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NIR DIODE ARRAY SPECTROMETERS ON AGRICULTURAL HARVEST MACHINES OVERVIEW AND OUTLOOK

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Compact Near Infrared Diode Array Spectrometers offer new possibilities for on line quality assurance in the agricultural sector. Due to their speed and complete robustness towards temperature fluctuations and mechanical shock Diode Array Spectrometers are suitable for the use on Agricultural Harvest Machines.

The growing consumer consciousness of food quality in combination with falling manufacturing prices demands procedures for an effective quality control system. The various conventional types of NIR instruments which have so far been used in laboratories are unsuitable for mobile applications under the rough conditions of field cropping not only because of their slow speed of measurement but also because of their shock sensitive filter wheels and monochromators necessary for fractionating polychromatic light. Another advantage of the on line use is the reduction of the sampling error because of the continuously measurement of the whole product.

Considering the large economic importance of the dry matter content on agricultural products it is of particular advantage that water belongs to those constituents which are most easily assessed in the near infrared. While other constituents of economic importance such as starch, oil and protein in grains and seeds have a much lesser effect on NIR signals, their contents can nonetheless be assessed with high analytical precision on freshly harvested grains and seeds.

In the last years several applications for on line quality assessment on harvesting machines were developed and tested. The talk will give an overview and outlook on existing and future possibilities of this new field of NIR applications.