

Plants from the larger seed piece also appear to produce a larger total number of tubers per plant, with no significant difference in the number of culls obtained from any of the treatments involving cut seed pieces. However, significantly fewer culls were found in the whole seed plots.

These findings indicate that a potato grower should carefully consider the use of small, whole tubers where an adequate supply is available. If an adequate supply is not available, and cut pieces must be used, every effort should be made to insure that they be at least 1-1/2 ounces in size. Seed pieces smaller than 1-1/2 ounces are not recommended.

Fertilizer Studies With Potatoes in the Queen Creek Area
(Fred Turner, Jr., and W. D. Pew)

Abstract: In a fertilizer study in the Queen Creek area, a strong response to nitrogen and phosphorus fertilizers was obtained. Potatoes did not respond to potassium when applied with nitrogen and phosphorus.

Introduction and Methods

Seed potatoes were planted early in December 1957 with the various combinations of N, P and K sidedressed. One-half of the total amount of fertilizer was applied at this time and the remainder was sidedressed on March 22, 1958. The crop was harvested on May 29.

Results and Discussion

The yield results (in pounds of potatoes per plot) of this experiment are shown in the following Table:

		P ₂ O ₅ (lbs. per acre)			
		P ₀ (0)	P ₁ (60)	P ₂ (120)	P ₃ (240)
N(lbs./acre)	N ₀ (0)	39	96	54	43
	N ₁ (60)	44	104	100	156
	N ₂ (120)	35	108	137	241
	N ₃ (240)	21	38	43	136
K ₁ = 100 lbs. K ₂₀ /ac.			N ₃ P ₃ K ₁		124
K ₂ = 200 lbs. K ₂₀ /ac.			N ₃ P ₃ K ₂		96

The data indicates a strong yield response to combined nitrogen and phosphorus fertilizer application. Without additional phosphorus, increasing the nitrogen appeared ineffective until the higher levels of phosphorus were reached.

Increasing the phosphorus to the P_1 level resulted in marked increase in yield over the P_0 level regardless of N_1 the amount of nitrogen applied. It wasn't until the P_2 level of phosphorus was used that the addition of nitrogen became effective and then only up through the N_2 level. Additional amounts of phosphorus to the P_3 level increased the value of the nitrogen as will be noted in the Table under N_3 the column at the P_3 , N_1 and N_2 levels.

Although there was an improvement at the N_3 level, it appeared that phosphorus was still limiting for this level of N_3 . The N_3 level at all levels of phosphorus, except P_3 , depressed yields indicating, perhaps, that the phosphorus level was too low to bring about the proper response from the highest level of nitrogen.

These data point out that added nitrogen on a low phosphorus soil is ineffective regardless of the rate used and not until the phosphorus requirements are satisfied does the nitrogen become important as a fertilizer in this soil with this crop. However, as the level of phosphorus is increased, the use of nitrogen in the program becomes more and more important in obtaining maximum yields.

It appears that the maximum effective level of phosphorus was not reached in this test for the most effective use of very high levels of nitrogen.

The potassium response was not significant. These findings tend to corroborate findings from other tests.

Potato Fertilization (W. D. Pew and J. H. Park)

Abstract: Results from experiments with varying levels of nitrogen, phosphorus and potassium have shown that the ratios of 1 - 2.5 - 0 to 1 - 3 - 0 produce the highest yields. While the ratio between nitrogen and phosphorus appears important, the water solubility of the phosphorus seems to be the most important factor in proper fertilization. Proper placement of the fertilizer as well as irrigation and other cultural practices are musts in potato production.

Introduction

Studies with fertilizer and fertilizer placement have shown that very important changes have become necessary in this phase of production to achieve greater success. Six ratios between nitrogen and phosphorus were used to determine the effects of these fertilizer materials on the yield of potatoes.