REDUCE N-APPLICATION

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Description
In several regions of western Europe, the NO_3-N content in ground- and surface water is beyond the threshold value of 50 mg NO_3^-/l or 11.3 mg NO_3^--N/l. Therefore, N-applications must be reduced.

Rationale, mechanism of action
The Nitrate Directive puts forward the threshold value of 50 nitrate/l in all ground- and surface waters throughout the year. To diminish the NO_3^--N losses by leaching, it is a prerequisite to better tune the total available nitrogen to the demand of the crop. This approach is also valuable for pastures. In that case the excrements of the animals have to be included with their efficiencies.

Applicability
The N-uptake of the most important crops is known. The total available N equals the N_{min} in the soil profile before sowing or planting + the N mineralized from SOM and of applied organic material + the mineral N-fertilization. Because the N_{min} is not always determined and the N-mineralization is difficult to estimate correctly, the N-fertilization has to be limited. Maximum amounts of total N, N from organic material and mineral N should be established, like it is already done in some countries, to reduce leaching losses.

Effectiveness, including certainty
The measure will be directly effective. It is clear that knowledge of the N_{min} before the vegetation period and a better estimation of the N released by SOM and organic inputs can further reduce the mineral N fertilization.

Time frame
The introduction of maximum allowed N applications will have a direct and immediate effect on potential leaching losses.

Environmental side-effect/ pollution swapping
No problems are expected.

Relevance, potential for targeting, administrative handling, control
Relevant for all fields but effect will be different depending on the fertility status of the soil. To make it not to complicated, make groups of crops with comparable N-uptake. Farmers have to fill out documents indicating the N-application at least on a farm basis. Control by the administration if the N applied is not higher than the calculated amount, based on the present crops on the farm.

Costs: investment, labor and acceptance by farmers
The administrative load is rather high. There are no further investment and labor costs. The acceptance by livestock farmers can be hard because this will limit the application of animal manure on their fields. As a consequence more animal manure has to be treated or transported to other farms with supplementary costs.