A NATIONAL DATA SYSTEM ON P INPUTS AND BALANCES ESTABLISHED BY FERTILIZER INDUSTRY

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- National fertilizer industry association
- 50 producers (lime, fertilizers, organic products, biostimulants)
- Official mandate to collect national statistics on fertilizer deliveries
- Updates since 1989 P, K and Mg total input to ag. soils and P, K and Mg balance
I. Why using P balance as an indicator?

1. P balance is easy to calculate
2. Limited P transfer from soil to air or water
3. Positive P balance = increase of P stock in soil
4. Negative P balance = decrease of P stock
5. This indicator can be used at field, farm and regional scale (22 régions in France)
II. Simple methodology of P balance

Total INPUT – Total OUTPUT = P balance

INPUT =
Mineral and organic fertilizers (including imports from B and NL)
Total excreta from farm animals
Biodigests: composts, sludges, digestates....

OUTPUT =
Crop production (annual national statistics) except for cereal straw
Grass both yielded and grazed (calculation according to number of ruminants)
III. Decrease of P input, a long term trend

Source: UNIFA
III. P in animal excreta, a major contributor

Total input in Kg P/ hectare of ag. land

France: 21 kg P /ha (Last 3 fertilizer years 2011-2013)
of which 8 kg P in mineral fertilizers
IV. Slight increase of P export in crops and grass

Source: UNIFA
V. P balance close to equilibrium

Source: UNIFA
V. Contrasted P balance across regions

Input – Output in Kg P/ hectare of ag. land

4.4 kg P /ha (fertilizer years 2011-2013)
Conclusion:

A low 4.4 kg P/ha balance due to reduced P input

- 42% less total P input since 1988/89, mainly mineral fertilizers
- 9% more total P output since 1988/89, mainly crops
- 78% reduction of P positive balance

P balance is negative or low in 7 regions (< 2.2 kg P/ha) with limited cattle and large cereal production

P balance is positive in 15 other regions (> 2.2 kg P/ha) with more animal production
Conclusion (2):
Recycling of P in manure and biowaste is a key issue

Less Input  More Output

Limited P Balance

- **P in animal excreta tends to decrease**: less animals, less P in the diet (phytase, lower P recommended) and in the manure
- **P in biowastes is important** but cannot compensate for the decrease of P input
- **Risk of decreasing P soil fertility** in regions exporting cereals
- **More effort to balance P fert.** at field, farm and regionalscale
Full report (40 p) in French:
http://www.unifa.fr/librairie/donnees-statistiques.html

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Thanks for your attention