

Highlights of the 1970 Soil Fertility Research Program

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Potassium

1. Barley yields were increased at rates up to 240 lb K_2O /acre for medium soil test values (121-180 lb K_2O /acre). Decreases in yield were experienced on fields testing high and very high in soil K when rates of fertilizer K were above 60 lb K_2O /acre.
2. Dryland alfalfa yields were increased by 30% due to residual sulfur from 1969 fertilization. Rye yields were increased by 8 bu/acre on a test fertilized with 240 lb K_2O /acre in 1968.

Irrigated Crops

1. Yield increases of up to 22 bu/acre were obtained by nitrogen fertilization of irrigated soft wheat, though overall yields were low. An average maximum increase of 10 bu/acre was obtained when fertilized with nitrogen at 75 lb N/acre. Percent protein was reduced by nitrogen fertilization at rates below 100 lb N/acre and increases were not obtained until fertilized at rates of 200 lb N/acre.
2. Small yield increases in irrigated alfalfa were obtained on plots fertilized with 90 lb P_2O_5 /acre in 1969.

Nitrogen Sources and Placements

1. Urea was found to be equal to ammonium nitrate in supplying the crop's nitrogen needs when applied as a broadcast application. When placed with the seed, germination was restricted at rates in excess of 30 lb N/acre as urea and 40 lb N/acre as ammonium nitrate. Seed placement of nitrogen did not result in yield increases when compared

to broadcast applications at the same rate. Maximum yields were obtained at rates of 80 lb N/acre. Protein content was increased at N rates in excess of 40 lb/acre. Maximum protein content of 15% for Manitou and 13% for Pitic were obtained at N rates of 160 lb/acre. Moisture use was not substantially increased due to the increased growth and yield resulting from nitrogen fertilization.