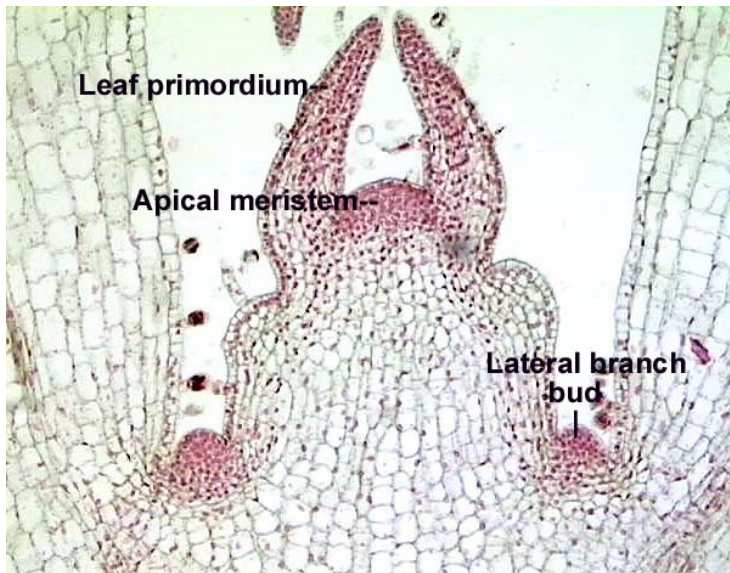


Virus eradication by meristem cultures



Our meristem procedure can eliminate all 17 viruses known to be present in California. The procedure is based on the principal that viruses do not invade the fast-growing meristem tissue. We excise the meristem under the microscope (0.3 mm long) and culture it on tissue culture media. The resulting plant from the meristem is grown in the greenhouse and tested for viruses. Virus-free plants are tested by DNA fingerprinting methods to assure that the correct variety is to be returned to the customers. The procedure may take 1-2 years. A brief description of the steps involved is as follows:

Step 1: Meristem culture

Several meristems are cultured to obtain several plants for later testing. Generally the success rate is 20% in virus elimination.

Step 2: Virus testing

All 17 viruses known to be present in California are tested by PCR method. Plants are tested after they are well established in the greenhouse and after the virus would have multiplied to detectable levels within the vine.

Step 3: Identity testing

The reference plant (before meristem) and the virus-free plants (after meristem) are tested by a set of 8 SSR markers to establish a genetic match before delivering the clean plant to the customer.



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Step 4: Propagation

We offer propagation of a clean plant to increase budwood. Alternatively, clients can contract a nursery to increase budwood for grafting onto their rootstock or do it themselves.

How to submit a sample

Samples can be taken from a selected vine and submitted as follows:

- Dormant sticks can be submitted. We will root them and grow a reference vine. Meristems will be extracted from the shoots.
- Green shoots "from a vine" in the summer can be submitted. We will culture meristems and raise a reference plant.

Samples should be enclosed in plastic bags and mailed by express mail. We can come out and collect samples from your vineyard or work with you to coordinate sample submission.



Flow chart for virus eradication

