EVALUATION AND CONTROL OF THE NUTRITIONAL STATUS OF CEREALS

III. METHODS OF DIAGNOSIS AND YIELD PROGNOSIS

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SUMMARY

Methods of quantitative diagnosis of the nutritional status of the young plant and quantitative prognosis of final yield were based on preliminary models constructed by using selected results ("pure"-effect data) from pot experiments with oats and spring wheat. The bases of the models - a fixed dry matter weight level of aerial parts of the plant and absolute and relative reference values - and the procedure by using the models were tested by relationships between predicted and obtained final yields. Highly significant correlation coefficients > 0.9 (p < 0.001) were found.

INTRODUCTION

Well-founded bases for expressing and evaluating the chemical composition of the young plant are necessary prerequisites for developing methods for diagnosing the nutritional status and forecasting yields.

Results in part I and II indicated that such bases are: 1) fixed dry matter weight-level (DMw-level) of aerial parts of the young plant and 2) reference values of absolutely and relatively optimal concentrations of nutrients, obtained from relationships between final yield and "pure"-effect concentrations of individual nutrients at a fixed DMw-level. "Pure"-effect concentration of K refers to that of K + ½Na.

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*** "Pure"-effect of a nutrient on yield is defined as highest attainable final yield, due solely to the concentration of the nutrient in the aerial parts of the plant at a fixed DMw-level. "Pure"-effect concentration of K refers to that of K + ½Na.
MODEL OF DIAGNOSIS AND YIELD PROGNOSIS

Selected results—('pure'-effect data) of pot experiments in 1964 with oats and spring wheat, were used in establishing models of diagnosis and yield prognosis for oats (Fig. 1) and for spring wheat (Fig. 2).