Measurements of Soil Mineral Nitrogen for agronomic learning and open innovation

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PRACTICE ABSTRACT

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For the past 10 years, in Burgundy (France), the Yonne Chamber of Agriculture and INRAE have been measuring mineral nitrogen in the soil at the beginning of winter (WNmin), with the farmers of a drinking water catchment polluted by nitrate. These WNmin measurements are then analysed with the farmers via : An annual analysis of the results of the leaching potential compared to the field: from January, the farmers are informed of the measurements of their fields.

They have access to their potential leachable nitrogen results by crop precedent, in comparison with their neighbours ; An annual analysis of the quality of the water emitted by the territory. During the spring, the results of the sample of plots are integrated at the scale of the whole territory, to estimate the global quantity of nitrate emitted ; An in-depth diagnosis of nitrate losses on each farm. After a few years, a reliable estimate of the leaching potential at the farm level is made.

Complemented by observations of absorbed nitrogen, these data allow a precise diagnosis of the nitrogen functioning of their cultivated fields. These diagnoses make it possible to : develop the agronomic learning of farmers and their advisors by providing knowledge on the functioning of nitrogen in their fields ; innovate, highlight and propose a dozen different ways of cultivating in order to succeed in "producing nitrate-free water" ; to provide tools for the governance of water quality recovery projects and to promote dialogue between the water manager and the farmers. Thanks to this dynamic, after 5 years, overall nitrate emissions from the territory's fields have become low.

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