TREND STUDIES IN RELATION TO THE ANALYSIS OF YIELD DATA FROM ROTATION EXPERIMENTS

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THE usual method of analysis of yield data from rotation experiments is based strictly on a presentation of the average yields obtained. While average yields are indispensable to any presentation of results from rotation and other field plat experiments in general and offer the best direct basis of comparison of various plat treatments, they may nevertheless be supplemented to advantage by additional criteria, such as evaluation of trend relationships and expressions of seasonal variability. The writer found in presenting the results of rotation experiments to groups of producers that as much, if not more, interest was shown by farmers in the trend relationships as in the average yields obtained from the various sequences of cropping. A graphical presentation of yield trends met with exceptionally good reception. The trend relationships were in all cases discussed in connection with the average yields obtained.

The above referred to producer response to trend relationships of crop rotation data provided the main impetus for presenting this type of analysis at this time.

MATERIALS AND METHODS

The yield data of 10 rotations conducted on the University Farm at Moscow, Idaho, were available for analysis. These rotation experiments were started in 1915 and have been carried up to date, making the yield data of a 23-year period available. Except in the case of the potato plats, the same varieties were used during the course of the experiment. Obviously, the substitution of varieties with differing yielding capacities may materially influence trend relationships. The varieties used were Red Russian winter wheat, Swedish Select oats, Alaska peas, Rustlers White Dent corn, and Early Ohio, Bliss Triumph, and Katahdin potatoes. These rotations, with their crops and practices in their order of sequence—

LINEAR AND CURVILINEAR TRENDS

Yield data may be fitted to various types of curves depending on the particular types of trends shown and closeness of fit. For purposes of providing supplementary information to the interpretation of mean yields, straight line trends have several decided advantages over curvilinear trends.