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Evaluation of Experimental Rose Clover at Eight Texas Locations

G. R. SMITH, G. W. EVERS, T. J. GERIK,
E. C. HOLT, M. HUSSEY, W. R. OCUMPAUGH,
J. C. READ, AND A. M. SCHUBERT

Summary

Ten experimental rose clover lines and two commercial varieties, 'Kondinin' and 'Hykon,' were evaluated at eight Texas locations for maturity and forage potential. In this preliminary evaluation, all experimental lines were later in maturity and rated superior in forage production potential compared to the check varieties. Forage production of the best experimental lines measured at Overton, Beeville, and College Station was almost double the yield of the rose clover checks.

Introduction

Rose clover is a winter annual legume with wide soil adaptation and the ability to produce a high percentage of persistent hard seed. Current rose clover varieties are too early maturing and/or unproductive under Texas conditions. Our objectives in this research were: 1) to deter-

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mine the adaptation of rose clover to different Texas environments; and 2) to compare forage production potential of selected breeding lines to commercial varieties of rose clover under different environmental and soil conditions.

Procedure

Observation plots of 10 experimental rose clover lines developed at Overton, and two check varieties, 'Kondinin' and 'Hykon,' were established in late October or early November 1984 at eight Texas locations, including Overton, Dallas, Temple, College Station, Yoakum, Angleton, Beeville, and Weslaco. Soil test information for each location is shown in Table 1. Nitragin inoculant (type WR) and six grams of seed per entry were provided which was sufficient to plant three replications of 12-ft rows at 15 lb seed/A. Notes were taken at each location for winter damage, maturity, and forage potential. Forage production data was taken at Beeville, College Station, and Overton.

Results and Discussion

Relative maturity ratings for each location are shown in Table 2. The frequency and date of notes varied between

TABLE 1. SOIL TEST INFORMATION FROM SEVEN ROSE CLOVER TEST SITES IN 1984-85

Location	pH	P ₂ O ₅ ¹	K ₂ O	Mg	Ca
Beeville	6.05	VL (3)	VL (80)	H (314)	VH (3,098)
College Station	7.65	VH (104)	H (296)	H (629)	VH (31,646)
Weslaco	7.40	VH (106)	H (205)	M (112)	VH (3,568)
Angleton	5.70	H (25)	L (92)	H (762)	VH (5,954)
Temple	7.90	L (6)	H (234)	H (475)	VH (31,000)
Yoakum	6.05	M (19)	L (95)	H (330)	H (1,316)
Overton	6.15	L (6)	VL (39)	L (29)	M (499)

¹Numbers in parenthesis are ppm.

locations. To compare across locations, we have presented the notes taken around mid-April, where available. All the experimental lines were later in maturity than Kondinin and Hykon. At Weslaco many experimental lines were earlier than at the more northern locations. This was probably due to photoperiod response and higher temperatures. Late maturity in these experimental lines has resulted in a late April to mid-May bloom period at Overton. These lines are later in maturity than crimson clover, but earlier than arrowleaf clover. This should allow a good expression of yield potential but minimum competition with warm season perennial grasses.

Severe winter damage at Dallas resulted in complete stand loss of Kondinin and Hykon and 95 percent stand loss of line RR-12. Winterkill at Dallas of the remaining experimental lines ranged from 30 to 50 percent. Yoakum reported stand losses due to cold damage of 15 and 13 percents for Hykon and RR-12, respectively. Rose clover line RR-12 appears to be the least winter-hardy of the experimentals evaluated.

Forage potential of the experimental rose clover lines was rated higher at most locations than the commercial varieties, Hykon and Kondinin, which served as checks (Table 3). The ratings were reversed at Beeville on notes taken March 27. This note was one to two weeks earlier than at other locations and many of the experimental lines were still in a vegetative growth stage. Overton production data for these rose clovers are presented in Table 4. Production data from Beeville and College Station on selected rose clover lines are shown in Figures 1 and 2. The experimental lines RD-3 and RF-20 showed potential for twice the forage production of Kondinin and Hykon at Beeville and College Station. At Overton rose clover production ranged from 2,617 to 647 lb DM/A for RM-13 and Hykon, respectively. The experimental line RD-3 was lower in forage production at Overton than RF-20. Genotype × environment interactions will be investigated in more detail next year.

TABLE 2. MATURITY RATING OF EXPERIMENTAL LINES AND COMMERCIAL VARIETIES OF ROSE CLOVER GROWN AT EIGHT TEXAS LOCATIONS IN 1984-85

Line	Overton	College Station	Beeville	Dallas	Yoakum	Temple	Angleton	Weslaco
RM-16	3.5 ¹	2.0	1.0	2.0	3.0	4.0	3.0	5.0
RR-12	3.0	2.6	4.0	1.0	3.0	— ²	3.0	5.0
RH-18	3.0	2.0	4.0	2.0	3.0	— ²	3.0	2.0
RH-7	4.0	2.6	1.0	2.0	4.0	3.0	3.0	5.0
RJ-3	3.5	2.6	4.0	2.0	4.0	3.0	3.0	4.0
RF-20	4.0	2.3	1.0	2.0	4.0	4.0	4.0	2.0
RD-15	3.5	2.3	1.0	2.0	4.0	4.0	3.0	2.0
RD-3	3.0	2.0	1.0	2.0	3.0	3.0	3.0	5.0
RD-17	3.5	2.6	1.0	5.0	4.0	4.0	3.0	5.0
RM-13	4.0	2.3	1.0	5.0	4.0	— ²	3.0	4.0
Kondinin	5.0	4.3	4.5	— ³	5.0	5.0	5.0	5.0
Hykon	5.0	4.0	4.5	— ³	5.0	5.0	5.0	5.0
Note Date	4-18	4-18	3-27	4-25	4-18	4-22	4-19	4-26

¹Maturity: 1=vegetative, 2=bud, 3=late bud, 4=first color, 5=full bloom.

²Not included at this location.

³Winter-killed.

TABLE 3. FORAGE POTENTIAL RATING OF EXPERIMENTAL LINES AND COMMERCIAL VARIETIES OF ROSE CLOVER GROWN AT SEVEN TEXAS LOCATIONS IN 1984-85

Line	Overton	College Station	Beeville	Dallas	Yoakum	Temple	Angleton
RM-16	4.9 ¹	4.0	2.0	3.0	4.3	3.8	4.0
RR-12	3.7	3.3	3.5	1.0	2.9	— ²	4.0
RH-18	4.9	4.0	2.5	3.0	3.7	— ²	4.0
RH-7	4.4	4.3	2.5	4.0	4.5	3.8	4.0
RJ-3	4.7	3.0	2.5	3.0	3.8	4.0	4.0
RF-20	4.9	4.0	2.5	3.0	4.3	3.3	5.0
RD-15	4.7	3.3	2.5	4.0	3.9	3.3	4.0
RD-3	4.8	4.3	2.0	4.0	4.5	3.5	4.0
RD-17	5.0	4.3	2.5	4.0	4.2	3.3	5.0
RM-13	4.7	3.3	2.5	5.0	4.0	— ²	5.0
Kondinin	2.9	1.3	4.0	— ³	3.1	2.5	2.0
Hykon	2.0	1.3	4.0	— ³	2.5	1.5	2.0
Note Date	4-18	4-18	3-27	4-25	4-18	4-2	4-19

¹Forage potential: 1 = poor, 5 = best.

²Not included at this location.

³Winter-killed.

TABLE 4. FORAGE PRODUCTION OF ROSE CLOVER AT OVERTON, TEXAS, 1984-85

Variety	Harvest Date			Total
	3-26	4-16	5-14	
	Pounds DM/acre			
RM-13	824	1,546	247	2,617 a
RF-20	704	1,668	187	2,559 a
RD-17	801	1,383	214	2,398 ab
RM-16	629	1,510	163	2,302 ab
RR-12	501	1,388	309	2,198 ab
RJ-3	534	1,511	118	2,163 ab
RD-15	531	1,310	207	2,048 abc
RH-18	495	1,300	188	1,983 abc
RH-7	398	1,345	238	1,981 abc
RD-3	465	1,275	136	1,876 abc
Wilton	292	953	215	1,460 bcd
Kondinin	401	637	87	1,125 cd
Hykon	299	315	33	647 d

C.V. = 19.6%

¹Entries identified by letter-number combinations are experimental rose clover lines from the Overton clover breeding program.

²Yields followed by the same letter are not significantly different at the 0.01 level using the Student Newman-Keuls Multiple Range Test.

With seed increases from the 1984-85 season, replicated forage production trials with these experimental rose clovers were established at Overton, Dallas, College Station, Angleton, Beeville, and Yoakum in fall 1985. Data from these experiments will provide more information concerning the future of rose clover in Texas.

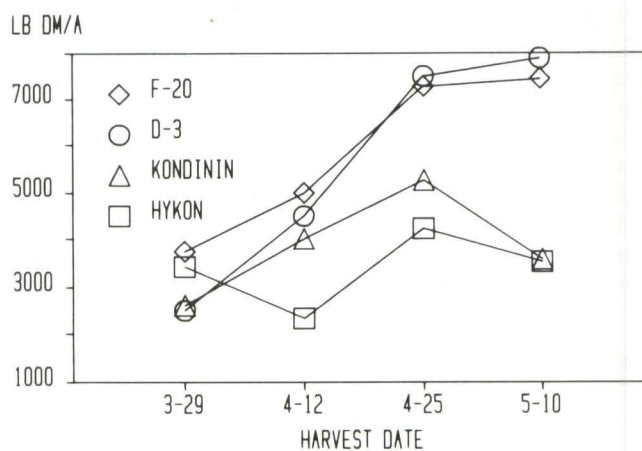


Figure 1. Cumulative production of selected rose clovers at Beeville in 1985.

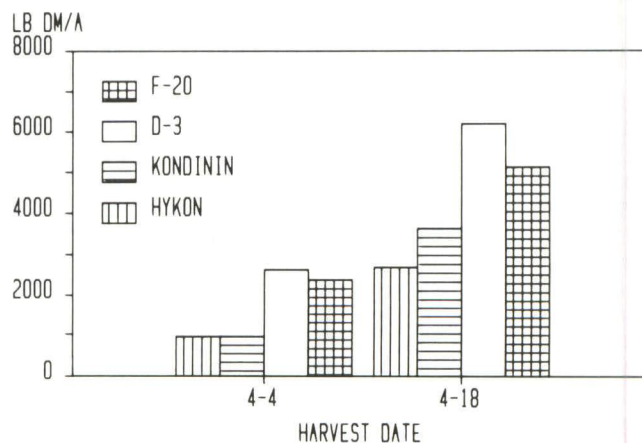


Figure 2. Cumulative production of selected rose clovers at College Station in 1985.