MOVIMIENTO INTERNO DE CONIDIAS DEL HONGO *Nectria galligena* Bres., CAUSANTE DE LA ENFERMEDAD CANCRO EUROPEA DEL MANZANO, EN RAMILLAS DEL MANZANO DE LAS VARIEDADES RED CHIEF Y GRANNY SMITH.

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Resumen

En el laboratorio de Fitopatología de la Facultad de Ciencias Agrarias de la Universidad de Talca, se realizaron evaluaciones de movimiento interno de conidias del hongo *Nectria galligena* Bres., a través de la corriente transpiratoria de ramillas de dos variedades de manzano, Red Chief del tipo Delicious conocida por su alta susceptibilidad a la enfermedad y la variedad Granny Smith la cual es descrita como tolerante a esta misma. Las conidias del hongo correspondieron a los aislados denominados NG-4 y NG-23, de las localidades de San Clemente (VII Región) y Temuco (IX Región). El ensayo consistió en un diseño completamente al azar en arreglo factorial 2x2, en donde los factores correspondieron a variedad y aislado. Los tratamientos evaluados fueron (Red Chief-NG-4), (Granny Smith-NG-4), (Red Chief-NG-23) y (Granny Smith-NG-23). Se evaluó el movimiento interno de las conidias del hongo *Nectria galligena* en ramillas de manzano, variedades Red Chief y Granny Smith en relación a la máxima altura alcanzada en cm dentro de sus ramillas, como también se determinó la recuperación del hongo, expresada como porcentaje de incidencia de la enfermedad en medios de cultivo AEM. (2%). La variedad Red Chief permitió un movimiento interno de las conidias del hongo significativamente mayor ($p<0.01$), en comparación a la variedad de manzano Granny Smith. En esta última variedad la distancia recorrida internamente a través de la corriente transpiratoria alcanzó los 4 cm, mientras que a igual tiempo de incubación en la variedad Red Chief alcanzó más del doble (9.44 cm). No existieron diferencias significativas entre los dos aislados

utilizados, en relación a la distancia alcanzada dentro de las ramillas, a pesar de que provenían de localidades distintas, existiendo sin embargo, una tendencia mayor de las conidias del aislado NG-23, de ser movilizadas a una mayor distancia que las conidias del aislado NG-4. La recuperación del hongo *N*. *galligena* fue medido como el porcentaje de incidencia de trozos de madera que arrojaron crecimiento de éste, siendo significativamente mayor para el aislado NG-23 en la variedad Red Chief, la cual fue cercana al 30%, siendo casi el triple a la obtenida tanto por el mismo aislado en la variedad Granny Smith como por el aislado NG-4 en ambas variedades. De esta forma se concluye, que los propágulos del hongo *Nectria galligena*, pueden ser movilizados internamente dentro del árbol de manzano acarreados por la corriente transpiratoria. Además esta vía de colonización interna estaría influenciado tanto por el aislado de *Nectria galligena* como por la variedad de manzano.

ABSTRACT

An experiment made to determine the distance that conidia of two isolates of *Nectria galligena* could be carried within the transpiration stream of shoots of two apple varieties was performed at the Plant Pathology Laboratory of the University of Talca. Terminal shoots of the current growing season of the apple varieties Granny Smith y Red Chief respectively, were collected in December, 2000, from a experimental orchard in Panguilemo, VII Region. The shoots were then placed in 1 litre glass beakers containing 300 ml of a suspension of conidia (2×10^5 conidia ml^{-1}) such that 5 cm of their bases were submerged in the suspension. Two isolates were tested, *NG-4* and *NG-23* obtained in a commercial orchard at San Clemente, VII Region, and Temuco, IX Region, respectively. Controls for each cultivar contained only sterile distilled water. Beakers, each with six shoots of each variety, were arranged in a completely randomised factorial design; varieties (Granny Smith and Red Chief) and isolates (*NG-4* and *NG-23*) were the treatments. The experiment contained four replications and was conducted inside of a controlled environment room. Environmental conditions were kept steady at 22°C daytime and 13°C night time temperatures. Each day the water level within the flasks was checked and the volume restored to the original level with a measured quantity of water. After incubation for seven days, the shoots were removed from the chamber and the leaves excised. Each remaining shoot was then cut into 3 cm lengths from the base upwards, and the position of each segment carefully registered and then tested for the presence of *N. galligena* using the culture methods for isolation from shoots. The recovery of *N. galligena* colonies from these were recorded after 15 days incubation at 20°C. The percentage of chips yielding the fungus was recorded for each cultured segment and also the maximum extent in the shoot that the fungus could be recovered. The apple variety Red Chief allowed a significantly greater conidia movement ($p<0.01$) compared to the Granny Smith variety. The internal movement in the Granny Smith variety reached up to 4 cm while the Red Chief variety allowed more than double of this amount (9 cm). There were no significant differences between the internal movement of the two isolates in spite of their provenance, however the *NG-23* tended to

show a slighty greater movement in the apple shoots than the *NG-4*. The recovery of *NG-23* was about 30% in the Red Chief variety which was the triple of the corresponding for Granny Smith. A similar tendency was shown with *NG-4*. Therefore, it was shown that the conidia of *Nectria galligena* fungus can move within apple trees carried by the transpiration stream. Furthermore the internal spreading of the disease would be influenced as much by the type of isolate of the fungus as by the variety of apple.