

## GLUMES IMAGE ANALYSIS FOR WHEAT LANDRACES IDENTIFICATION

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Wheat glumes size, shape, colour and texture, measured by image analysis techniques, were used, for the first time, to identify landraces.

This new approach was implemented and tested on 52 different Sicilian wheat landraces, reaped for three consecutive years. A total of 138 quantitative morpho-colorimetric variables were measured from high resolution digital images and the recorded data were statistically analysed applying a stepwise Linear Discriminant Analysis.

All the comparative analyses, conducted distinguishing for systematic rank, given perfect identification performances; while an overall percentage of correct identification of 89.7% was reached when the landraces were compared all together.

Finally, the new identification system was tested with an unknown glume sample, later exclusively recognized as Vallelunga, one of the Sicilian landraces.

This work represent the first attempt of wheat landraces identification based on glume phenotypic characters, applying computer vision techniques. Considering the current growing interest in local old wheat landraces, strongly connected to the renewed appreciation in traditional and typical local products, these new achievements allow to propose the application of the image analysis system not only for grading purposes, but also as an affective traceability system for the cereal chain.