

## REDUCING P CONTENT OF COMMON NPK FERTILIZERS

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### *Description*

The nutrient requirements of N, P and K vary substantially according to e.g. cultivated crop species and climatic conditions. Further, the P amounts which actually need to be applied in mineral fertilizers are also dependent on the amounts becoming available from other sources, i.e. soil reserves, animal manures or other organic fertilizers. To avoid unnecessary high P applications in NPK fertilizers in cases of considerable P supply from the other sources, it is essential that there are such NPK fertilizers in the market which contain also low amounts of P.

### *Rationale, mechanism of action*

P fertilizer recommendations are based on field experiments and they help to optimize the P application amounts. The recommendations are updated to consider the latest research knowledge, and due to adverse environmental side-effects of excessive P applications, considerable shift towards lower recommended P levels has occurred. On the other hand, the nutrient contents of different NPK fertilizers have been changing according to the market needs. Due to site or crop specific fertilizer requirements and new, lower recommended P application levels, it may not always be easy to find suitable fertilizers in practice, if there are only a limited number of products available in terms of proportions of the different nutrients in the compound fertilizers. Therefore, at the farm level, the lack of NPK fertilizers with low P contents may limit the possibilities to follow the P recommendations, leading to over-fertilization. It is crucial that fertilizer industry is willing to cooperate with research and advisory system to find out which would be the best selections of nutrient proportions in NPK fertilizers for a given market area, depending on the actual need of agricultural crops.

### *Applicability*

At the farm level, when soil P status is already high or animal manures are used, it is possible to follow the fertilizer recommendations and adjust P fertilization accordingly, if NPK fertilizers with low P amounts are available. In some countries or regions, like in Finland, this is not the case. It is a very simple measure and there is no need for technical equipment.

### *Effectiveness, including certainty*

The measure will be effective in the long run.

### *Time frame*

It can take several decades before real changes in losses will occur. However, adjusting P inputs with actual crop need is one of the most crucial things to be achieved.

### *Environmental side-effect/ pollution swapping*

No problems are expected.

*Relevance, potential for targeting, administrative handling, control*

The measure is relevant for all types of agriculture. The cooperation between industry and research/advice is needed.

*Costs: investment, labor and acceptance by farmers*

In principal the measure should reduce the farmers' costs when they have to buy less P. However, the prices of low-P fertilizers may not be much lower due to extra costs in manufacturing and offering for sale the larger selection of different NPK fertilizers. Moreover, acceptance by farmers may be restricted by extra work needed when selecting and applying the different fertilizers.