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RESISTANCE SUSTAINABILITY IN THE *HETERODERA SCHACHTII* SUGAR BEET COMPLEX

**Stabilité de la résistance à l'intérieur du complexe betterave sucrière-
Heterodera schachtii / Resistenzstabilität im Zuckerrüben-*Heterodera*
schachtii-Komplex**

ABSTRACT

Increasing restrictions on the use of pesticides has led to the development of new environmentally friendly control methods among which resistant varieties appear as one of the most cost-effective. This is particularly true for *Heterodera schachtii*, a cyst nematode species causing severe annual damages on sugar beet (*Beta vulgaris*). In sugar beet fields, the use of resistant varieties has recently become the preferred way to control *H. schachtii* populations and minimize yield losses. However, this control method is often associated with the risk of selecting individuals able to overcome the resistance and make it at the end inefficient. This selection process has been clearly demonstrated in laboratory conditions for major resistances only, but there is no evidence in fields conditions. Thus, breeders and growers have to face a major challenge: select productive resistant varieties, efficient over time and over space.

To address these issues, field trials were performed in France to assess the effect of different successions on (i) the efficiency over time of partial and/or major resistance cultivars (i.e. sustainability), (ii) the biological characteristics of nematodes populations (i.e. selection), (iii) the yield. To evaluate the efficiency of major and partial resistant over space, nematode populations sampled at a large geographical scale were phenotyped in controlled conditions.
