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Evaluation of Selected Israeli Rootstocks for Productivity and Dwarfness under Different Stress Conditions

Continuing Project; Second Year

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Benefit to the Industry

Phytophthora cinnamomi is one of the most damaging problems in the avocado industry all over the world. The expenses of replacing 10% of the trees in the orchards annually, in addition to the cost of the treatments, can make the difference between loss and profit. The most economic way to minimize this problem is by using resistant rootstocks.

Objective

To select a high yielding avocado rootstock, (includes dwarf genes, if possible) resistant to Phytophthora cinnamomi. salinity and low soil temperatures.

Summary

The research is carried on in two different levels:

1) **The three existing plots,** which include part of the tested rootstocks. They were established on spring 1996 in **Givat-Haim** (light soil, P. cinnamomi) and **Mishmar-Haemek** (heavy soil, P. cinnamomi). The rootstocks will be grafted with Hass cultivar in the spring of 1999. The third plot is located in **Kfar Hogla,** (Light soil and poor water quality). The rootstocks are grafted with Reed and Haas cultivars. (Table 1). Horticulture surveys (trees' growth, leaf-burn, trunk diameter and flowering rates) are to be taken during autumn and winter 1998-9. It has to be mentioned that this year the winter is very dry, with hot days followed by cold nights. The preliminary results show more leafburn than usual, especially on rootstocks vc55, vc207, vc256, vc806, and vc820. No P. cinnamomi symptoms, yet.

2) **The new plots.** A total of 12 different rootstocks, 30 replicates from each rootstock. These rootstocks will be transferred to test plots in the spring of 1999 (as ungrafted rootstocks). These 12 rootstocks were ordered by Bracha-Or Nurseries, in October 1997. These are as follows: West Indian rootstocks: vc28, vc66, vc55 vc207, vc256, vc265, and vc803; Ashdod 17 (seedlings); Degania 117 (seedlings). Mexican rootstocks: vc49, vc239, and vc828. They will be planted at the Northern Galilee (Idmit): Heavy soil, high quality irrigation water (100 mg. Cl/1), presence of P. cinnamomi. and cold weather conditions. This summer, the plot has been prepared for planting. During spring 1999, the trees will be ready to be plant. They will be planted on ridges in the space of 6 x 4m. Four local seedling rootstocks will be tested in the same plot (Zrifin99, Fairchield and Nachal-Oz6,7). All rootstocks will be grafted with Hass variety. **Central area** - Hefer valley (Givat-Haim): light soil, high salinity in irrigation water, and presence of P. cinnamomi. The plot has been recently planted (Sep. 14, 1998). The rootstocks included in this plot are vc28, and vc66. Both showed-excellent yielding under stress conditions, especially under Phytophthora infested soils. Some of the trees didn't overcome the winter (for unknown reasons). They will be replaced during April 1999. In the new plots, the collection of data will commence in the year 2000 or 2001. Testing the rootstocks in different distant growing areas in Israel enables us to achieve a significant amount of information about these rootstocks.

Table 1: The list of rootstocks in the existing plots

Location of Rootstock	Givat-Haim	Mishmar-Haemek	Kfar-Hogla **
VC28 W.I.	*	+	*
VC49 Mex.	+		+
VC55 W.I.		+	*
VC66 W.I.	** +	+	+
VC207 W.I.Mx	+	+	+
VC256 W.I.	+	+	+
VC801 W.I.		+	*
VC802 W.I.	+	+	+
VC805 W.I.	+	+	+
VC806 W.I.		+	*
VC817 W.I.		+	*
VC820 W.I.		+	
Vc821 W.I.		+	*

*Rootstocks planted on autumn 1998.