reviewed by:

Rogerick Thompson, NRCS, Jackson, MS; Gordon Andrews, NRCS, Greenwood, MS; Gregory Swain, NRCS, Tupelo, MS; and Heather Dial, NRCS, Portland, OR, who served as peer reviewers.

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Preface

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Plant Materials Program has been involved in the evaluation of conservation plants and planting technology for more than 80 years. The purpose of this paper is to provide recommendations for planting and termination windows for Hairy Vetch (*Vicia villosa* L.) based on a producer's resource concerns in the Mid-South.

For additional information on specific species of plants mentioned in this publication, please see the USDA PLANTS database at: (<http://plants.usda.gov/java/>) or contact the nearest Plant Materials Center or plant materials specialist (<http://plant-materials.nrcs.usda.gov/contact/>) and/or the Land Grant Universities that serve the State. For specific information on soils and soil health, please see USDA NRCS soils website at: (<http://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/>). Also, see technical resources on the National Plant Materials Program Web site at: (<http://www.plant-materials.nrcs.usda.gov/>).



Figure 2. Location Map of NRCS Plant Materials Centers.

Why plant hairy vetch?

Hairy vetch is a common annual cool season legume used for a cover crop and green manure in the Mid-South. Two advantages of hairy vetch compared to other cool season legumes are early weed suppression and high nitrogen production. It has been shown that mixing cereal rye, crimson clover, and hairy vetch (seeding rates of 30,10, and 20 lb/acre, respectively) extends weed control after termination by five or six weeks, about the same as an all-rye mulch (Clark, 2007). Additionally, the vigorous spring growth of a fall-sown hairy vetch cover crop tends to out compete weeds and fill in gaps where germination is spotty. On nitrogen production, hairy vetch can fix between 90 to 200 lbs of N per acre under optimum conditions. These advantages make it a good choice for producers in the mid-South struggling with winter weed pressure and nitrogen production.

What cultivars or varieties of hairy vetch are recommended for the Mid-South?

The Jamie L. Whitten plant materials center (PMC) conducted an adaptation trial for hairy vetch during the 2017-2018 and 2018-2019 growing seasons (Richard and Allison, 2020). As a result of this study, the cultivars CCS Groff, Lana, Purple Bounty, Purple Prosperity, TNT, and Villana were found to be well adapted to the growing conditions of the Mid-South. Purple Bounty has the greatest availability and has been shown to be adaptable to the conditions of the Mid-South.

What is the recommended seeding rate for hairy vetch?

The seeding rate of hairy vetch is dependent upon multiple factors such as seeding dates, planting method, and resource concerns being addressed with the cover crop. Addressing weed suppression and nitrogen depletion will require a medium to high seeding rate regardless of planting method. However, if the purpose of the cover crop is biodiversity and attracting beneficial insects, then a low to medium seeding rate will be sufficient. Another factor to consider when determining the seeding rate is seed bed preparation. Conventional fall tillage to prepare the seed bed will require a lower seeding rate compared to no-till/minimum tillage due to higher seed to soil contact and lower seedling mortality. Earlier planting dates will also require a lower seeding rate compared to a later planting date due to greater vegetative growth experienced in the fall. The large seed size of hairy vetch requires planting to be done by either seed drill or broadcast followed by incorporation. Broadcasting hairy vetch seeds without incorporation or covering seed will be risky due to higher seedling mortality resulting in spotty stands.

Table 1. Recommended seeding rates (lbs/acre) for hairy vetch in the mid-south by planting method at low, medium, and high rates. USDA-NRCS, Coffeerville, MS 2026.

Seeding method	Seeding rate (lbs/acre)		
	Low	Medium	High
Broadcast	15	20	25
Drill	10	15	20

(Source: [USDA NRCS, 2022](#))

When should hairy vetch be planted and terminated in the Mid-South?

To maximize the benefits of a hairy vetch over crop, it is recommended that hairy vetch be planted between September 15 to October 15. Planting within this window promotes earlier dry matter production resulting from greater accumulation of growing degree day units in the fall compared to November plantings (Table 2). For instance, in a study conducted by the PMC using ‘Purple Bounty’ hairy vetch, the highest dry matter yields were achieved with a September 15 planting (4,553 lbs/acre) in 2023 and an October 1 planting (4,860 lbs/acre) in 2024 when combined with a May 1 termination (Vollmer et al, 2025). November plantings failed to emerge in 2023 season until May 1. Nitrogen yields were higher when hairy vetch was planted September 15 to October 15, and termination was delayed until

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April 15. The highest nitrogen yields (lbs of N/acre) were achieved with a September 15 planting (181 lbs of N/acre) and an October 1 planting (176 lbs of N/acre) when combined with a May 1 termination for the 2022 and 2023 seasons, respectively (Table 2). In general, earlier planting dates combined with later termination dates resulted in higher potential nitrogen yields compared to later planting dates (November plantings).

Table. 2 Effect of planting and termination date on dry matter yields (DMY) and nitrogen yields of ‘Purple Bounty’ hairy vetch in 2022-2023 and 2023-2024, USDA-NRCS Coffeerville, MS, 2025.

Planting Date	Termination Date (2023)									
	DMY (lbs/acre)					Nitrogen (lbs/acre)				
	March 1	March 15	April 1	April 15	May 1	March 1	March 15	April 1	April 15	May 1
September 15	510 bB	692 bA	1184 abA	2639 abA	4553 aA*	23 bB	33 bA	54 bA	123 aA	181 aA*
October 1	1102 bA	781 bA	824 bB	1769 abA	3879 aA	50 bA	37 bA	37 bB	78 abA	148 aA
October 15	150 bB	275 bB	417 bC	738 bB	2910 aAB	6 bB	12 bB	18 bC	32 bB	102 aAB
November 1	.	.	.	.	724 aB	.	.	.	.	28 aB
November 15	.	.	.	.	653 aB	.	.	.	.	27 aB
Planting Date	Termination Date (2024)									
September 15	2400 aA	2122 aA	2881 aA	3890 aA	3668 aA	89 aA	79 aA	112 aA	137 aA	150 aA
October 1	1009 cAB	1904 bcAB	1188 cB	3598 abA	4860 aA*	37 bB	72 bAB	39 bB	129 abA	176 aA*
October 15	389 bB	796 bC	1951 abAB	2582 aA	3505 aA	14 cB	31 bcBC	69 abAB	87 aA	119 aA
November 1	374 cB	1034 cBC	1512 bcAB	3655 aA	2967 abA	12 cB	35 bcBC	55 bcAB	135 aA	96 abA
November 15	.	803 bC	1398 bAB	1284 bB	4054 aA	.	28 bC	48 bB	44 bB	130 aA

Means within rows for a planting date followed by the same lower-case letters and within columns for a termination date followed by the same upper-case letters are not significantly different at $P < 0.05$ using Tukey’s LSD pairwise comparison.

(Source: [Vollmer et al., 2025](#))

Phosphorus and potassium yields increased with earlier planting dates when combined with a later termination date. Earlier planted hairy vetch plants can produce greater dry matter production in the fall compared to later planting dates (November) (Table 2). In general, greater dry matter production results in greater phosphorus and potassium yields for hairy vetch. For instance, the highest phosphorus and potassium yields resulted from a September 15 planting with a May 1 termination (17 lbs of P/acre and 64 lbs of K/acre) and an October 1 planting with a May 1 termination (19 lbs of P/acre and 125 lbs of K/acre) for the 2023 and 2024 seasons, respectively (Table 3). These planting and termination date combinations correspond to the highest dry matter yield previously noted in Table 2. To maximize hairy vetch’s ability to scavenge phosphorus and potassium, it is recommended that hairy vetch be planted between September 15 to October 15 and termination be delayed until April 15.

Table. 3 Effect of planting and termination date on phosphorus and potassium yields (lb/acre) of ‘Purple Bounty’ hairy vetch in 2022-2023 and 2023-2024, USDA-NRCS Coffeerville, MS, 2025.

Planting Date	Termination Date (2023)									
	Phosphorus (lbs/acre)					Potassium (lbs/acre)				
	March 1	March 15	April 1	April 15	May 1	March 1	March 15	April 1	April 15	May 1
September 15	2 bB	3 abA	4 abA	11 abA	17 aA*	5 bB	11 abA	16 abA	47 abA	64 aA*
October 1	4 bA	3 bA	3 bB	6 abA	14 aA	7 bA	12 bA	10 bAB	27 abA	46 aAB
October 15	1 bB	1 bB	2 bC	3 bB	10 aAB	2 bB	5 bB	5 bB	12 bB	26 aBC
November 1	.	.	.	.	2 aB	.	.	.	.	9 aC
November 15	.	.	.	.	2 aB	.	.	.	.	11 aC
Planting Date	Termination Date (2024)									
September 15	5 aA	8 aA	11 aA	14 aA	16 aA	27 aA	57 aA	64 aA	92 aA	91 aA
October 1	3 bA	7 bAB	4 bA	14 abA	19 aA*	20 bA	45 bAB	27 bB	86 abA	125 aA*
October 15	1 bA	3 bB	7 abA	10 aA	12 aA	8 cA	21 bcB	47 abcAB	55 abA	85 aA
November 1	2 cA	4 bcAB	5 bcA	14 aA	10 abA	11 bA	34 bAB	38 bAB	91 aA	78 aA
November 15	.	3 bB	5 bA	5 bB	15 aA	.	28 bAB	41 bAB	32 bB	100 aA

Means within rows for a planting date followed by the same lower-case letters and within columns for a termination date followed by the same upper-case letters are not significantly different at $P < 0.05$ using Tukey’s LSD pairwise comparison.

(Source: [Vollmer et al., 2025](#))

Summary

It is critical to plant hairy vetch between September 15 to October 15 in the mid-South. Delaying planting until November resulted in lower dry matter, nitrogen, phosphorus, and potassium yields compared to earlier plantings. Additionally, it is recommended to avoid planting hairy vetch in November due to the increased risk of failed germination. Termination whether by chemical or cultural means should be delayed until April 15 to maximize the benefits of a hairy vetch cover crop. Earlier terminations (March 1 to April 1) resulted in decreased dry matter production, nitrogen production, and nutrient scavenging. As a result, it is recommended that hairy vetch should be planted between September 15 to October 15 and terminated on or after April 15 in the mid-South.

References

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