

Approaches to crop phenotyping using image analysis techniques

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Plant phenomics is the novel research area in the plant sciences aiming to solve the bottleneck in the analysis of the relationships between the genotype and phenotype. It is based mainly on the high throughput automated approaches of image analysis. In the report, we describe the successful implementation of the high throughput phenotyping for the analysis of plant leaf hairiness (in wheat, potato, and tobacco), wheat seed size, shape and color characteristics. These approaches allowed us to identify candidate genes for the complex plant traits and evaluate of the traits changes with respect to changing environmental conditions.

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The main publications of authors on the subject of the abstract:

Afonnikov, D. A., Genaev, M. A., Doroshkov, A. V., Komyshev, E. G., & Pshenichnikova, T. A. (2016). *Methods of high-throughput plant phenotyping for large-scale breeding and genetic experiments. Russian journal of genetics*, 52(7), 688-701.

Take-home message:

The success of the development of the plant phenomics tools will provide efficient determination of the genes controlling various plant traits important for breeding.