



# Improvement of wine terroir management according to biogeochemical cycle of nitrogen in soil

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## Introduction

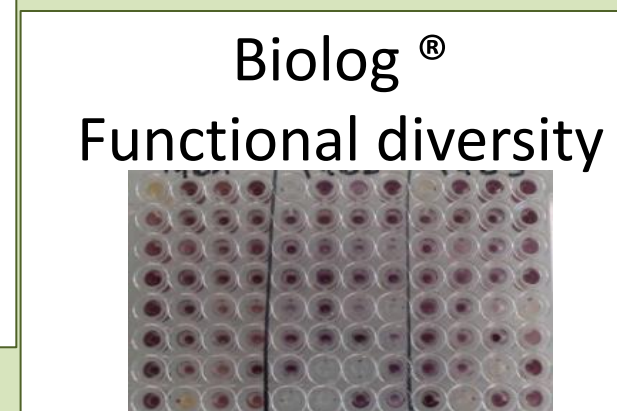
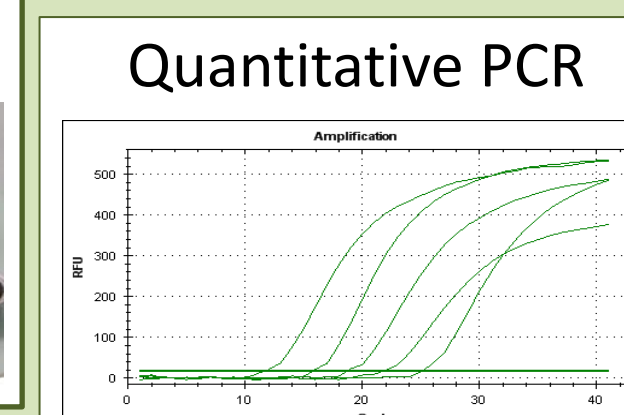
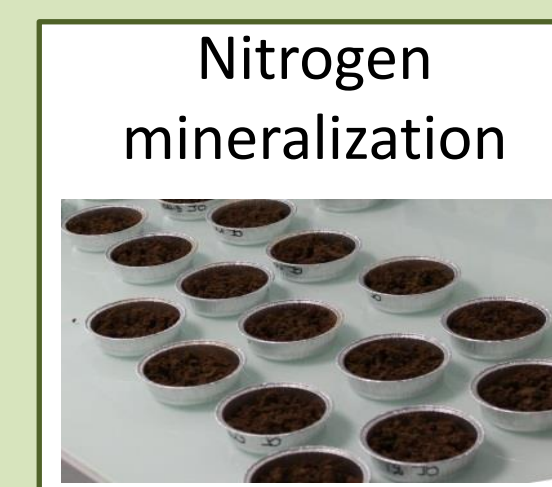
Good yield wine production implies well-balanced BCN (biogeochemical cycle of nitrogen), in soil and plant. Nitrogen is very important for grape quality and soil sustainability. The mineralization of organic nitrogen, depending on soil microbial activity, which is linked to soil cover crop management, is the main source of mineral nitrogen for the vine. **This study is focused on the microbial soil community related to nitrogen mineralization and dynamic in soil.**

## Materials and methods

6 sites : 4 sites in Alsace (Ribeauvillé, Rouffach, Ingersheim, Chatenois) and 2 in Atlantic coast (Aquitaine and Loire). Various systems : Integrated (PI) and Organic (AB).

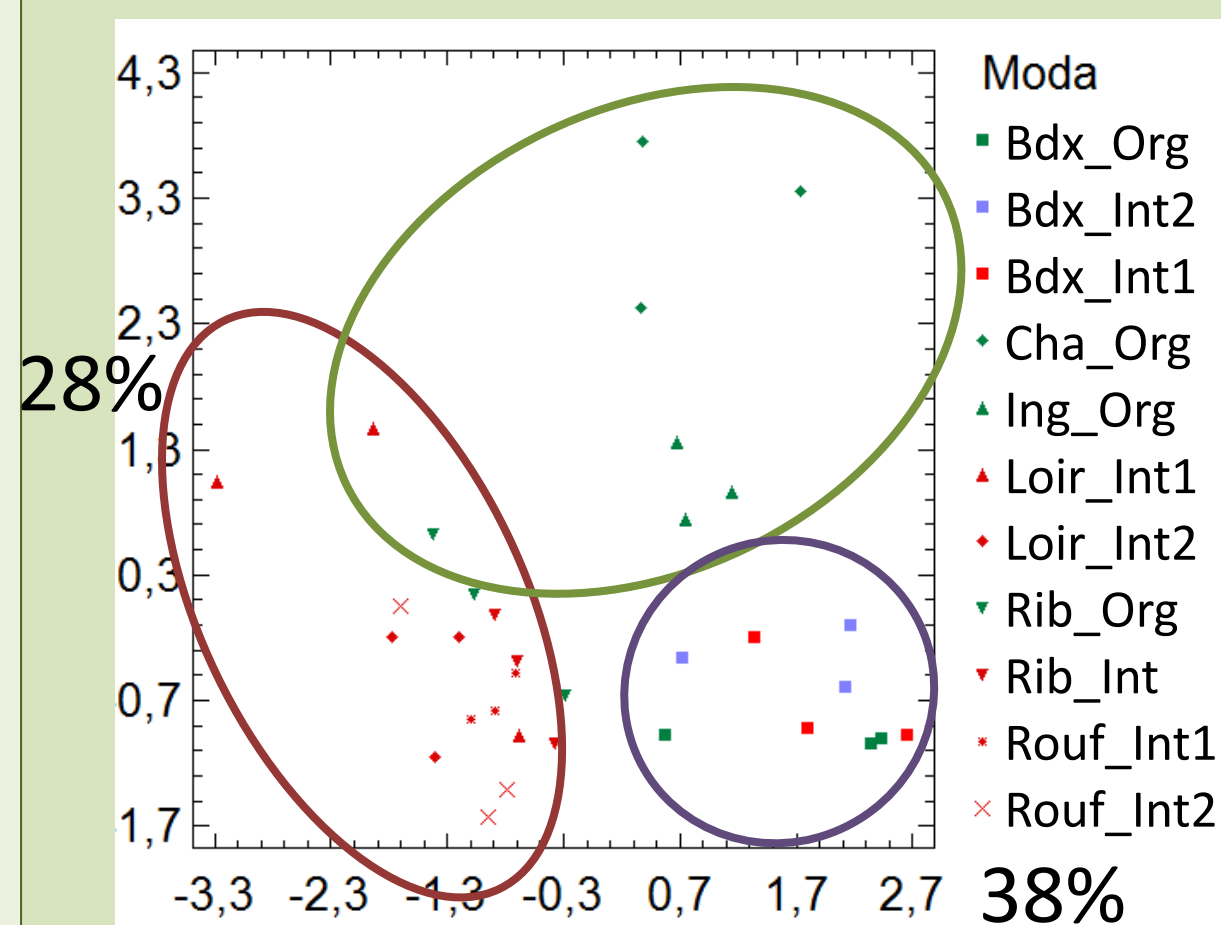
**Diversity of environmental factors** (soil and climate) **combined to terroir management** (soil, pesticides' input and terroir management).

## Biological and chemical indicators measured



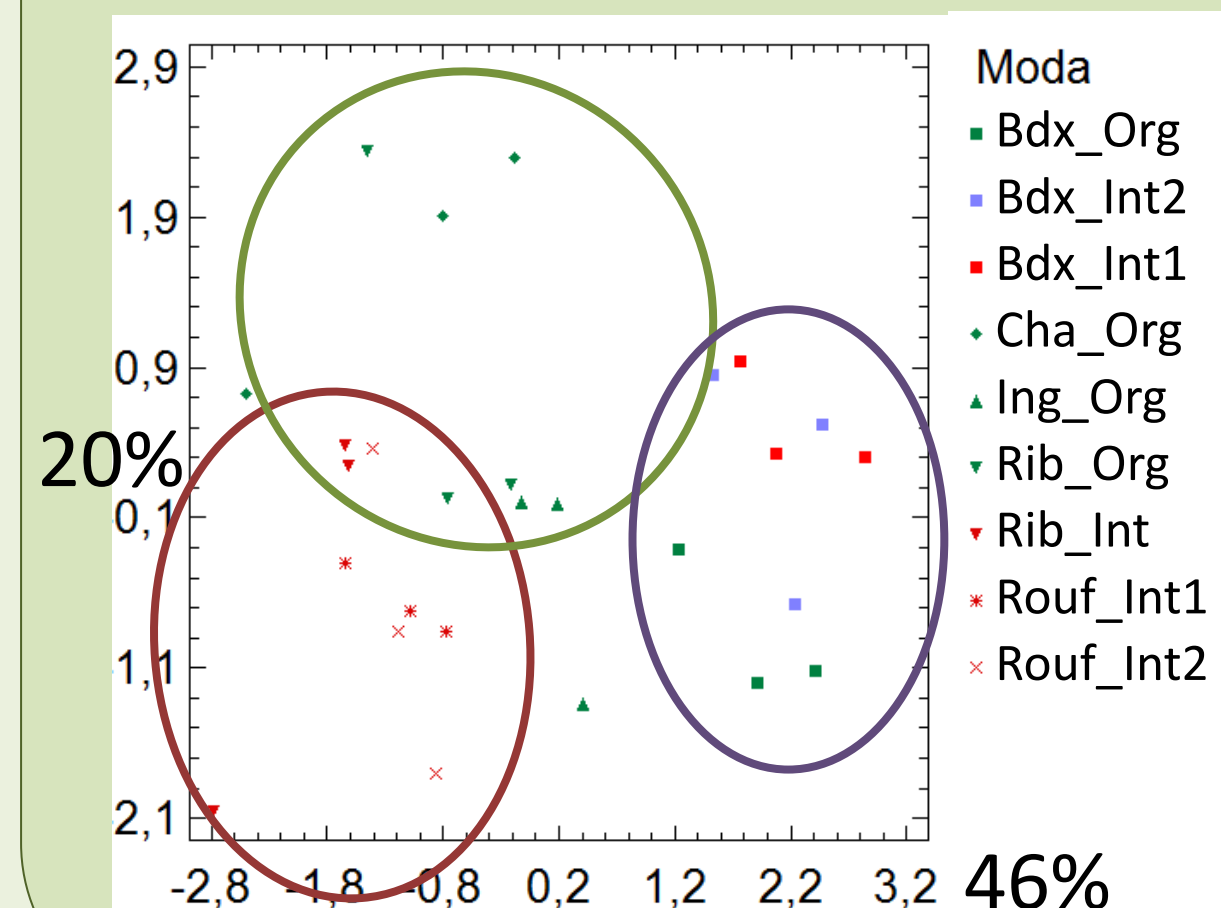
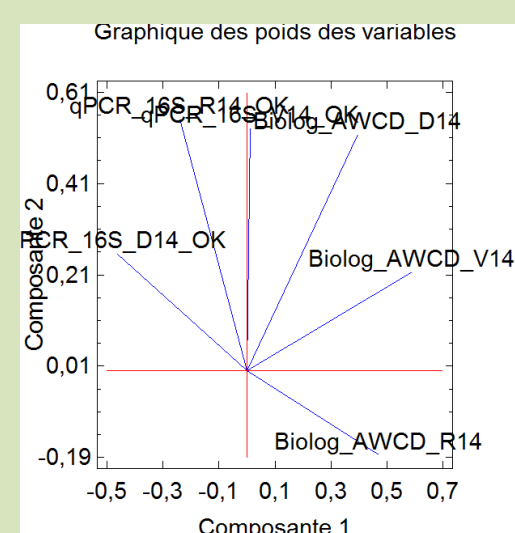
## Results

### Microbial indicators



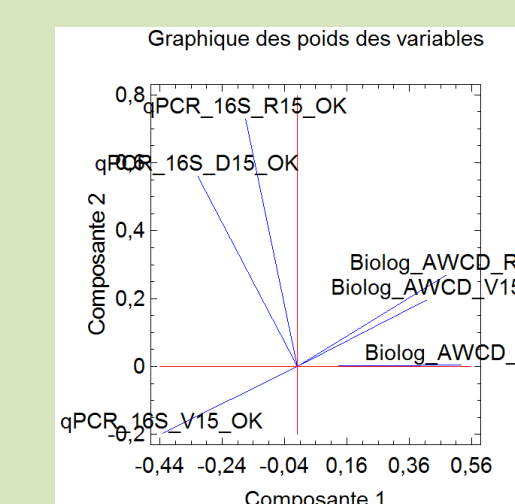
#### 2014

Bud break – Veraison – Leaves fall  
16S qPCR – AWCD Biolog®



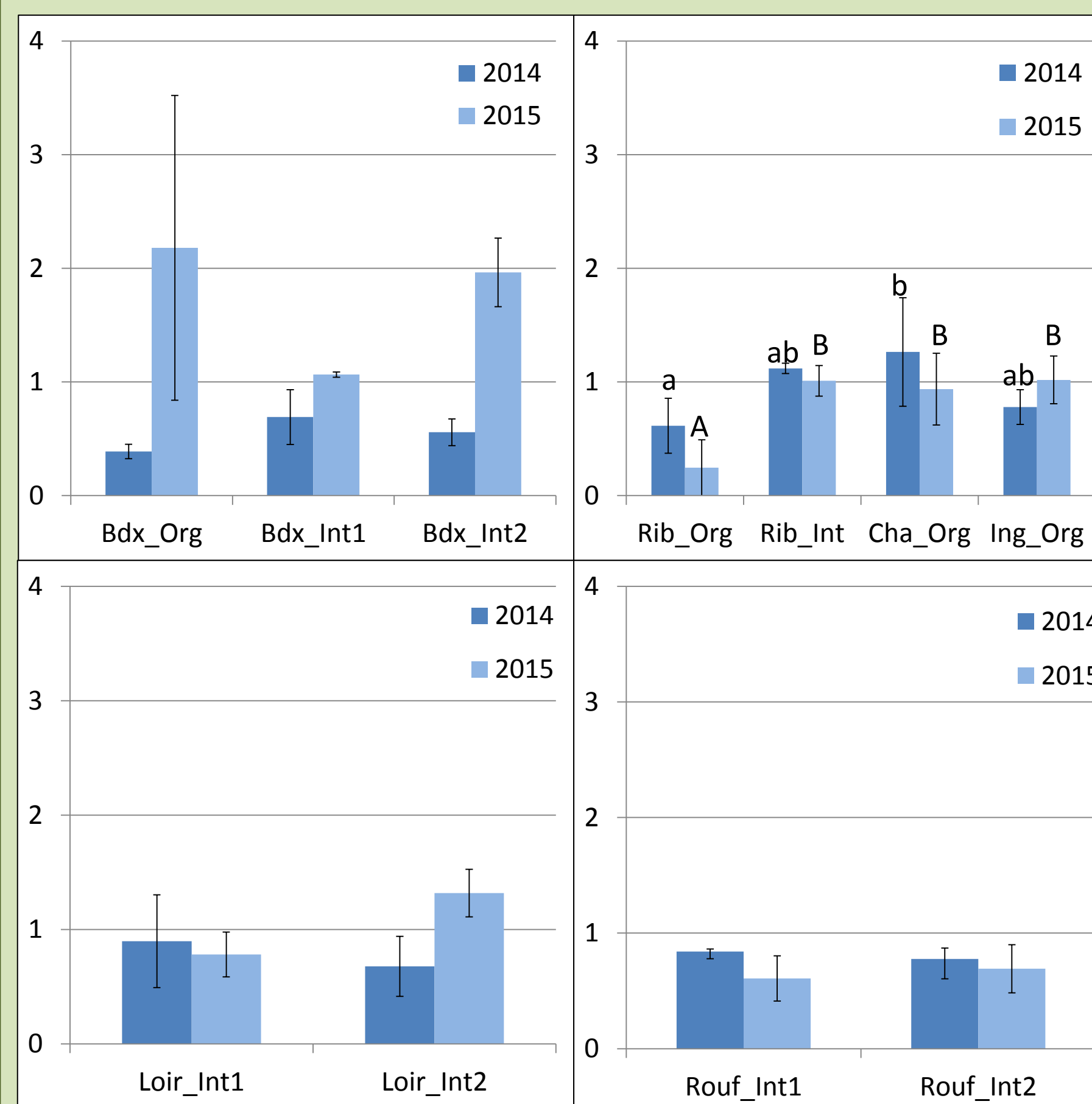
#### 2015

Bud break – Veraison – Leaves fall  
16S qPCR – AWCD Biolog®



### Chemical indicators

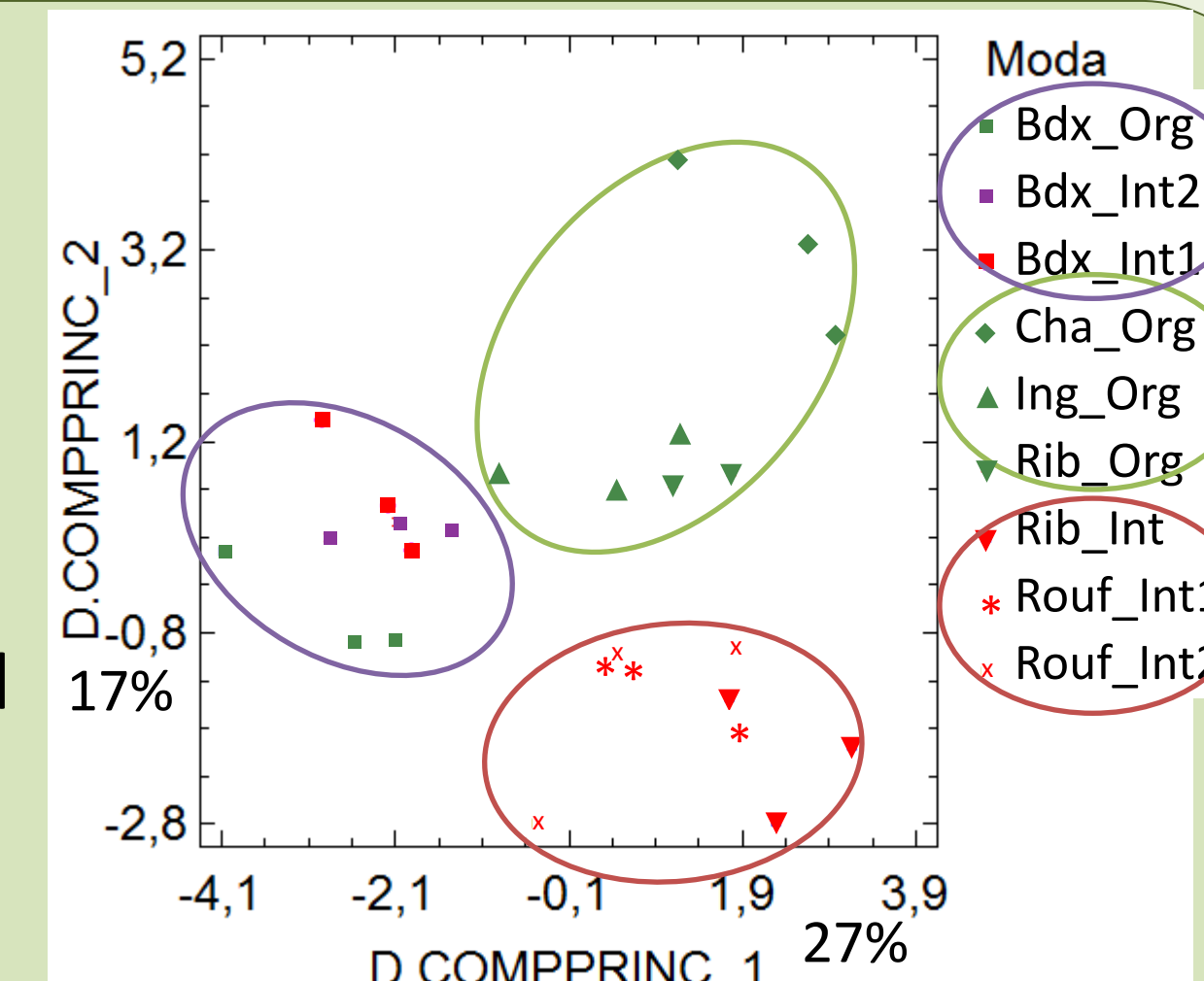
Mineralization velocity (mg Nmin / kg soil / day)



## Correlation

Chemical and biological parameters in 2014 and 2015

Effect of **soil** (sandy soil in Bordeaux) and of **practice management** (Organic and Integrated)



## Conclusion

The sites-systems studied showed effect of farming practices (Integrated or Biological) on measures of bacterial abundance (qPCR), of bacterial functional diversity (Biolog® Ecoplates) and of nitrogen dynamic. This is observed even if an effect of environmental factors on microbial indicators is observed. **These BCN indicators can be combined to differentiate between sites-systems according to practice managements. These indicators could help in managing nitrogen dynamics and nitrogenous nutrition of vine in innovative sites/systems with various practice management.**