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Innovative IPM Solutions for Winter Wheat-based Rotations (WP2): Cropping Systems Assessed in the INRA Trials (France)

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**OBJECTIVE**

Within the context of the PURE project (WP2), innovative IPM solutions were designed, tested and validated for winter wheat-based rotations in different pedoclimatic conditions in Europe.

In each location, three cropping systems (C.S.) were designed according to a gradient of pesticide-use intensity: (1) current agricultural practices with a conventional use of pesticides, (2) intermediate level of IPM with a reduction in pesticide use and (3) advanced level of IPM where no pesticides are allowed.

- Here, we describe the field trials and the main characteristics (i.e. agricultural practices) of the three cropping systems assessed in the INRA long-term field trials in France.

**MAIN CHARACTERISTICS OF THE 3 CROPPING SYSTEMS ASSESSED**

(Colenne-David C. and Doré T., 2014)

- **CURRENT SYSTEM (C.S.)**
  The C.S. was designed to maximize gross margin in bread wheat-based rotation: ➔ high amount of pesticides allowed ➔ yield targets: close to the current regional system

- **INTERMEDIATE SYSTEM (I.S.)**
  The I.S. was designed with:
  ➔ multiple environmental targets (i.e. to reduce pesticide use, to lessen energy consumption, to decrease N leaching, to stabilize the amount of soil organic matter) ➔ yield targets: close to the regional low-input C.S.

- **ADVANCED SYSTEM (A.S.)**
  The A.S. was designed with:
  ➔ a pesticide constraint: no pesticide is allowed ➔ multiple environmental targets (i.e. see I.S.) ➔ yield targets: higher than the regional organic C.S.

**LONG-TERM FIELD TRIALS AT INRA (France)**

Trial network locations in Europe - WP2 (on-station)

Main characteristics of the 3 cropping systems assessed

- **4-year rotation**
  - Winter Wheat yield: 9.77 t ha⁻¹
  - Winter Wheat yield: 8.56 t ha⁻¹
  - Winter Wheat yield: 7.53 t ha⁻¹

- **5-year rotation**
  - Winter Wheat yield: 9.77 t ha⁻¹
  - Winter Wheat yield: 8.56 t ha⁻¹
  - Winter Wheat yield: 7.53 t ha⁻¹

- **6-year rotation**
  - Winter Wheat yield: 9.77 t ha⁻¹
  - Winter Wheat yield: 8.56 t ha⁻¹
  - Winter Wheat yield: 7.53 t ha⁻¹

Mean values are calculated at rotation scale

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