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## Rootstocks with immunity to phylloxera and nematode resistance

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**Abstract:** BÖRNER discovered the immunity of *V. cinerea* type ARNOLD against all known biotypes of phylloxera. No galls develop on leaves or roots of this particular wild species. It was possible to transmit this necrotic reaction through cross-breeding. BÖRNER and his team evaluated about 16,000 seedlings with genes of *V. cinerea* ARNOLD in combination with many rootstocks, crossings and other *Euviitis* species. At Geisenheim the new rootstock Na 5153-54 (*V. riparia* 183 Geisenheim x *V. cinerea* ARNOLD) was selected out of many seedlings and was named Boerner commemorating his work. It will be patented and taken to the German varietal list in April 1989. It is already in propagation for further grafting. In 1989 about 140,000 cuttings are grafted.

The Boerner rootstock is vigorous, winter hardy and tolerant to mildew. The take with benchgrafting is medium and might be improving with more experience. It grows in many soils and seems to be as tolerant to chlorosis as *V. berlandieri* x *V. riparia* stock. We have results of more than 15 years with Riesling clone 239 Geisenheim grafted on Boerner in different soils. We also tasted wines of Riesling clone 239 Geisenheim grafted on Boerner in comparison with wines from other rootstocks for many years and found no negative effects. The yields of the grafted vines on Boerner are about the same as SO4 and other rootstock clones. Dagger nematodes (*Xiphinema*) do not induce galls or swellings on roots of Boerner. The reaction of the roots of Boerner is comparable to that caused by phylloxera on roots of this vine. In contrast to Boerner, roots of *V. berlandieri* x *V. riparia* produce galls and bigger cells due to phylloxera feeding, but not due to dagger nematode. In our research no fanleaf virus could be transmitted to Boerner. Necrotic reactions were studied in histologic investigations of Boerner roots infested with *Xiphinema*. The results have to be confirmed by further investigations, experiments and field tests.

We expect a breakthrough in the control of nepoviruses in the next years. There are more rootstocks with *V. cinerea* genes to be studied in the future.