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FOR FOOD SECURITY AND HEALTHY LIVES**

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DURUM WHEAT NITROGEN MANAGEMENT: FROM MONITORING TO APPLICATION AND MORE

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Nitrogen deficiency is, after water stress, the main abiotic factor limiting productivity in the Mediterranean basin, where durum wheat is a major crop in terms of area cultivated. Therefore, proper nitrogen management is key to ensure yield sustainability and grain quality of durum wheat. Monitoring is a basic component for an efficient nitrogen management. That includes the deployment of remote sensing techniques from very diverse platforms and at very different spatial scales: aerial platforms (including satellites and unmanned or manned vehicles), ground level or even in the lab at single kernel level. As for sensors different categories exist. The most commonly used are hyperspectral / multispectral sensors and cameras: these include from cameras placed in aerial platforms, to sensors deployed at the ground level (including hand held canopy and single leaf sensors and NIRS on combine harvesters) and in the lab (usually NIRS). However, RGB images from conventional cameras are also amenable for nitrogen monitoring, while representing a low cost alternative. Beside remote sensing techniques other approaches exist for monitoring N status. This is the case of the natural abundance of stable nitrogen isotope composition in kernels or another tissues which may inform not only on the amount of fertilizer applied but even on the kind of fertilization (eg. chemical versus organic fertilization). On what follows examples of the different categories will be presented.

ABSTRACT