

KANSAS TECHNICAL NOTE



PLANT MATERIALS TECHNICAL NOTE NO. 24
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March 1, 2000

CONSERVATION RESERVE PROGRAM (CRP) ENHANCEMENT SEEDING SUMMARY

This technical note provides a summary of forb / legume interseedings completed into existing stands of Conservation Reserve Program (CRP) lands in Kansas. Under recent CRP sign-up periods, producers have been given the opportunity to enhance their existing stands with additional plant species to improve their environmental benefits index rating.

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INTRODUCTION

Kansas field offices were provided with several interseeding options prior to the 16th CRP Sign-up. To document the status of interseeding, field offices were asked to complete a forb/legume enhancement worksheet for seedings completed in 1998 and 1999. These worksheets were to be used to evaluate the initial results of enhancement seedings across different seeding times, species, seeding methods, and seedbed preparation techniques.

Information requested on the worksheet included the type of existing cover, method of seedbed preparation, method of seeding, plant species used, timing of seeding, and a relative rating of the initial establishment of the seeded species. The enhancement establishment ratings used were: excellent = many forbs/legumes observed; good = moderate number of forb/legumes observed; fair = few plants observed; poor = no plants observed.

ENHANCEMENT SUMMARY

The summary is based on 2,188 enhancement worksheets returned by field offices during 1998 and 1999. Although not a statistically valid sample, it was felt that some general trends might be provided by the information contained on the worksheets. The worksheets represented 96,169 acres. Of those reported acres, 94 percent of the forb/legume interseedings were completed into native stands comprised predominately of switchgrass, sideoats grama, little bluestem, western wheatgrass, big bluestem, and Indian grass. The remaining 6 percent of the enhancements were made into stands of introduced grasses.

Of the plant species used in the enhancements, 85 percent of the acres were seeded to introduced legumes (alfalfa, sweetclover), 2 percent to natives forbs/legumes, and 13 percent to a mixture of native and introduced forb / legumes. Therefore, the general conclusions were

predominately based on the response of introduced legumes.

Of the seedbed preparation methods, 64 percent of the enhanced acres received no seedbed treatment (no till), 26 percent of the acres were burned, 6 percent were tilled, 3 percent were mowed, and the remaining 1 percent were chemically sprayed, grazed, or baled prior to seeding.

For the seeding method, 90 percent of the enhanced acres were drilled, with the remaining 10 percent being broadcast. For the seeding period, May had the greatest number of seeded acres, followed by April, March, and February.

Of the reported 96,169 acres enhanced during 1998, and 1999, 4 percent were rated as excellent in terms of forb/legume establishment, 34 percent as good, 43 percent as fair, and 3 percent as poor.

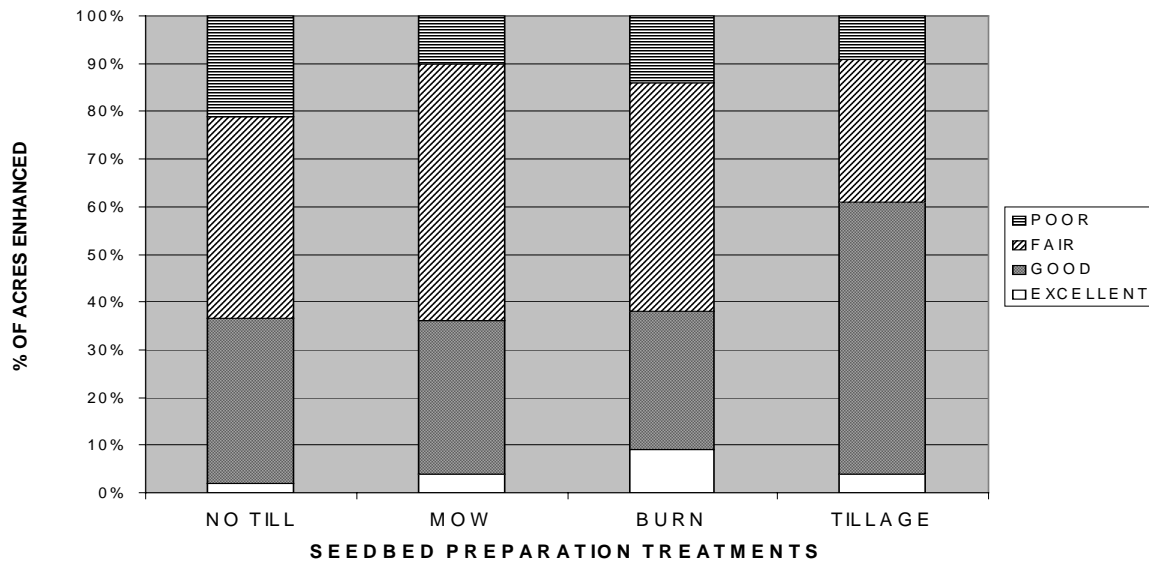
GENERAL CONCLUSIONS

Although the data provided by the enhancement worksheets was more qualitative than quantitative, there were some general trends that could be obtained from the information.

Seedbed preparation methods showed varying results on establishment. It appears that tillage prior to seeding improved legume establishment (Figure 1). The tillage treatment typically consisted of a light disking operation prior to seeding. The tillage treatment resulted in 61 percent of the enhanced acres being reported as good or better in terms of legume establishment, compared to 37 percent for burning, 35 percent for mowing, and 36 percent for no seedbed preparation performed.

The tillage operation could have affected the legume establishment in one of several ways. By roughening up the surface, a more suitable seedbed may have been prepared. Also a rough surface has the capacity to catch and hold additional moisture thus enhancing the chances of seedling establishment. By scattering or breaking up

FIGURE 1. FORB / LEGUME ENHANCEMENT ESTABLISHMENT RATINGS FOR SEEDBED PREPARATION TREATMENTS



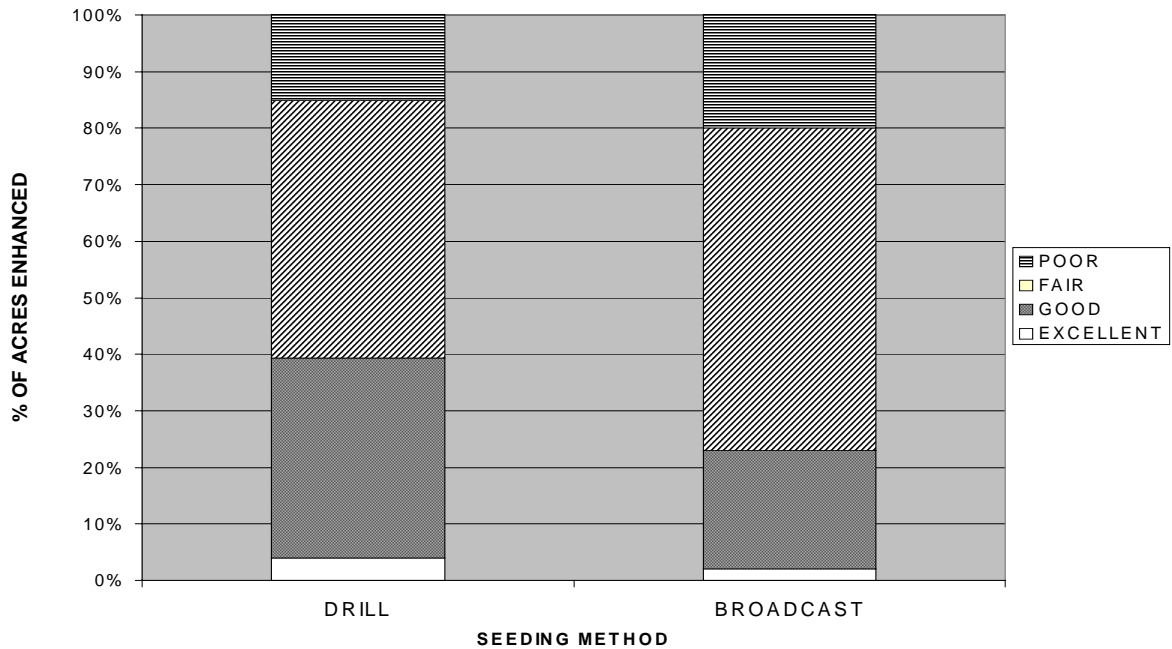
the residue, it may have opened up the stand and allowed for better seed to soil contact. The tillage action could also have destroyed some of the existing vegetation, thereby reducing the amount of competition faced by the emerging legume seedlings. This treatment appeared to be particularly effective if completed early in the spring followed immediately by seeding. This allowed for spring precipitation to help work the small seed into the soil and also firm up the seedbed thereby improving the seed to soil contact.

Burning as a seedbed preparation had varied results. The timing of the burn and the timing of the seeding in relation to the burn appeared to significantly affect the overall legume establishment. If the burning took place 2 – 3 weeks earlier than what is normally recommended for warm season species and was followed immediately by seeding, usually produced good or excellent results. Where the burn was performed and seeding was delayed until late April or May, results were usually poorer in terms of establishment. Burning will stimulate the initiation of growth and vigor of the warm season grasses which will be a detriment to the emerging legume species. Therefore it appears that burning and seeding early gives the seeded legumes a start on establishment before the warm season grasses initiate growth.

Method of seeding showed that drilling resulted in 40 percent of the enhanced acres being rated as good or better compared to 22 percent for broadcast. (Figure 2). The lack of significant difference between the two methods may be do the required seeding rates. The drill seeding rate for enhancement was 1 lb. pls / acre, while broadcast seeding was 2 lb. pls / acre.

Timing of seeding may be as or even more important than seedbed preparation and seeding methods in terms of legume establishment. The information and comments provided on the enhancement worksheets seemed to support the idea that earlier seeding dates resulted in better establishment, irrespective of seedbed treatments and seeding methods used (Figure 3). Earlier seeding dates puts the legume seed into or on the ground at such a time to take advantage of early spring precipitation. Also, the majority of enhancement seedings involved alfalfa and sweetclover (both cool season species) being seeded into predominantly warm season grasses. Allowing the seeded legumes an opportunity to germinate and establish before the warm season species initiated growth, may have provided them a competitive advantage.

FIGURE 2. FORB / LEGUME ENHANCEMENT ESTABLISHMENT RATINGS FOR SEEDING METHODS



In conclusion, emphasis should be placed on completing seedbed preparation and seeding as early as possible to allow the seeded legumes to take advantage of the early spring moisture and reduced competition from the established grasses. Also, emphasis needs to be placed on the

importance of good seed to soil contact. This is accomplished by using the right type of seeding equipment that will handle the residue and allow for proper seed placement. If that equipment is not available, the residue should be removed through seedbed preparation to allow proper seed placement.

FIGURE 3. FORB / LEGUME ENHANCEMENT ESTABLISHMENT RATINGS FOR TIME OF SEEDING

