How agronomists and farmers describe diversity? The example of mountain grasslands in France

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Context:

Grassland-based herbivore
Farming systems in the Massif Central (France) →no alternative to grass

In such areas, we assume that:

1) Diversity of grasslands is an asset to maintain LFS (at both farm and territory level).

2) Diversity may not have the same meaning for agronomists and for farmers

Objective: on-farm grasslands diversity assessment, according to production systems and farmers practices

The studied area and the farms

Territory:

- Upland area (700-1200 m) with volcanic soils of good fertility
- Average annual rainfall of 1350 mm.
- Small farms (42 ha) with a mean stocking rate of 1.05 LU/ha.
- 90% of farm area is permanent semi-natural grasslands.

17 farms studied in 2009 and 2010:

6 specialized dairy cattle
4 specialized beef cattle
4 mixed dairy and beef cattle
3 mixed dairy cattle and sheep

Methods

Agronomists (17 farms):

- 5 to 8 grasslands in each of the 17 farms
- According to their use: early or late cut
  grazed by cows, heifers, ewes…

→ 106 grasslands; floristic composition

Farmers (17 farms among 37):

- Questionnaires: description of farm area and practices
- Which criteria used to describe grasslands?
- Which of them taken into account for the management?
- Which interest of diversity?

Results

Agronomists: 3 classes of grasslands (mean ± SD)

	Class 1 (n=54)	Class 2 (n=45)	Class 3 (n=7)
Botanical families			
Grasses (%)	76 ± 8.4 ^{a}	49 ± 9.4 ^{b}	70 ± 6.9 ^{c}
Legumes (%)	11 ± 6.3 ^{a}	19 ± 8.2 ^{b}	7 ± 10.2 ^{c}
Forbs (%)	12 ± 6.6 ^{a}	32 ± 12.5 ^{b}	20 ± 9.0 ^{c}
Others (%)	1 ± 1.3 ^{a}	0 ± 0.0 ^{b}	3 ± 4.8 ^{a}

Agronomic value	↗	↗	↘
Diversity	↘	↗	↗

Results

Agronomists: distribution of the 106 plots according to the production system *(% within each system)*

Production system	Class 1	Class 2	Class 3
Dairy cattle (n=49)	79	12	9
Beef cattle (n=20)	48	32	20
Dairy + beef cattle (n=23)	52	43	4
Dairy cattle + sheep (n=14)	36	50	14

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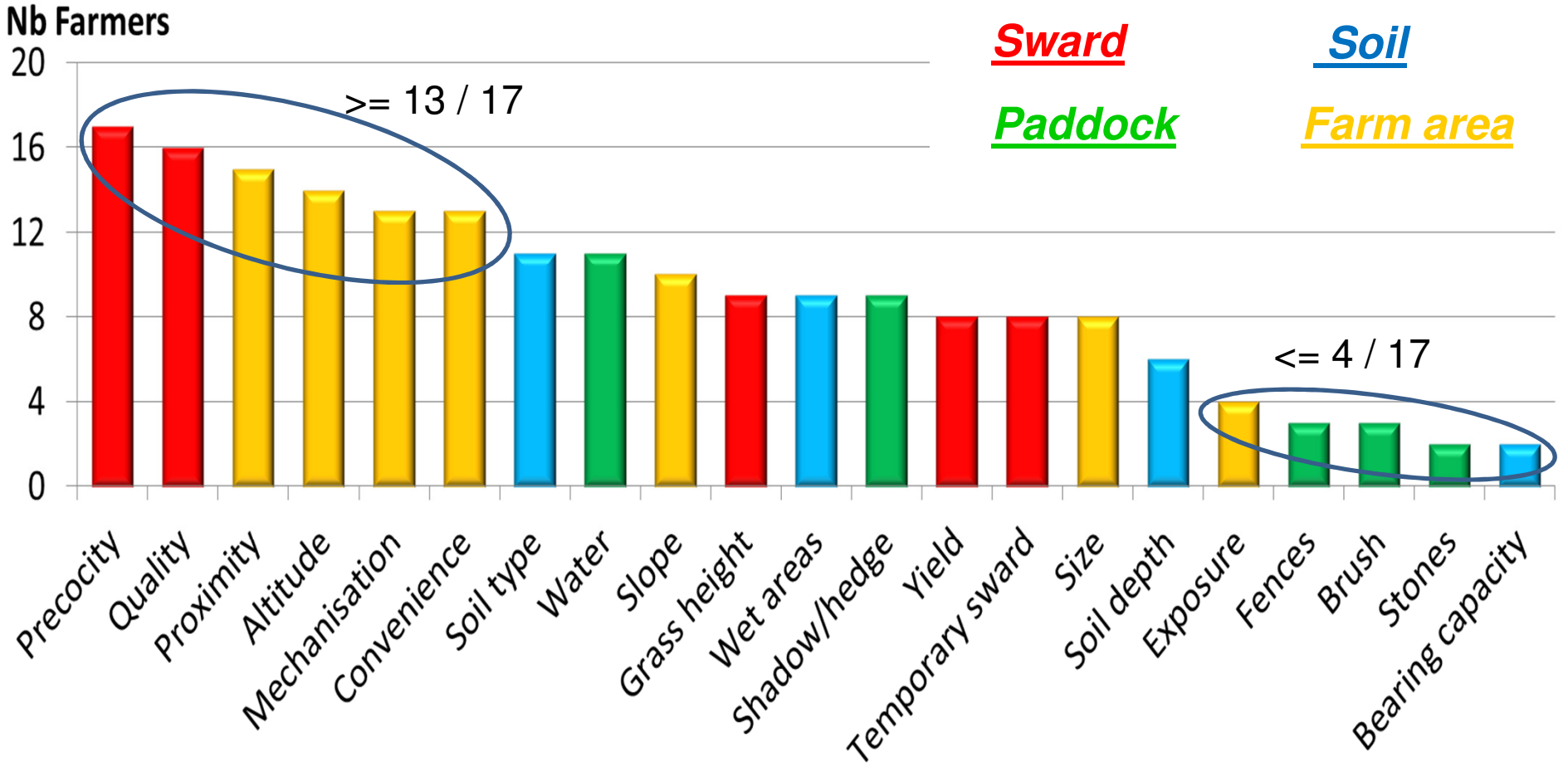
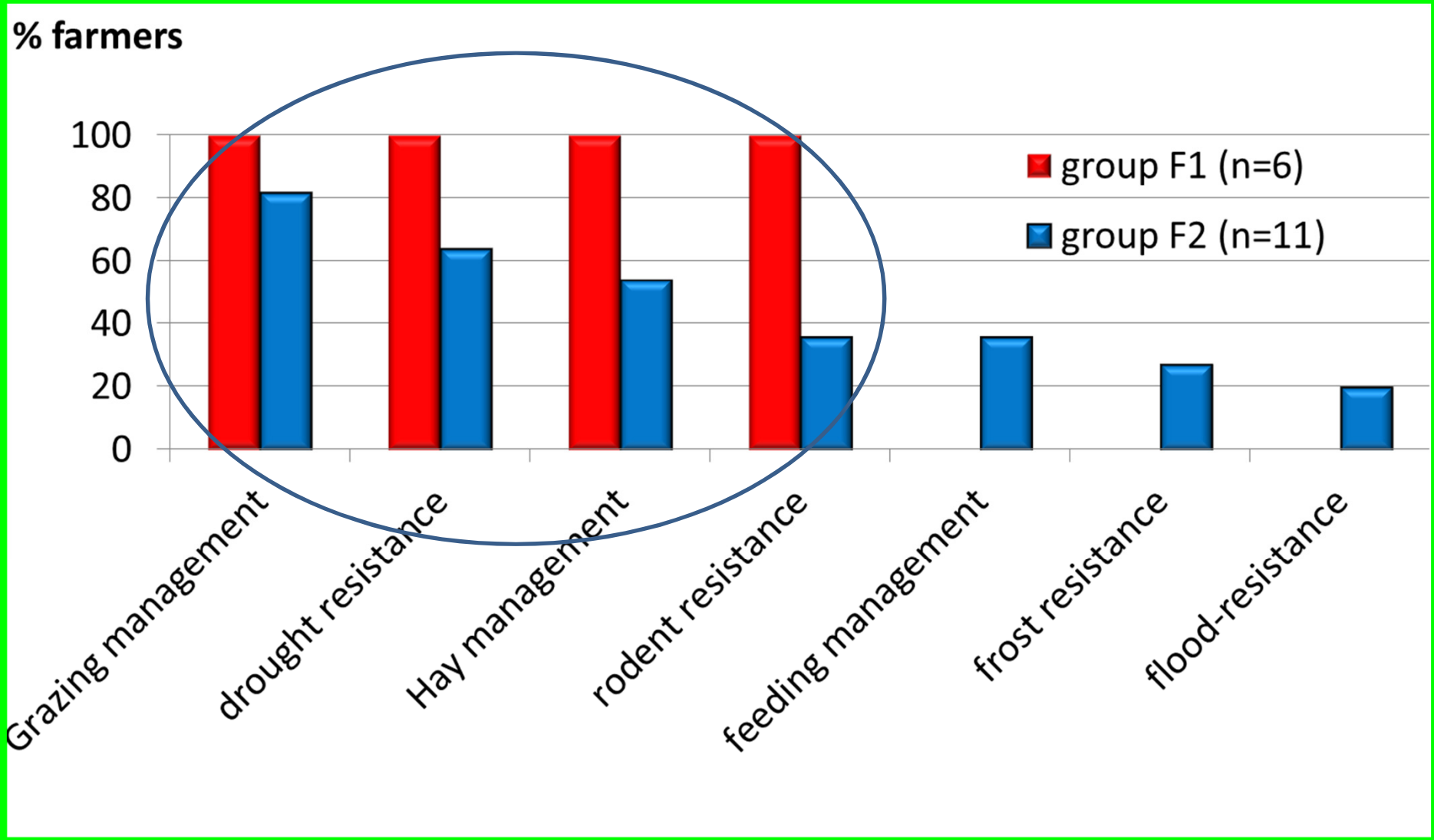
Results

Farmers: 21 criteria to describe between-plots diversity



Results

Farmers: the interest of grasslands diversity



Results

Agronomists X farmers: distribution of the 106 plots according to the grazing practices *(% within each line)*

	Class 1	Class 2	Class 3
Dairy cow grazing	67	33	0
Beef cow grazing	55	45	0
Heifer grazing	32	50	18
Sheep grazing	0	67	33

Conclusion

- The diversity of plot types is higher in relation to lower intensity of use and lower fertility.
- Mixed systems (dairy + beef cattle, dairy cattle + sheep) and beef cattle systems present a higher diversity of types of grasslands than specialized dairy cattle systems
- Diversity is perceived by farmers both as a constraint and as an added-value for the management

The highest diversity is found in mixed systems, which have to be analyzed according to their capacity to cope with unpredictible events:
what is the trade-off between "deal with" and "act upon"?

Meetings with farmers and extension services at the end of 2011 to submit and discuss those results

Souriat 2010

Thank you for your attention!