MECHELKE, W.[1], J.R. STANDER[2], E. BARZEN[3] and E. SCHULTE-KAPPERT[4].
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[4] PLANTA, Grimsehlstr. 31, D-37574 Einbeck. - New tools in Rhizomania resistance breeding.

Requirements are increasing for rhizomania resistant varieties with higher performance under both infected and non-infected conditions, and which also combine resistances to other diseases. The foundations for rapid gain from selection are simply inherited resistances, efficient disease screening techniques, and short breeding cycles. "C39", "RIZOR" and "HOLLY" are the sources of moderate to high resistance used in most of today's varieties. In the long-term breeders will also utilize resistance derived from *Beta maritima*.
Rhizomania greenhouse tests which measure the virus content in seedlings are very efficient for the selection of high resistance. There is a strong correlation between a low greenhouse virus content and a high sugar yield in the field under infection. Selection for resistance based upon RFLP- or PCR-markers which are closely linked to rhizomania resistance genes may in the long-term replace the greenhouse test. Data from proprietary and official trials demonstrate the potential of using these techniques to develop highly tolerant varieties which perform competitively with normal varieties under non-infected conditions.