

SHORT COMMUNICATION

INDUCED REVERSION OF MORPHOLOGICAL
CHARACTERISTICS OF
FUSARIUM OXYSPORUM

J. A. MEYER and M. GOETHALS

Institut Agronomique, Héverlé (Louvain), Belgique

Morphological variations of *Fusarium oxysporum* f. *vasinfectum* (Atk.) Snyder & Hans. in culture are similar to those which have been reported for other formae of the collective species *Fusarium oxysporum* Schlecht. sensu Snyder & Hans. The variants range from the wild sporodochial type without pigments and possessing abundant aerial mycelium to a slimy type lacking aerial mycelium but producing mycelial and pionnotal macroconidia. Intermediate forms between those extreme types have been characterized on the basis of pigmentation, quantity and appearance of aerial mycelium, and abundance and morphology of macroconidia.

Morphological variants suddenly appear when subcultures are prepared by using single spores. Their frequency is highly variable but the appearance of the slimy pionnotal type of the parental or wild strain is frequently observed. A decrease of the pathogenicity of strains during repeated transfers in the laboratory is frequently noted, but this decrease is not correlated with a specific morphological variant.

Mutations are commonly considered to be responsible for the occurrence of morphological variants. It has not been possible to explain these variants by the segregation of nuclei from heterocaryons which might have been present in the original material. Only 1 to 48 original isolations yielded a morphological variant when single spores were tested. The stability of the wild type and of the morphologically intermediate strains varies strongly among the available strains which were examined. The slimy pionnotal type, on the other hand, is apparently very stable in that no mutant type has yet been observed. Variants were not detected when transfers were made using either heavy inocula or single spores. Repeated passages through the appropriate host have failed also to yield either the parent type or any morphological variant. The stability of the slimy pionnotal type has also been reported for *F. oxysporum* f. *melonis* (MILLER, 1946), *F. oxysporum* f. *vasinfectum* (ARMSTRONG *et al.*, 1940) and *F. oxysporum* f. *cubense* (STOVER, 1962). GERLACH (1954) has reported morphological variants from slimy pionnotal type of *F. oxysporum* f. *cyclaminis*.

A mycelial type which appeared to be similar to the parental type was obtained by ultraviolet light-irradiation of spores of a slimy pionnotal strain of *F. oxysporum* f. *vasinfectum*. The only obvious difference between the parental wild type and the reverted strain is the earlier and more abundant production of sporodochial macroconidia and the localization of sporodochia around the

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point of inoculation on medium when the latter strain is used. The mycelial revertant has been maintained for 18 months during many transfers using either mass inoculum or single spores and has maintained its pathogenicity for cotton. Furthermore, the shape and dimensions of the macroconidia of the revertant remained unchanged during the 18 months.

REFERENCES

- ARMSTRONG G. M., J. D. MACLACHLAN & R. WEINDLING, – 1940. Variation in pathogenicity and cultural characteristics of the cotton wilt organism *Fusarium vasinfectum*. *Phytopathology* 30: 515–520.
- GERLACH W., – 1954. Untersuchungen über die Welkekrankheit des Alpenveilchens. *Phytopath. Z.* 22: 125–176.
- MILLER J. J., – 1946. Cultural and taxonomic studies on certain *Fusaria* 2. The taxonomic problem in *Fusarium* with particular reference to section *elegans*. *Canad. J. Res. C* 24: 213–223.
- STOVER R. H., – 1962. Fusarial wilt (Panama disease) of bananas and other *Musa* species. *Phytopath. Paper C.M.I.*, n° 4.