Innovative IPM for Winter Wheat-based Rotations: First Results of ex post Sustainability Assessment of Cropping Systems Tested at INRA (France)

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OBJECTIVE
- Within the context of the PURE project (WP2), innovative IPM cropping systems were designed for winter wheat-based rotations in the Paris basin area, at INRA in France. We used a three-step prototyping method to design the cropping systems: (1) crop successions and agricultural practices were defined for each system, (2) the prototypes were ex ante assessed and, (3) the most promising systems were tested in field trials and ex post assessed.
- Here, we presented results of the ex post sustainability assessment after one complete rotation.

RESULTS
- After one complete rotation, all cropping systems achieve a “high” score (4/5) in terms of overall sustainability. However, this result is obtained by very different combinations of performances on the three sustainability pillars:
  - economical pillar is higher in the C.S.,
  - environmental pillar is higher in the A.S.
- The social sustainability has remained medium (3/5) for all systems.

- There is a clear hierarchy between these systems in terms of the environmental sustainability, which can be explained by various uses of pesticides. TFI are as follows: C.S. = 4.7 < I.S. = 1.8 < A.S. = 0.0

In the C.S., high level of pesticide use led to a decline in all subcomponents of the environmental sustainability. On the contrary, in the A.S. (i.e. without any pesticide), environmental performances are judged very high.

METHODOLOGY
- Three cropping systems were designed according to a gradient of pesticide use intensity: (1) current agricultural practices (C.S.) with a conventional use of pesticides, (2) intermediate level of IPM (I.S.) with a reduction in pesticide use and (3) advanced level of IPM (A.S.) where no pesticides are allowed (for more details, see the poster of Colnenne-David et al., 2015).
- Ex post sustainability assessment was performed with DEXiPM (Pelzer et al., 2012) on these systems after one complete rotation.

REFERENCES

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