EXTENSION AGRONOMIST PERCEPTIONS REGARDING CLOVER USE IN THE USA

D.M. Ball[1] and G.D. Lacefield[2]
[1]Department of Agronomy and Soils, Auburn University, Auburn University, AL 36830
[2]Department of Agronomy, University of Kentucky, Princeton, KY 42445

ABSTRACT
Recent enhancement of economic incentives for using legumes in forage/livestock systems seems likely to result in greater usage of clovers in the USA. To determine attitudes regarding clovers, a questionnaire was sent to forage crop agronomists having Extension assignments. Responses to most questions varied greatly, particularly among geographic regions. Poor grazing management was identified as the primary concern or problem associated with clovers, followed by poor persistence, and a lack of recognition of the benefits. Improved forage quality was ranked as the most important benefit, followed by better distribution of pasture growth, and biological nitrogen fixation. The importance of benefits associated with using clovers ranked considerably higher than concerns or problems. Respondents overall strongly indicated they consider themselves to be advocates of legume usage, that they feel clover usage is becoming more important and feasible, and that more profitable livestock producers tend to use clovers.

KEYWORDS
Legume, Trifolium, forage, problems, benefits

INTRODUCTION
Forage legumes offer numerous benefits in forage/livestock systems (Ball et al., 1996; Lacefield et al., 1993a; Lacefield et al., 1993b). These include biological nitrogen fixation, high forage quality, good forage yields, improved distribution of growth as compared to growing forage grasses alone, offsetting of certain livestock disorders, and improved soil tilth.

Despite these attributes, legume usage by forage/livestock producers in the USA has been less than some scientists feel is appropriate. However, there are indications that the use of forage legumes is becoming more feasible and justifiable (Ball and Lacefield, 1994).

Clovers (Trifolium spp.) are a diverse genus of leguminous plants, at least 15 species of which are used to an important extent for forage production in the USA (Taylor, 1985). Due to the collective wide adaptation and multiple uses of clovers, it seems logical that clover acreage will increase.

Extension Forage Crop Agronomists throughout the USA work closely with forage/livestock producers in various geographic areas. Therefore, learning the attitudes of Extension Forage Crop Agronomists can provide important insights regarding the problems (perceived or real) in using clovers, as well as help identify additional research and/or educational needs.

METHODS
In an effort to determine Extension Forage Crop Agronomist attitudes regarding clovers, a questionnaire was sent to 104 state or area agronomists in 43 states within the USA. These were persons who were listed by the USDA as having some level of forage crop extension responsibility (Anonymous, 1994).

The first 23 questionnaire items were statements regarding clovers for which participants were requested to provide a ranking indicating their level of agreement or disagreement (1+ strongly disagree; 10= strongly agree). In item 24, participants were asked to rank the effectiveness of various educational techniques commonly used by Extension workers.

RESULTS AND DISCUSSION
Responses were received from 71 persons in 35 states, which represented 68.3% of the individuals, and 81.4% of the states, to which the questionnaires were mailed. Mean rankings for each statement or educational technique were as follows.

1. I consider myself an advocate of the use of legumes in forage/livestock programs. Mean ranking - 8.9

2. White clover should be used much more in my state.
Mean ranking - 5.8

3. Red clover should be used much more in my state.
Mean ranking - 6.6

4. Annual clovers should be used much more in my state.
Mean ranking - 4.5

5. Concern about bloat is a major factor limiting the use of clovers in my state. Mean ranking - 4.7

6. The cost of clover seed is perceived as being too high as compared to the benefits derived from using clovers. Mean ranking - 4.3

7. A major reason why clovers are not used more in my state is that many producers have had difficulty getting stands.
Mean ranking - 5.1

8. The perception of poor persistence (resulting from perennial growth habit and/or reseeding) of clovers hurts their usage in my state. Mean ranking - 7.0

9. Grass competition is a primary difficulty involved in successfully growing clovers in my state. Mean ranking - 5.9

10. Soil acidity and the cost of liming greatly limit the use of clovers in my state. Mean ranking - 5.5

11. Producers in my state don't fully realize the benefits clovers offer.
Mean ranking - 7.0

12. Many producers in my state don't use clovers simply because they require too much management. Mean ranking - 5.7

13. Better distribution of pasture growth is an important reason for using clovers. Mean ranking - 7.0

14. When clovers are introduced into a pasture, increased yield/acre usually results. Mean ranking - 6.3

15. Clovers can significantly improve forage quality of a pasture.
Mean ranking - 8.6

16. A good reason for using clovers is that they help offset animal disorders. Mean ranking - 6.0

17. Biological nitrogen fixation provides a major incentive for producers to use clovers. Mean ranking - 6.6

18. There should be more planting of clovers done with no-till seeders. Mean ranking - 6.9

19. The technique of having animals "tread-in" or "trample in" clovers is greatly underutilized. Mean ranking - 6.7

20. Inadequate phosphorus and/or potassium levels in the soil are major reasons why clover usage is not higher in my state. Mean ranking - 5.2

21. Better grazing management could greatly increase clover populations in many pastures in my state. Mean ranking - 7.6

22. I believe the use of clovers in forage/livestock programs is becoming increasingly desirable and feasible. Mean ranking - 7.5

23. Producers who use clovers generally have more profitable livestock operations than those who don't. Mean ranking - 6.9

How effective are each of the following approaches to educating livestock producers regarding the benefits of using clovers?

Technique	Mean ranking
Demonstrations	8.4
Magazine articles	6.2
Educational meetings	6.2
Publications	5.7
News releases	4.8
Videotapes or slide/tape sets	4.7

As expected, there was a wide range of responses to each statement. In many cases this was related to geographical differences in adaptation of various clover species and/or the types of forage systems typically used by producers. The mean responses nonetheless provide much insight regarding the attitudes of Extension Agronomists (and undoubtedly also the producers with whom they work) relative to various aspects of clover usage.

Statements regarding clovers for which respondents provided rankings can be placed into three categories: (1) problems or concerns; (2) benefits or opportunities; and (3) general attitudes regarding clover usage. Mean rankings provide an indication of the importance of various items relative to each other. However, for discussion purposes in this paper, mean rankings of 8.0 or greater, 6.0 to 8.0, 3 to 5, and 1 to 3 are considered highly important, important, relatively unimportant; and highly unimportant, respectively.

No problem or concern fell into the "highly important" category, but lack of producer realization of clover benefits and perception of poor persistence were ranked as important. Bloat, the cost of clover seed, grass competition, soil acidity, the perception that clovers require too much management, and low soil phosphorous or potassium levels were considered relatively unimportant factors overall, but some individuals did rank some of these as being important or highly important in their area.

Potential opportunities or benefits associated with growing clovers ranked much higher. The ability of clovers to improve forage quality was ranked as highly important and the possibility of better grazing management for increasing clover populations, better distribution of pasture growth, biological nitrogen fixation, increased forage yield, and the potential for offsetting animal disorders were ranked as important factors.

With regard to general attitudes regarding clovers, there was a highly important ranking overall regarding whether the participants considered themselves to be advocates of the use of legumes. Furthermore, the concepts that clover usage is becoming more feasible and that more profitable operators use clovers were both ranked as important.

Demonstrations were ranked overall as being a highly important educational technique, while magazine articles and educational meetings were ranked as important. Publications, news releases, and videotapes or slide/tape sets were ranked as relatively unimportant.

CONCLUSIONS

Overall, participants in this survey indicated that clovers offer numerous important or highly important benefits or opportunities, but that most problems or concerns associated with the use of clovers are relatively unimportant. As a group, the respondents provided much evidence of enthusiasm for the use of forage legumes and provide support for the idea that increased use of clovers could benefit many forage programs. Educational efforts, especially demonstrations, magazine articles, and producer meetings, can help producers realize the benefits clovers offer.

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