

DIFFERENTIAL SET

Fusarium oxysporum f. sp. *conglutinans* (Foc) – **Brassica oleracea**

Fusarium oxysporum f. sp. *conglutinans* causes Fusarium yellows on cabbage which can result in severe yield losses. Resistance genes have been described in literature and introgressed into commercial material, but resistance reactions are dependent on soil temperature with higher resistance being expressed at lower temperatures and increased disease at higher temperatures.

Differentials	ISF Code and races	Foc:1*	Foc:2
	Gene (s)		
Golden Acre* or Golden Acre 84*, Fast Vantage, 01-20		S	S
Wisconsin Golden Acre*, 96-100		HR	S
BI-16* (Badger Inbred 16, University of Wisconsin, Madison)		HR	HR

Explanatory Note:

When evaluating plant varieties for resistance to specific pathogens or pests, the following classifications are used to describe their response:

- **S** – Susceptible
- **HR** – Highly Resistant

* groups/races and differentials that are actively used across the seed sector

You can find further information on these definitions in the following ISF document <https://worldseed.org/document/definitions-of-the-terminology-plants-pests-v-o-seed-industry-2022/>

References:

Bosland, P.W. and Williams, P.H. (1987). An evaluation of *Fusarium oxysporum* from crucifers based on pathogenicity, isozyme polymorphism, vegetative compatibility, and geographic origin. Canadian Journal of Botany 65: 2067-2073.

Bosland, P.W., Williams, P.H. and Morrison, R.H. (1988). Influence of soil temperature on the expression of yellows and wilt of crucifers by *Fusarium oxysporum*. *Plant Disease* 72: 777-780.

Liu, X., Han, F., Kong, C., Fang, Z., Yang, L., Zhang, Y., et al. (2017a). Rapid introgression of the fusarium wilt resistance gene into an elite cabbage line through the combined application of a microspore culture, genome background analysis, and disease resistance-specific marker assisted foreground selection. *Front. Plant Sci.* 8:354. doi: 10.3389/fpls.2017.00354.

Liu, X., Ling, J., Xiao, Z., Xie, B., Fang, Z., Yang, L., et al. (2017b). Characterization of emerging populations of *Fusarium oxysporum* f. sp. *conglutinans* causing cabbage wilt in China. *J. Phytopathol.* 165, 11–12. doi: 10.1111/jph.12621.

Liu X, Xing M, Kong C, Fang Z, Yang L, Zhang Y, Wang Y, Ling J, Yang Y and Lv H (2019) Genetic Diversity, Virulence, Race Profiling, and Comparative Genomic Analysis of the *Fusarium oxysporum* f. sp. *conglutinans* Strains Infecting Cabbages in China. *Front. Microbiol.* 10:1373. doi: 10.3389/fmicb.2019.01373

Protocol:

CPVO. See <http://www.cpvo.europa.eu/> for a protocol on disease resistance testing

For more information contact the ISF Secretariat at isf@worldseed.org

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