

soil in calcareous soils. Data from soil tests provides information that is useful in determining optimum levels of phosphate fertilization.

Generally, potassium applications have failed to increase the yields of field crops in Arizona. It is likely, however, that there are specific locations where applications of potassium may increase dry-matter yield and the potassium content of forage.

Soluble Protein in Alfalfa

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Summary

Individual plants within a population of alfalfa were sampled for percent soluble leaf protein. Ten plants were selected for further study. The largest variance in soluble protein between the selected individuals was found to occur during the summer. No correlation was found between the amount of soluble leaf protein and other physiological factors studied.

Soluble protein in alfalfa has been shown to constitute 50-70% of the total crude protein. The majority of soluble protein is contained in the leaves; especially within the chloroplasts. The quantity of soluble protein has been found to vary significantly within alfalfa cultivars.

Two hundred-fifty individual plants within a population of 1979 Syn 1 Cycle 3 experimental salt tolerant alfalfa were sampled for total quantity of soluble leaf protein. Ten plants were selected and propagated by cuttings for further field and laboratory studies.

The selected plants were used for physiological studies conducted during the summer months. Soluble protein differences between the plants were the greatest at this time (Table 1).

Although the plants varied seasonally in percent soluble protein the rank of the plants in this respect was fairly consistent (Table 1).

Table 1. Percent soluble leaf protein of individual plants taken at various dates.

Plant #	Feb. 27	March 26	June 3	July 7
100	24	25	27	26
105	24	23	18	21
64	22	24	18	21
137	21	23	16	20
230	22	22	18	19
185	21	22	14	19
155	21	21	19	18
11	21	22	14	18
244	20	21	14	17
252	20	21	14	16

Field and laboratory studies examined some physiological aspects of the plants selected. No correlation was found between soluble protein quantity and apparent photosynthesis, dark respiration, photorespiration or transpiration.

Currently work is being done to examine the qualitative and quantitative differences within various protein fractions of the individuals. Morphological characteristics such as leaf to stem ratio and specific stem weight are also being studied.