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Developing Tobacco Lines Resistant to Powdery Mildew (*Erysiphe cichoracearum* L.) by Anther Culture Technique for the Aegean Region

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Abstract: The anther culture technique as a biotechnological application was combined with conventional breeding methods in order to improve tobacco varieties' resistant to powdery mildew prevailing in the Aegean region of Turkey. For this, resistance was transferred to two varieties from a genitor by the backcross method leading to derive haploid plants from the cultured anthers of BC₁ plants firstly, and dihaploid plants by acenaphthene or colchicine treatments secondly. A total of 14 dihaploid lines out of 67 DH lines developed were found to be resistant to powdery mildew in disease screening tests. They were later subjected to field experiments to compare their morphological, yield and quality characteristics. In relation to dry leaf yield, 3 lines performed better than both of the standard varieties, while 7 lines of the same group were better than the standard Karabağlar 6265 only. As to quality characteristics, 4 lines by reducing sugar content and 4 lines by total alkaloid content performed better than standard. Finally, 8 DH lines with powdery mildew resistance and reasonable yield, quality and morphological characteristics were selected for further yield and quality trials.

Key Words: Tobacco, anther culture, resistance to powdery mildew (*Erysiphe cichoracearum* L.)

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