Methodological approach of PECgw and pesticide registration at national level.

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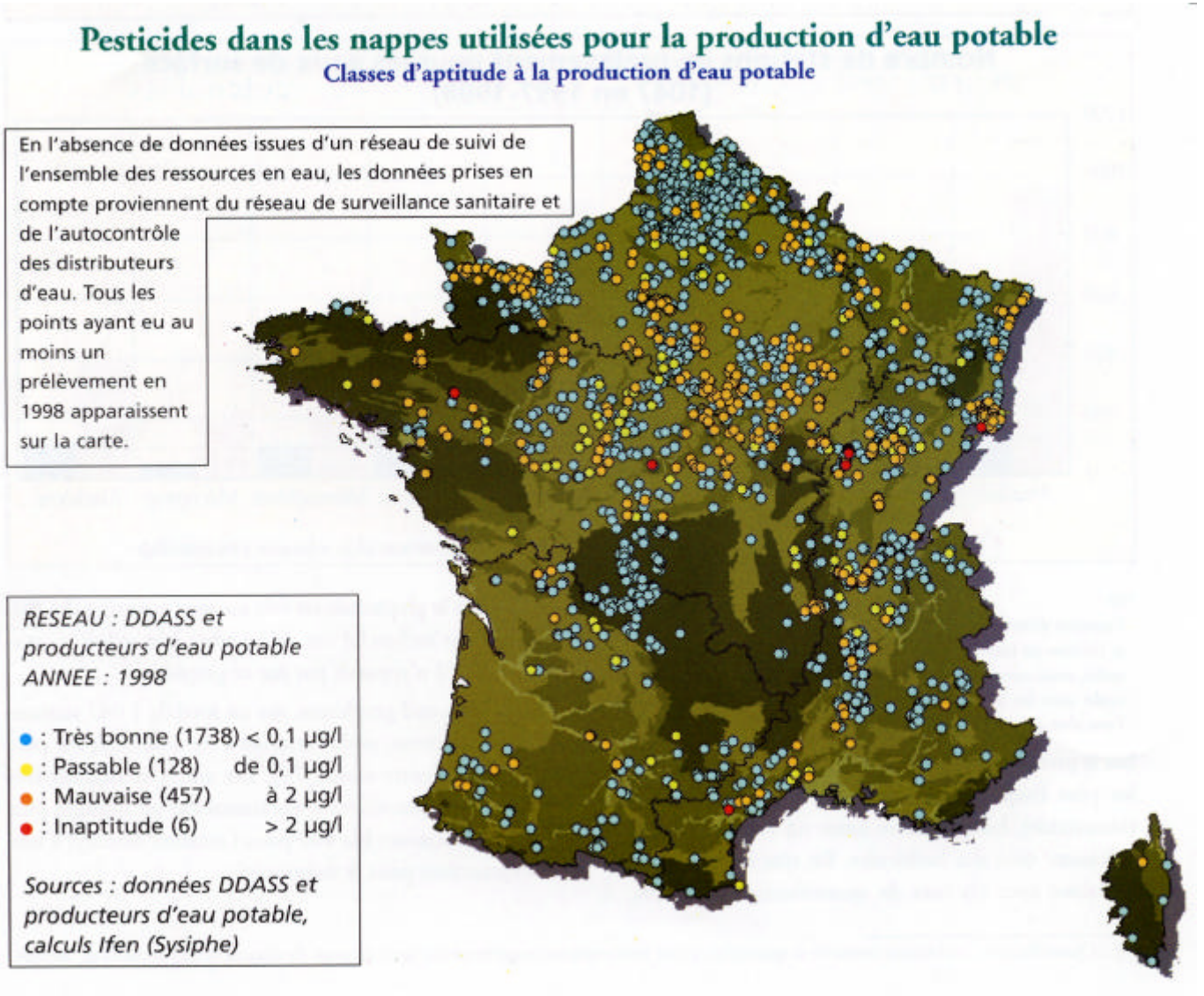
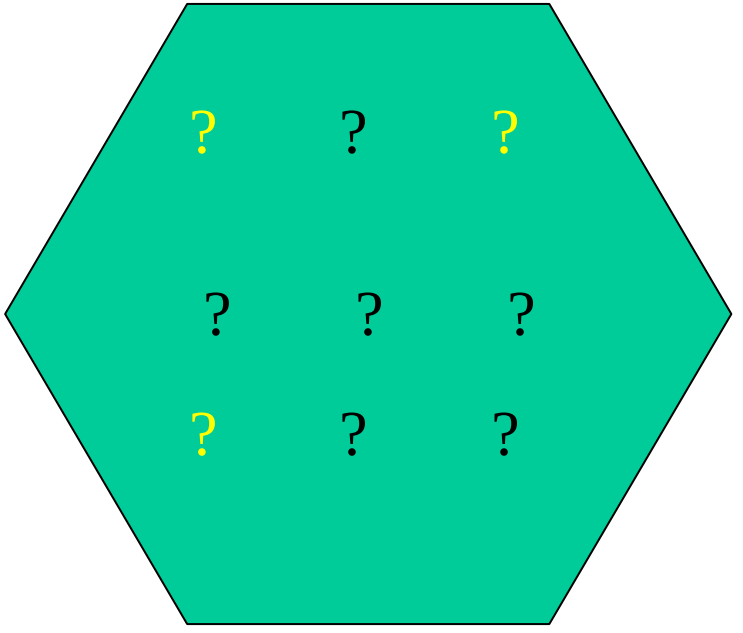
- Directive 91 414 EU requires in Annex III a determination of PEC_{GW}
- At EU level the question is: no major risk ? and a suitable way to deal with is the use of test scenarios as proposed by FOCUS
- At National level, the question is : is the use of PPP safe regarding Uniform Principles?
- Member States have to ensure that the concentration of residues of AS in soil water at 1 meter depth is less than the trigger value of 0.1µg/L.
- Regarding a Directive definition, MS have an obligation of result whatever the chosen method.

Pesticides in ground waters a dispersed occurence



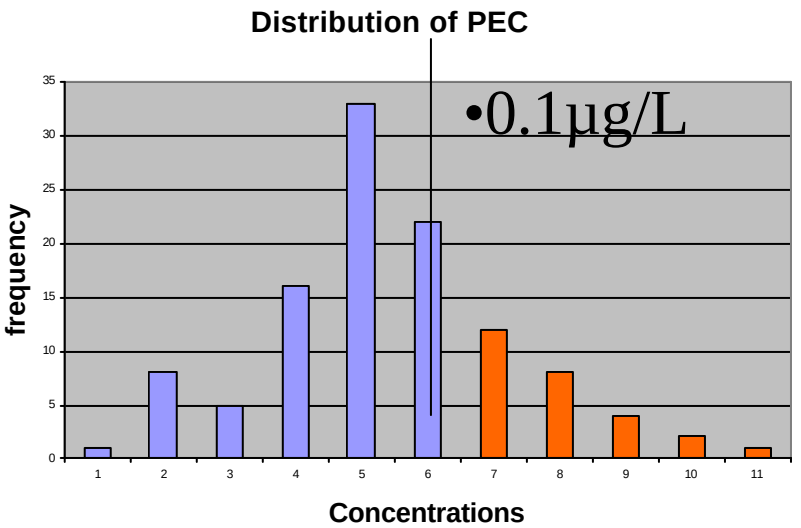
A possible approach for France, a country which belongs to Northern and Southern areas

- Percentage of PEC_{GW} over 0.1µg/L
- And
- Associated factors of risk
- Could be a basis for a Political decision



A possible method

- Requirement
- Percentage of PEC_{GW} over 0.1µg/L



- Proposal
- A distribution of PEC around 0.1µg/L (and percentages)
- A population of PEC
- A population of geographically distributed scenarios

An attempt to identify the associated factors of risk

- Requirement
- Associated factors of risk

- Proposal
- identification of dominants factors

from

unfavourable PEC

(PCA analysis of associated factors)

(sensitivity analysis of the chosen model is achieved)

This approach requires

- A model
- - with simple assumptions as PRZM or PELMO
- - which allows acceptable calculation duration
- - with Monte Carlo codes

- A set of scenarios
- - large enough to allows Principal Component Analysis (PCA)
- - Input data with a known variability

A population of geographically distributed scenarios

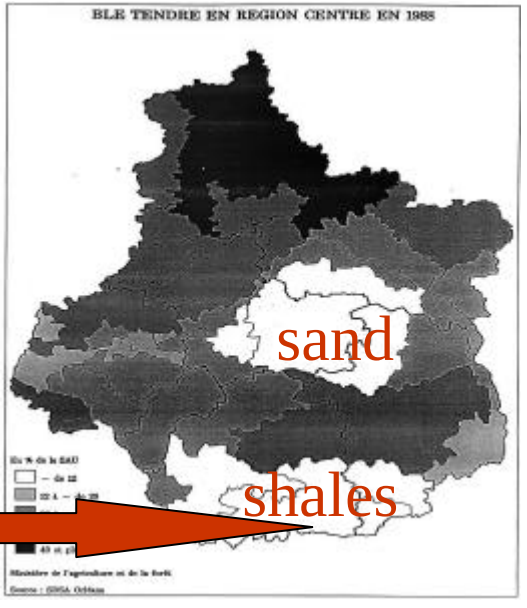
The cropping areas (areas of concern)

A crop can require specific conditions of soil, water, and climate (temperature, water)

- Ex: vine

- As scenarios are limited to relevant conditions the range of variation of parameters is reduced

- Inner and outer borderline cropping depends on economical conditions and are treated on expert judgment
- Ex: wheat



Climatic areas (agro-climatic domains, domains of plant growth)

- A crop can require more or less narrow conditions of climate (temperature, soil water, precipitations)
- In agro-climatic areas, climatic conditions are «comparable »
- In France 29 areas are identified

Meteorology

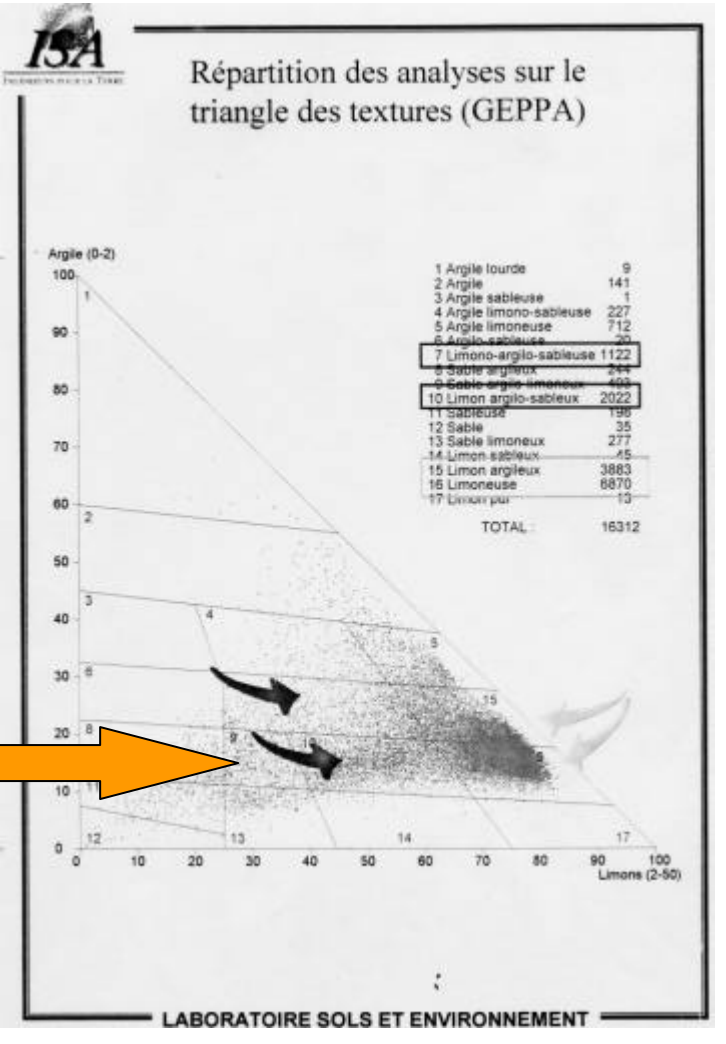
- 30 years chronicles are available from 70 to 140 distributed points in France

- The distribution is not homogeneous
- An interpolation calculation will allow to allocate data sets to each scenarios

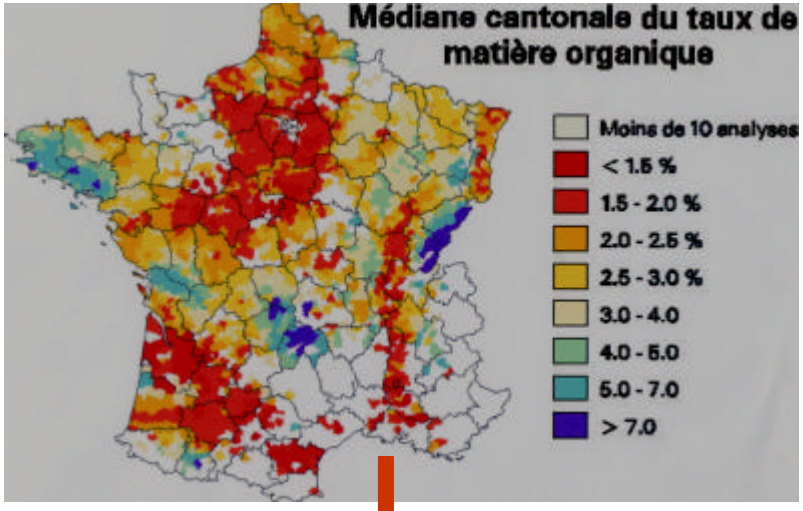
In each climatic zone a number of scenarios first related to crop and plough layer

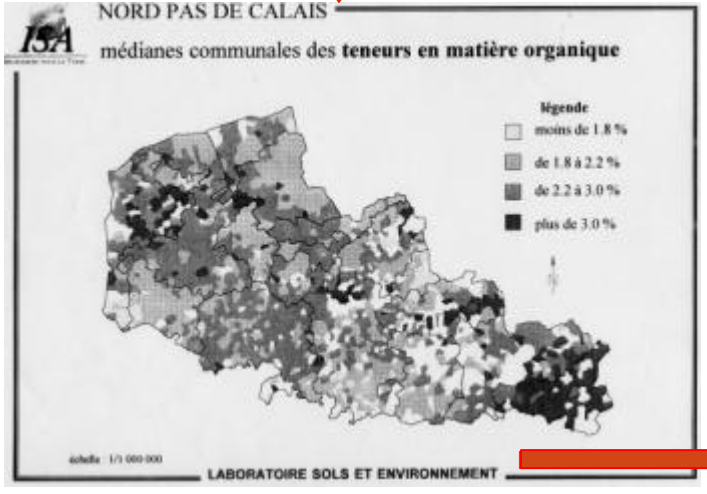
- Usage (crop)
- And
- Plough layer (analysis and related statistics to characterise the top sol properties Ex: Texture)

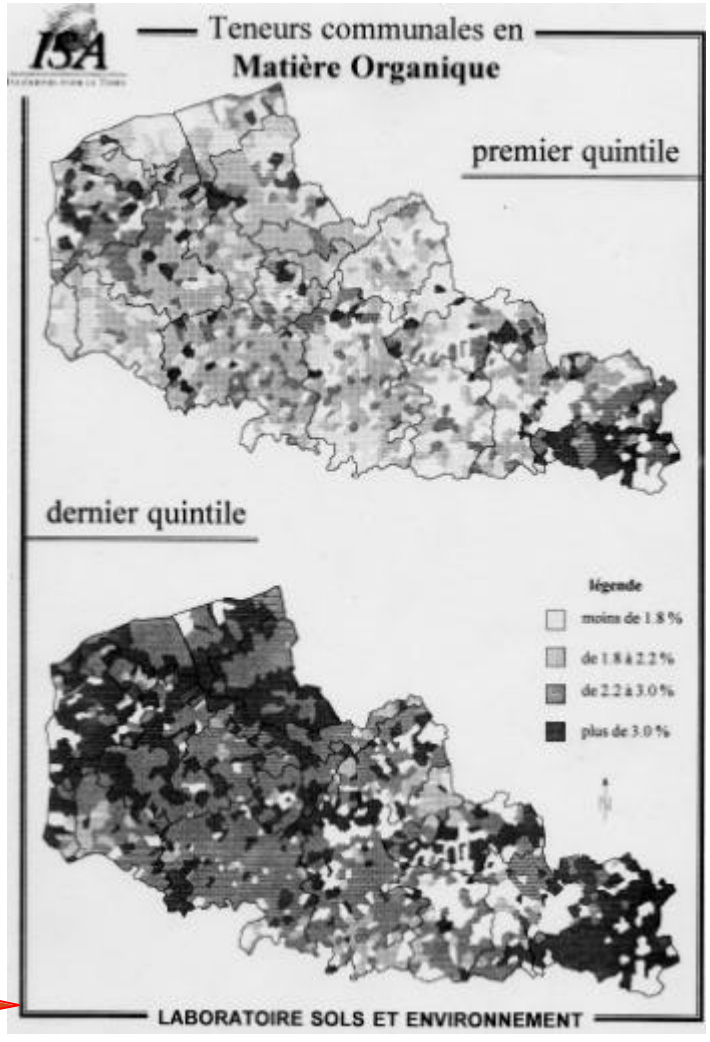
are known at cantonal scale (at least 3000 units at INRA- INFOSOL)



Plough layer OM content (statistics)

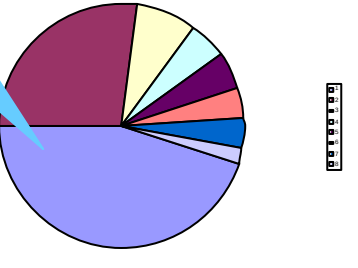




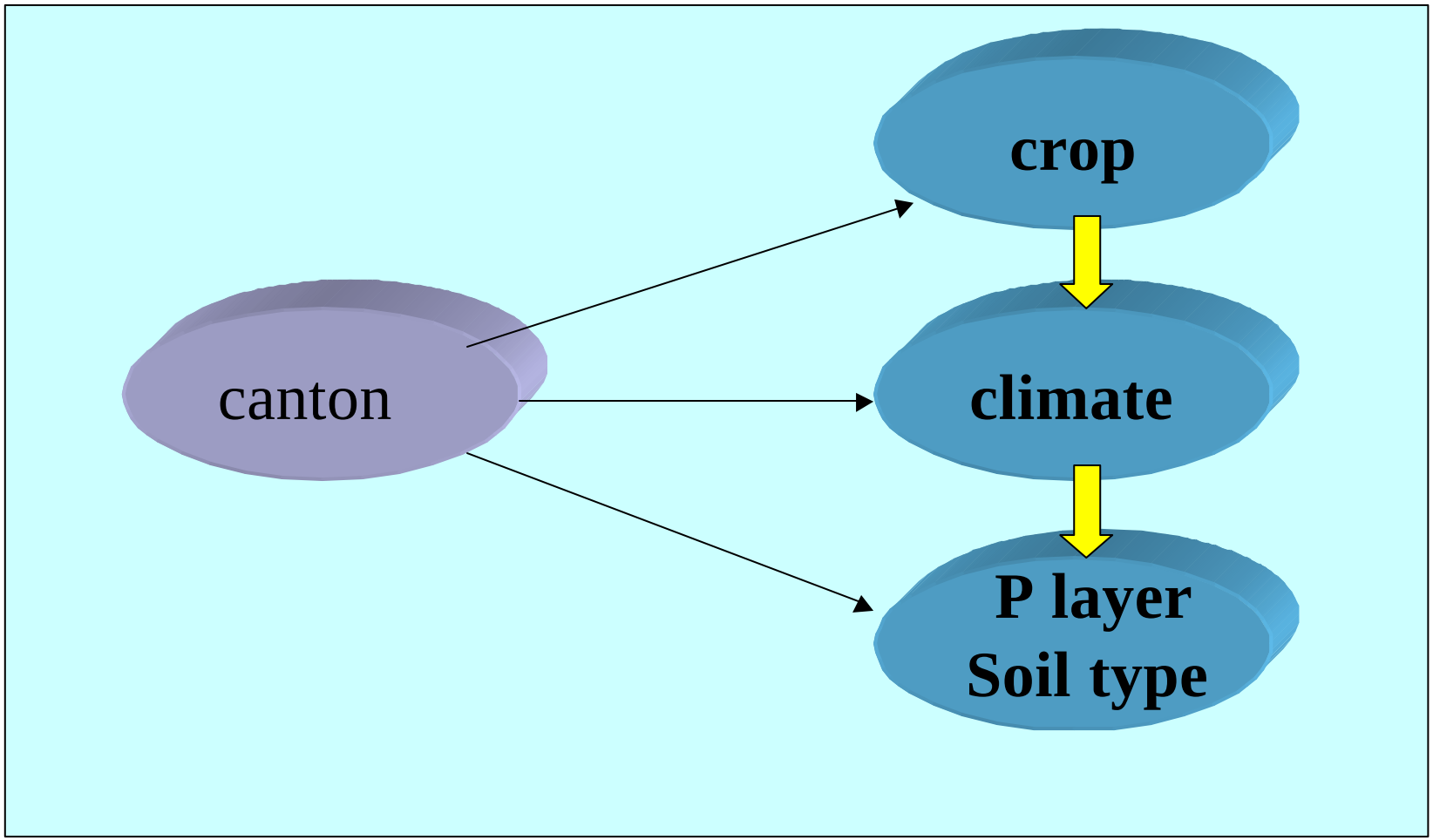


A number of scenarios secondly related to soil type

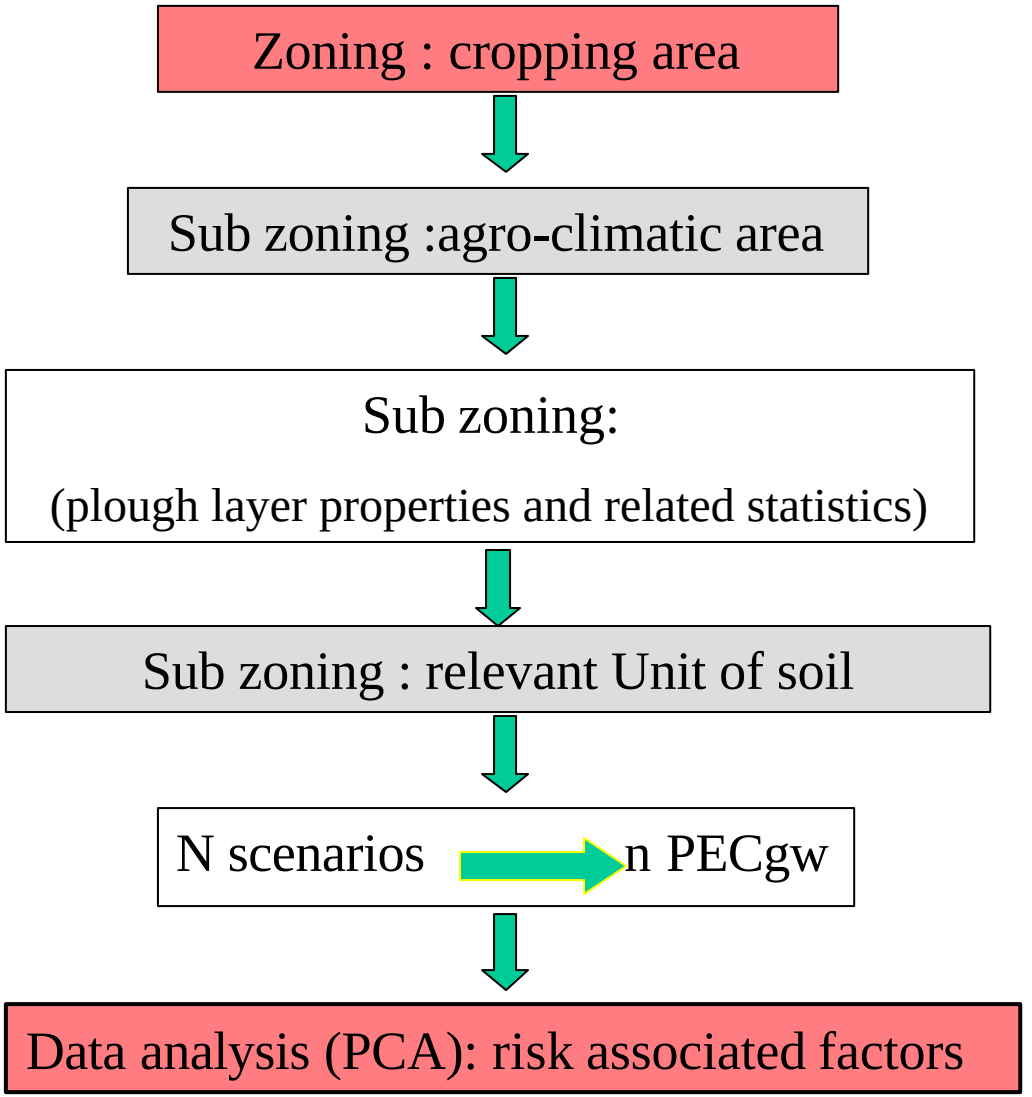
- Finally, a scenario is associated to each relevant and dominant soil type of the cropping area.
- Soil profile relevant properties are available from a data base, DONESOL.
- A range and mode describe a variability associated to each main parameter .



Definition of scenarios



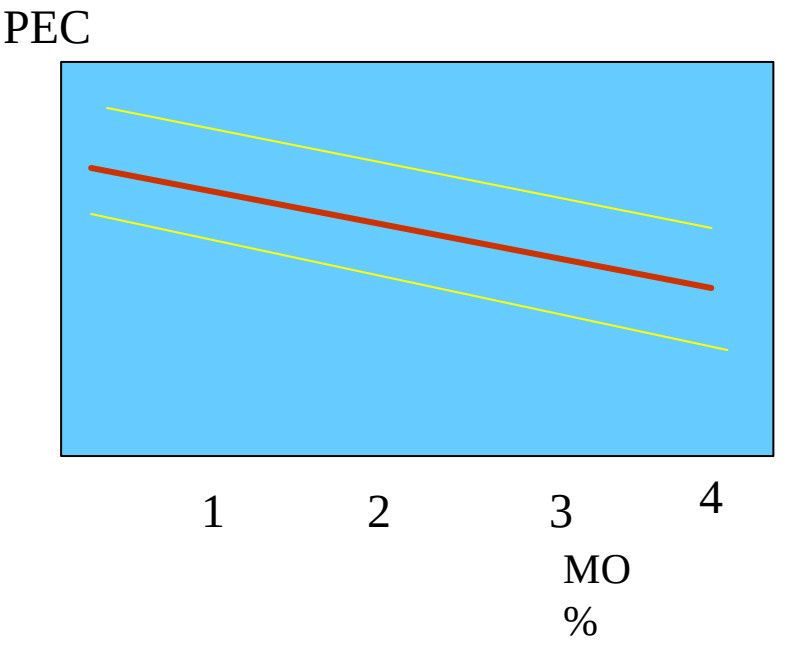
Risk associated factors related to croping area



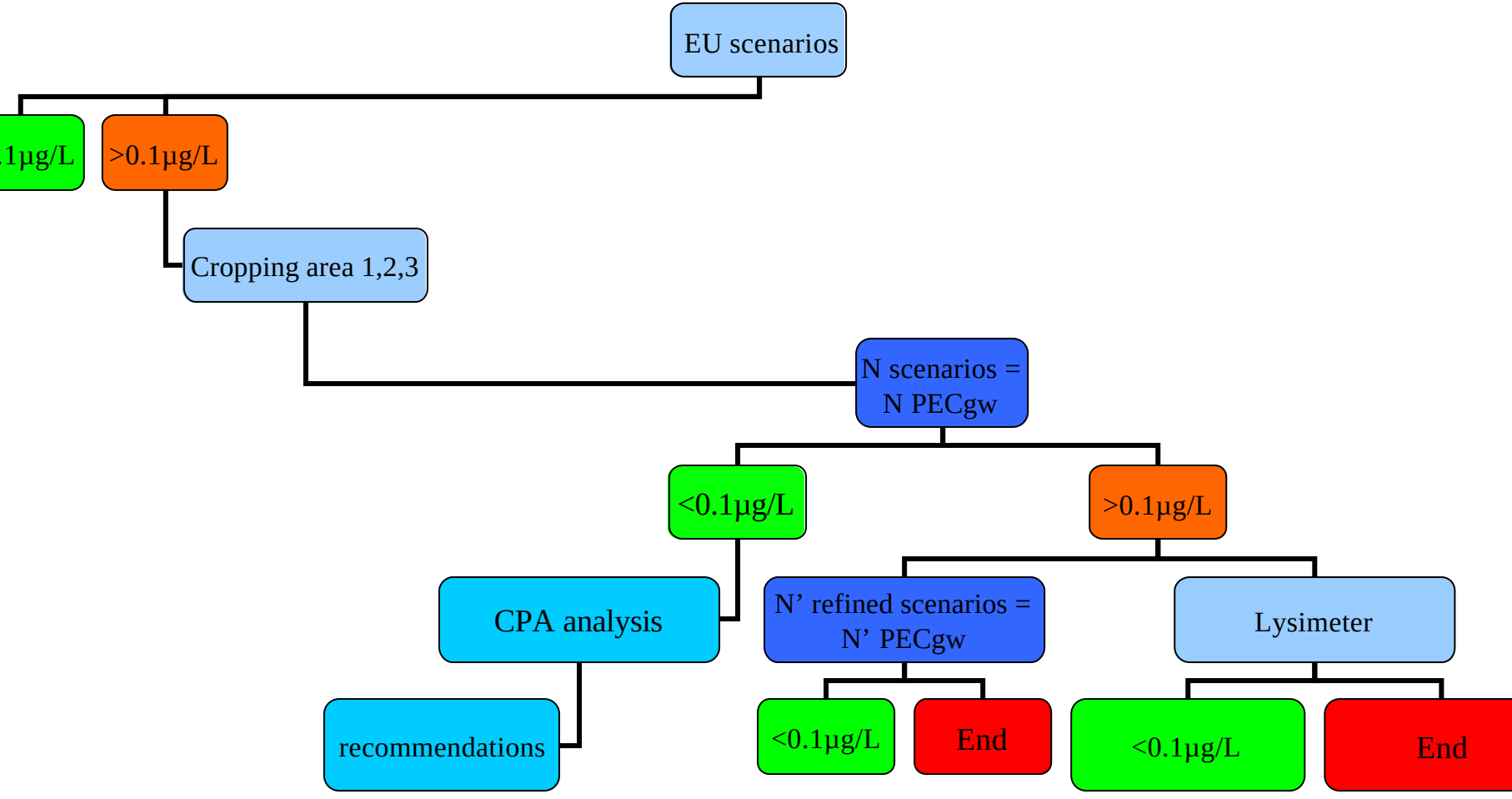
Incertitude on PEC

Variability related to soil parameters:
Plough layer informations
Profile relevant parameters

induces PEC incertitude



A three tiers approach



Conclusion (1)

- A basis for a Political decision could be in France, a country which belongs to Northern and Southern areas to determine a percentage of PEC_{GW} over 0.1µg/L and associated factors of risk as a second step in a three tiered approach
- A pilot will be achieved for the end of this year

Conclusion (2)

The proposed method is an attempt to define more or less homogeneous soil areas (represented by scenarios) where an extrapolation of the prediction of a stational model can be relevant (this is a deterministic approach)

and also an attempt to add information by an identification of dominant factors of risk for mitigation purpose

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When the number of scenarios is limited (Ex : minor crops), a Monte Carlo simulation is proposed to take in account possible uncertainties on the used parameters.