

DONUTSS workshop

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

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▶ **UNIFA - Paris, France**

- ▶ **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

$$\text{Total INPUT} - \text{Total OUTPUT} = \text{P balance}$$

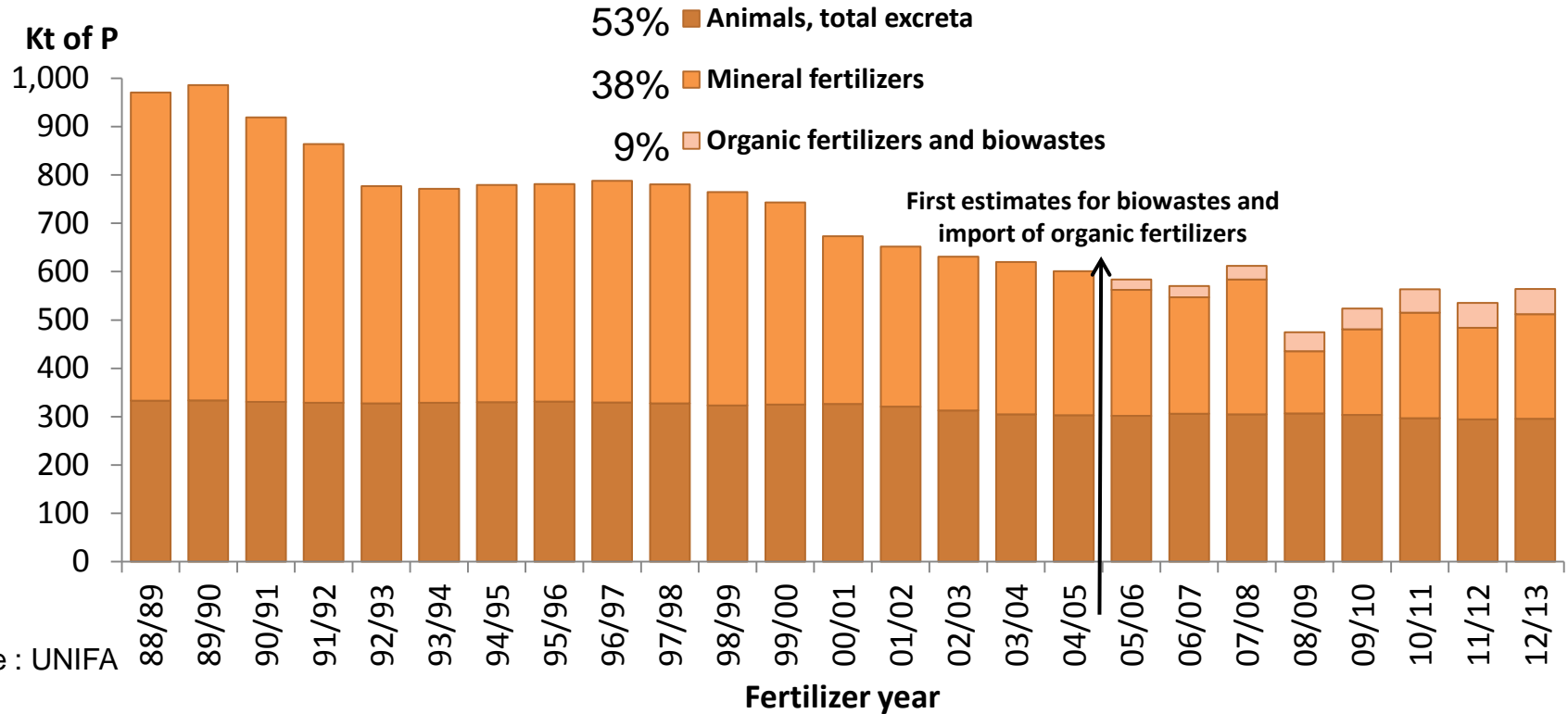
INPUT =

Mineral and organic fertilizers (including imports from B and NL)
Total excreta from farm animals
Biowastes: 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

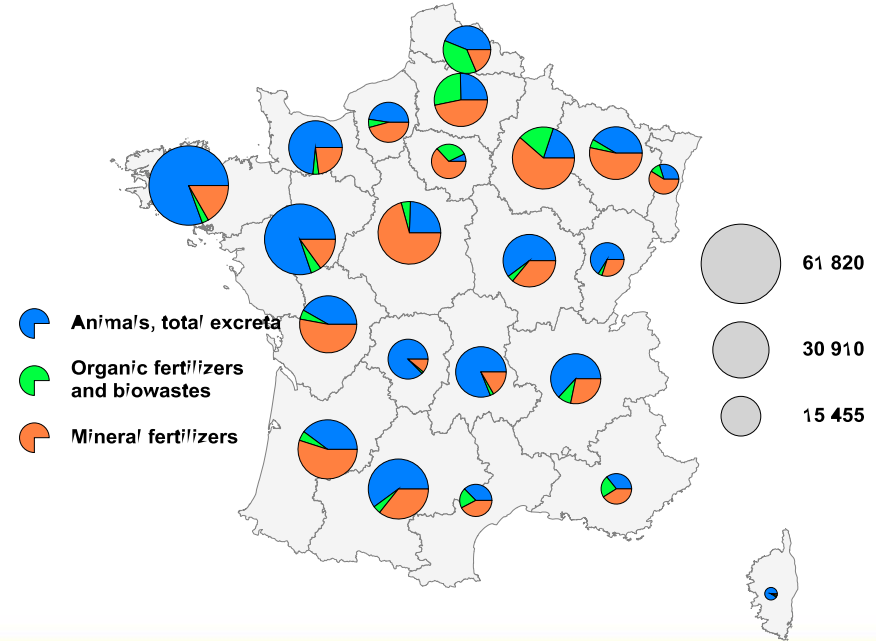
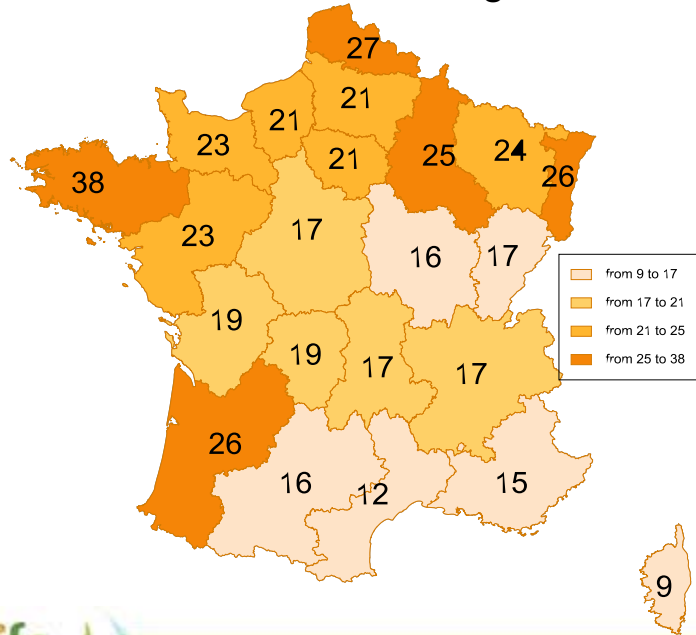


Source : UNIFA

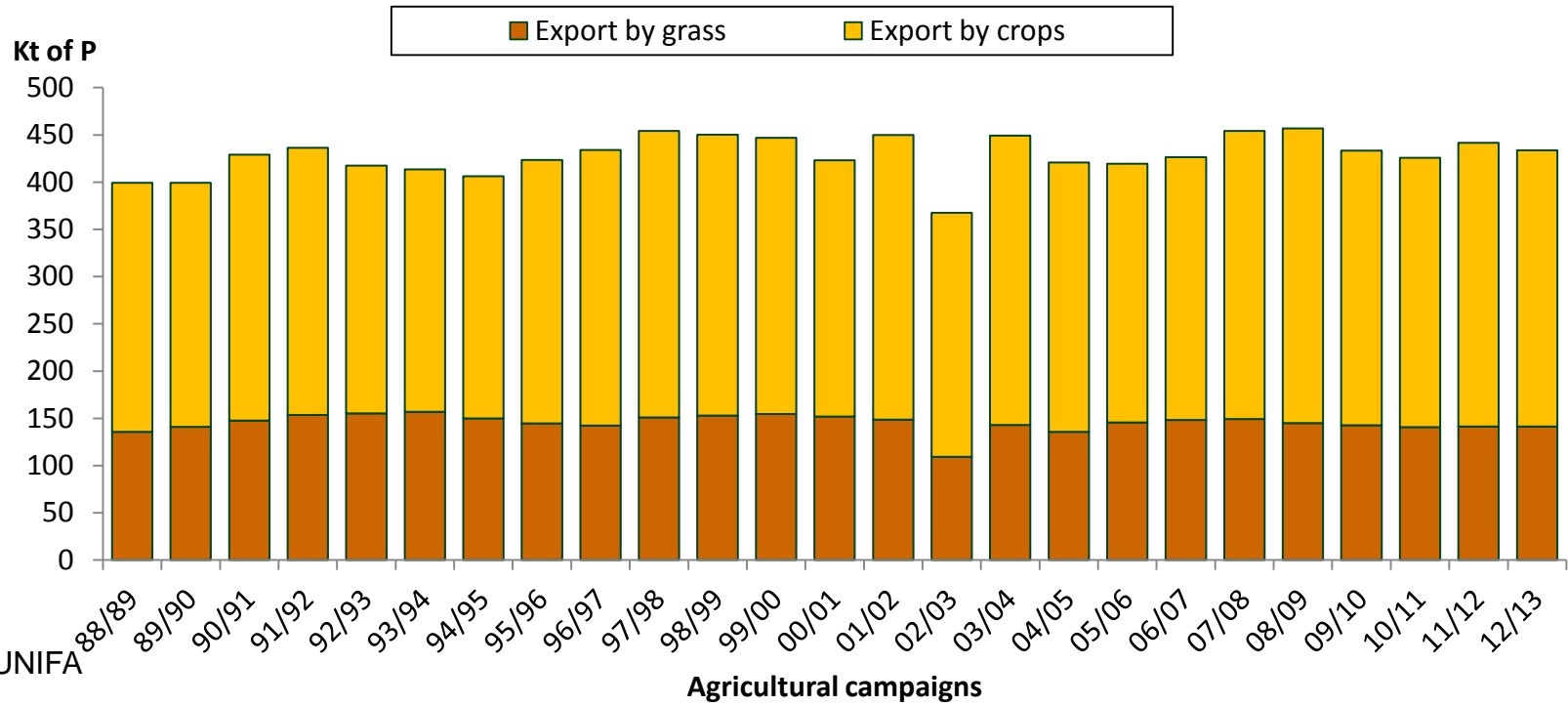
III. P in animal excreta, a major contributor

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

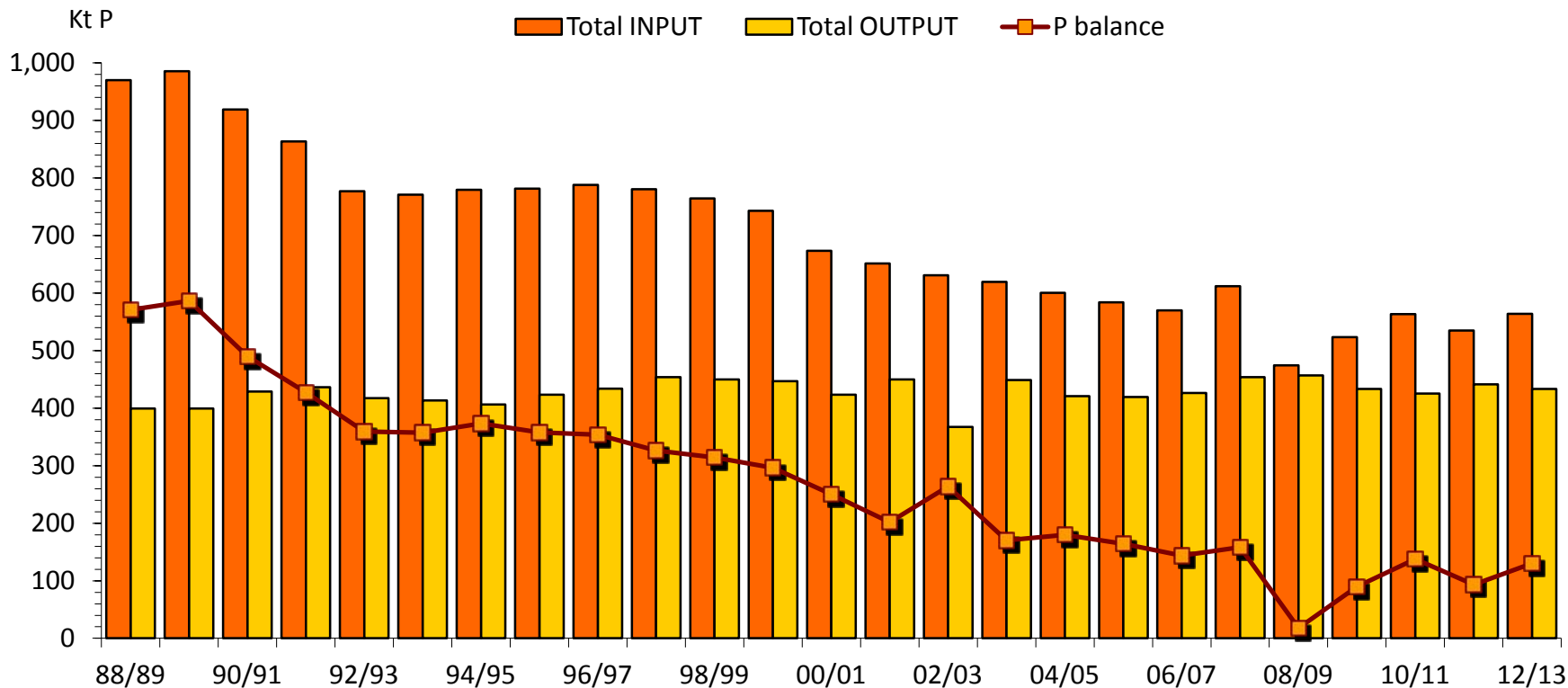


IV. Slight increase of P export in crops and grass



Source : UNIFA

V. P balance close to equilibrium

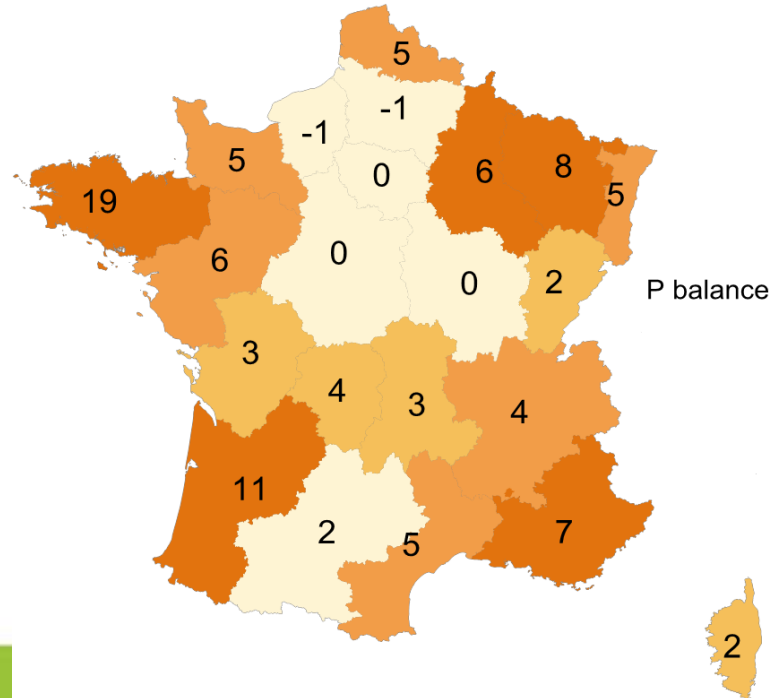


Source : UNIFA

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 regional scale



Full report (40 p) in French:

<http://www.unifa.fr/librairie/donnees-statistiques.html>

Any question to:

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Thanks for your attention