

Thinning in all of the naked seed plantings was conducted according to current thinning practice. Thinning in the coated seed plots was done with a long handled hoe since isolation of single plants by finger thinning was not required.

Data collected from the experiments included plant population both before and after thinning, number of marketable heads at harvest time, weight of marketable heads, and thinning labor requirements.

Results and Discussion

There appears to be very little advantage in hill-dropping naked seed over conventional planting techniques. There is some savings in the amount of seed used and a small reduction in thinning labor requirements with this planting method but significant differences in yield and uniformity at harvest as compared to standard practices were not observed.

Precision planting coated seed, however, offers several advantages over conventional planting practices for naked seed. Although a higher plant population after thinning was obtained with standard planting techniques, the number of marketable heads, average head weight, and percent of heads harvested during the first cut was higher in the coated seed plots where the seedbed was properly prepared. Also, thinning labor for the precision planted plots was more than 50% less than the conventionally planted plots.

Correct seedbed preparation for the coated seed is very important. Satisfactory stands were not obtained in the experiments reported here when the coated seed was planted in rough beds that contained large clods. It is apparent that some type of precision tillage to seed depth or slightly below is necessary in many cases. However, unless a petroleum mulch application is to follow planting, the soil should not be completely pulverized because of the potential crusting problem. Petroleum mulch applications on fall lettuce seedbeds previous to November 1 in the Salt River Valley create seedbed temperatures beyond that suitable for satisfactory stand establishment.

The use of coated seed for lettuce production appears to have excellent potential for increasing profits. However, seedbed preparation, irrigation scheduling, insect control, and disease control prior to thinning are even more important when coated seed is precision planted because of the lower total number of plants. Hence, a more intensive management of the crop is required if the full potential of precision planting is to be realized.

Lettuce Nutrition as Influenced by Nitrogen, Phosphorus, Potassium
and Magnesium Fertilization
(L. A. Stanersen and Fred Turner, Jr.)

Greenhouse Experiment

Two soils from Cochise County were selected for the study. One soil was a McAllister sandy clay loam which had received little or no fertilizer during

its 20 years under cultivation. The other soil, an Elfrida clay loam, was in range land the year prior to sampling.

Various rates of nitrogen, phosphorus, and potassium were applied to the soils. Soil applications of 200 pounds of nitrogen plus 400 pounds of P_2O_5 per acre significantly increased growth of lettuce on both soils used. Heavier applications did not further increase yields.

It should be kept in mind that more fertilizer is required for greenhouse production when plants are confined to relatively small pots as compared to field conditions. There was a linear increase of nitrogen uptake following nitrogen applications up to 400 pounds per acre on both soils. Phosphorus and potassium uptake were not significantly affected by soil applications of nitrogen and phosphorus to the Elfrida soil.

The potassium content of the lettuce grown on the McAllister soil treated with 200 pounds per acre of nitrogen increased significantly.

Field Experiment

In the field study at the Campbell Avenue Farm, Tucson, nitrogen, potassium, and magnesium applications varied. A standard application of 100 pounds of P_2O_5 was made to all plots.

Due to past fertilizer practices resulting in a high fertility level, no differences in yield or weight of heads were found. However, the application of 100 pounds of nitrogen per acre significantly increased nitrogen uptake at the wrapper leaf stage. Some evidence was found that magnesium with nitrogen hastened maturity. The nitrogen, phosphorus, potassium, and magnesium contents of mature heads did not vary significantly regardless of treatment.

Potassium applications had no consistent effect on the growth or earliness of maturity of head lettuce.

Effect of Fertilizers on Yield, Quality and Nutrient Uptake by Lettuce (J. L. Strohlein and T. C. Tucker)

Abstract: A series of studies on lettuce fertilization have been carried out over the past few years. Fertilizer applications increased yield through increased head size and did not affect the number or quality of harvested heads. The lower rates used were as effective as the higher rates. Nitrogen and phosphorus fertilization generally increased the nitrate and phosphorus content of the various plant parts selected for analysis.

Introduction

Lettuce is an important crop in Arizona, and considerable interest exists in fertilization practices for this crop. Since tissue analysis has become an