

A SURVEY OF WHEAT, (Triticum aestivum L. em. Thell.),  
SEED QUALITY AND ITS EFFECT ON GRAIN YIELD

by

ROBERT MARK JACQUES

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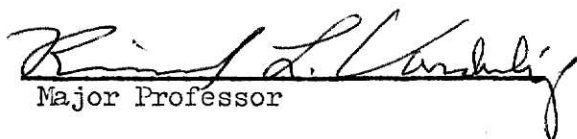
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Approved by:

  
Major Professor

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## INTRODUCTION

Production of winter wheat (Triticum aestivum L. em. Thell.) long has been of great importance in Kansas. Over one-fifth of all winter wheat produced in the United States comes from Kansas. About 12 million acres of wheat are planted in the state every year. Consequently increasing the quality and yield of grain produced could be of considerable economic importance.

One method of increasing yields is to improve the quality of seed being used. To the farmer, wheat seed generally has good quality if (1) the plant grown from the seed matures properly in its environment and is readily harvested and, particularly, (2) if it produces a good grain yield. Increasing concern has been expressed regarding the quality of wheat seed being used in the state. Only recently has emphasis been placed on the importance of seeding good quality seed, and the subsequent possibility of obtaining higher yields.

The major objective of this study was to evaluate the effect of seed quality on grain yield, and determine what aspects of seed quality most influence yield. If a determination of how seed quality affects yield could be made, then emphasis on growing and maintaining good quality seed could be increased, thus insuring that seed quality is not a limiting factor for maximum yield.

Varietal purity is considered a standard of good seed quality. Since most of the seed wheat used in Kansas is grown by the farmer for his own use, it was of interest to determine if varietal purity was being maintained. An additional study was conducted to determine varietal purity of samples collected in the 1974 Kansas wheat drill box survey. Varietal

purity was related and compared to different areas of the state and variables defined in the survey.

## REVIEW OF LITERATURE

### Similar Surveys

Few experiments similar to this survey have been documented in the literature. A drill box survey was conducted in Georgia (22) to determine the quality and kind of small grain seed being planted by farmers in the state. South Carolina also published results of a similar survey conducted in 1958 (8). The Nebraska Crop Improvement Association (18) conducted a survey among certified wheat seed growers in the state to compare yields obtained from certified seed to state average yields.

Lowery (22) collected at least 25 samples of small grain seed out of 54 counties in Georgia. A questionnaire was completed at the time each sample was collected. A three-pound sample of seed was taken, part for laboratory analysis and the remainder for planting demonstration plots. Meetings with farmers, seedsmen, and other groups were held at the demonstration plots so those interested could see the type of small grain seed being planted.

Garrison, Squires, and Shelley (8) in South Carolina expressed concern that farmers were not following the best available recommendations on selection and planting of small grain seed. Consequently, a study was conducted to determine the source and quality of seed being planted. At least 100 samples were taken in 21 counties, with the samples being taken directly from the grain drill for laboratory analysis and field demonstration plots. Four hundred seeds of each sample were planted in the greenhouse for an emergence and disease study. Field days also were held to