

IMPROVED WINTER GROWTH OF ROSE CLOVER

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Summary

Cultivars of rose clover (*Trifolium hirtum* All.) have been developed with a wide range of cold tolerance, winter growth and flowering date combinations. However, no rose clover cultivars are available with high rates of winter growth and a late April flowering date when grown in northeast Texas. Plants from segregating F₂ families of rose clover were evaluated for plant size in February and March and flowering date was recorded. Plants were identified that combined superior winter growth and late maturity. Progeny from these lines will continue to be evaluated for a new cultivar release.

Introduction

Rose clover is a cool season forage legume that can be a reliable reseeded component of pasture systems in East Texas. Commercial cultivars of rose clover include 'Hykon', 'Kondinin' and 'Overton R18'. Hykon and Kondinin are Australian cultivars and both have very little winter dormancy or cold tolerance. Hykon and Kondinin often winterkill or suffer severe cold damage at Overton or Dallas and are not recommended for northeast Texas. Overton R18 was developed at Overton and selected for a high level of cold tolerance. Overton R18 has survived winters and been productive in central Oklahoma and in some years southern Kansas and southern Missouri. However, winter forage production decreases as cold tolerance increases. Overton R18 is probably more cold tolerant and more winter dormant than is needed for East Texas climatic conditions. A rose clover with better cool season forage production than Overton R18 is needed. This reduction in winter dormancy must be balanced with enough cold tolerance to survive the winter season.

The objective of this research was to develop a rose clover cultivar with full-season forage production from November to May with adequate cold tolerance for northeast Texas' winters.

Procedure

Hand crosses were made between Overton R18 and Hykon or Kondinin. Actual crosses were identified using a leaf mark gene and seed were produced of four F₂ families. Seed of the F₂ families were germinated and plants grown in the greenhouse for six weeks. In mid Nov. 1995, 150 plants of each F₂ population and 50 plants each of the three parent cultivars (750 total plants) were transplanted to a field site near Overton, Texas. The plants were grown in rows with each plant on a 4 ft. center. Plant diameter was measured on 3 Feb. and 10 Mar. Flowering notes were taken at weekly intervals on each plant beginning 20 Mar. Flowering was rated using the following scale: early bud = bud diameter < .25 inch; bud = bud diameter > .25 inch but no open flowers; early flowering = some open flowers noted but < 50% of the flowering stems with open flowers; full bloom = >50% of the flowering stems with open flowers.

Results and Discussion

All Hykon and Kondinin plants reached full bloom during the two-week period of 20 Mar. to 4 April. Hykon was slightly earlier than Kondinin. Overton R18 reached full bloom during the 6-day period of 26 April to 2 May. On 27 Mar. Overton R18 was vegetative, most of the Hykon and Kondinin plants were in full bloom, and the F₂ populations had some plants in each flowering stage from vegetative to full bloom. All plants of the four F₂ families reached full bloom during the 5-week period from 20 Mar. to 26 April. This presented an excellent opportunity to select for late flowering in combination with high winter growth.

The average size (diameter) of Overton R18 plants on 2 Feb. was about 25% less than the cultivars Kondinin and Hykon (Table 1). This illustrates the poor winter growth of Overton R18 and shows the potential for improvement using selections from the F₂ families. This trend continued with the 10 Mar. measurement where Kondinin and Hykon were double the size of Overton R18. Two sets of selections with combinations of good early growth and late flowering were made for continued evaluation. Set A had the best early growth potential but was 2 weeks earlier in maturity than Overton R18. Set B was closer in maturity to Overton R18 and had slightly less winter growth potential.

Development of improved rose clover cultivars with better combinations of winter growth and full season forage production is in progress. Selections have been made that demonstrate to potential to develop new rose clover cultivars for East Texas.

Table 1. Plant diameter and date of full bloom for rose clover cultivars and sets of F2 selections.

<i>Entry</i>	<i>2 Feb.</i> <i>Diameter (cm)</i>	<i>10 Mar</i> <i>Diameter (cm)</i>	<i>Full Bloom</i> <i>Date</i>
Overton R18	12.3	15.4	26 April
Kondinin	16.2	29.8	20 March
Hykon	16.4	31.9	20 March
Set A (n=3)	22.5	34.0	12 April
Set B (n=9)	18.4	28.4	17 April