**PROJECT TITLE: DISEASE DETECTION AND CLASSIFICATION OF WHEAT KERNEL TYPE USING FUSED INFORMATION FROM THREE IMAGING TECHNIQUE**

(supported by The Scientific and Technological Research Council of Turkey (TUBITAK))

Wheat is the most produced among major agricultural components of human nutrition. Wheat quality is planned to be determined using visible, near and far infrared imaging techniques. Type of the wheat, which is the most important parameter on the quality decision, will be determined. Ingredients of the wheat, such as protein, gluten etc., will be estimated. Ratios of foreign residuals, radicals, and defective seeds will be automatically determined. For these, design and development of a system that integrates the information from all three wavelengths and software on recently developed subtractive classification techniques is aimed. With the final system, human influence on wheat rating, definition and classification and quality assessment tasks will be eliminated and more objective decisions will be achieved.
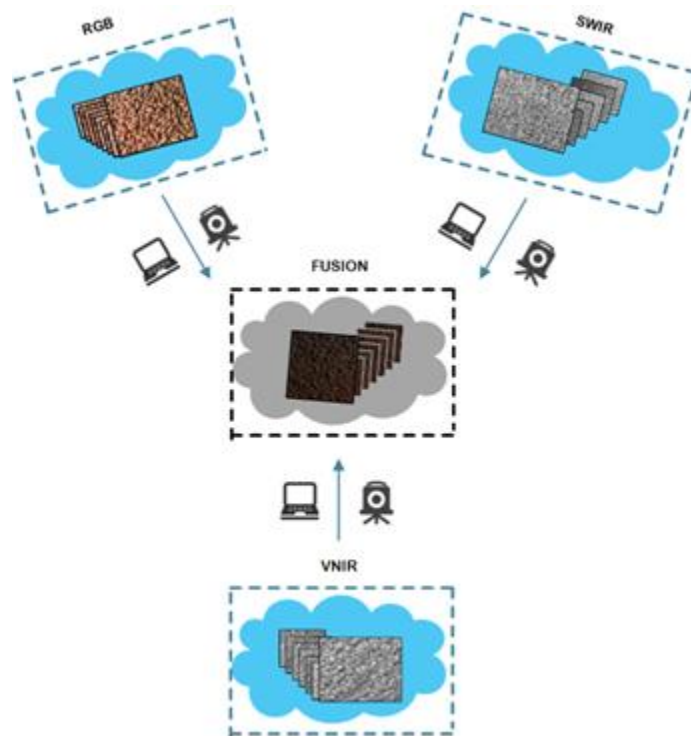
PROJECT TITLE : DESIGN/DEVELOPMENT OF A PORTABLE V-NIR DEVICE FOR DOMESTIC BREAD WHEAT PROCUREMENT EVALUATION

(supported by The Scientific and Technological Research Council of Turkey (TUBITAK))

Technical quality for wheat means suitability for the final product. Along with the physical properties that favors the high flour efficiency, since the amount of flour obtained by the processing of the wheat is a primary parameter that determines the technical quality, gluten content and composition (protein quality) are also essential. The aim of this project is to design and develop a

prototype of a domestic and national portable/hand-held device for quality assessment and classification of wheat. This prototype will comprise a miniature NIR measurement sensor, a mini processor board and required peripherals like buttons and displays. Classification and decision algorithm will entail deep learning. With this system (prototype), the major problem of type determination during first class bread wheat purchases at TMO and trade market will be reduced. The device is also expected to contribute in rehabilitation research in early phases, even in the cropland.