

Genome mining, secondary metabolism and pathogenicity of three strains of *Fusarium fujikuroi*

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Bakanae is an important seedborne disease of rice, caused by *Fusarium fujikuroi*, also able to produce fumonisins (Carter et al., 2008). Different strains of the pathogen show varying virulence on rice, often correlated to the production of gibberellins and fusaric acid.

The objective of the present study was to gain insight into secondary metabolites (SM) synthesis in *F. fujikuroi*, by sequencing the genome of three strains Augusto2, CSV1 and I1.3, identifying the allelic variants in the genes responsible for SM production, and comparing pathogenicity *in vitro* and on rice of the three *F. fujikuroi* strains.

Sequence analysis was conducted by reference

guided genome assembly. Fumonisin cluster was identified. Differences in the predicted amino acid sequence were found in *I1.3*, in respect to *CSV1* and *Augusto2*, in FUM1 and FUM21, a polyketide synthase and a transcription factor of the fumonisin cluster. Fungal growth was determined *in vitro* in yeast extract sucrose agar medium (YES) plates. Colony diameter (mm) was recorded for up to 14 days. (Fig.1). Colony diameters increased significantly with time and all the three *F. fujikuroi* strains exhibited distinct differences in colony morphology and growth kinetics. Pathogenicity of the three *F. fujikuroi* strains was compared on rice: after 3 weeks of germination, *I1.3* show statistically high pathogenicity comparing to *Augusto2* and *CSV1*. This study permitted to add a new tile to the complex puzzle of rice-*F. fujikuroi* interactions.

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Lavori citati

CARTER, L.L.A., LESLIE, L.F., WEBSTER, R.K., 2008. Population structure of *Fusarium fujikuroi* from California rice and water grass. *Phytopathology* 9, 992-998.

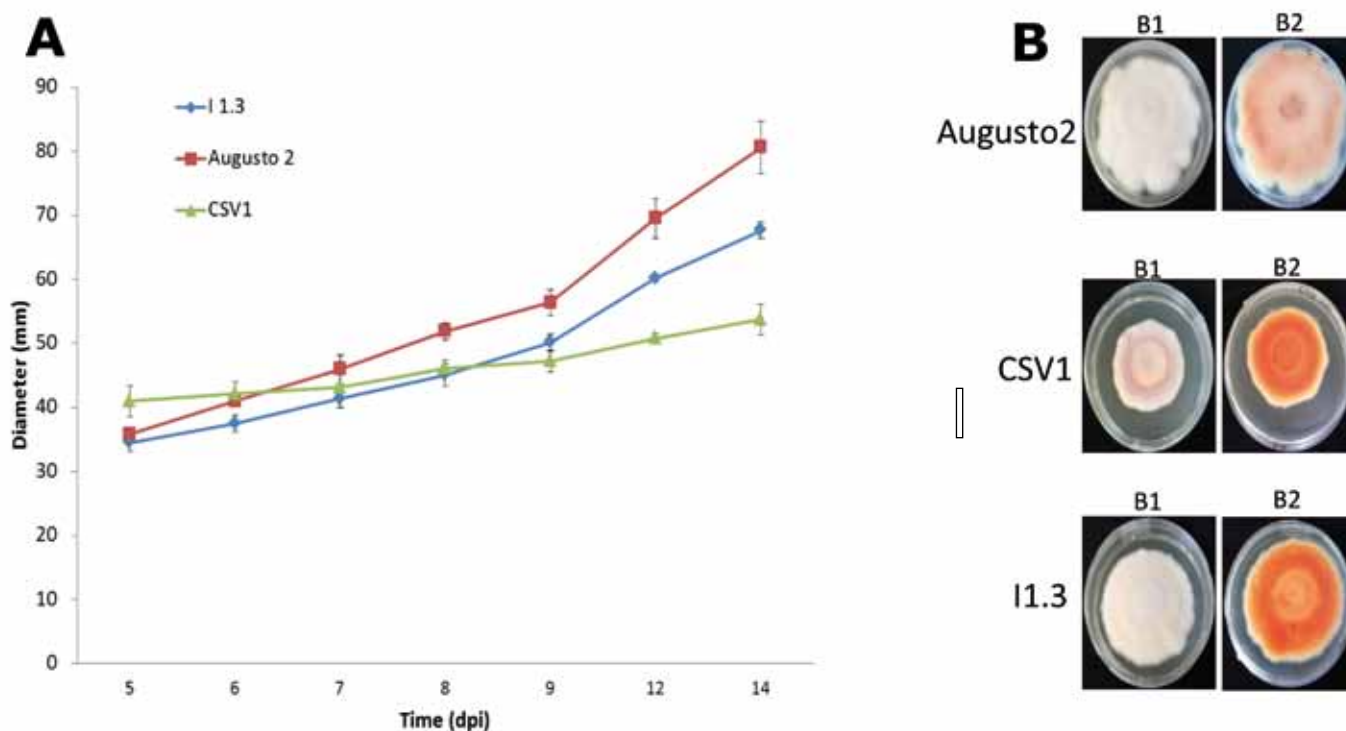


Figura 1 - Diametro delle colonie (A) e aspetto (B1: parte inferiore, B2: parte superiore) di 3 ceppi di *F. fujikuroi* incubati per 14 giorni dopo l'inoculazione (dpi).

Figure 1 - Colony diameter (A) and view (B1: up and B2: down of Petri plates) of *F. fujikuroi* strains incubated for up to 14 days post inoculation (dpi).