

Special requirements for Rubus plants (Raspberries, blackberries and hybrid berries) to qualify as nuclear stock

Eligible material	Any new or established variety or candidate material of potential new varieties can be entered. The progeny of nuclear stock is eligible as parent material to produce Foundation grade cuttings or to plant field-grown Super Elite stoolbeds.
Growing conditions	<p>Nuclear stock plants must have been maintained in a suitably designed insect-proof gauzehouse containing only Rubus nuclear stock plants.</p> <p>Strict precautions should be taken to prevent the introduction of any pest or disease especially those diseases listed in Annex 1. Quality pests and diseases such as aphids or powdery mildew should be kept at as low a level as practically possible.</p> <p>All mother plants must be grown singly in sterilised growing medium and in individually labelled containers.</p> <p>Nuclear stock maintained and multiplied in vitro must be adequately labelled.</p>
Pests and diseases	<p>At least every two years the mother plants must have been individually tested and found free from the diseases listed in Annex 1 using the indicator plants or test methods described.</p> <p>New plants to be entered into the nuclear stock house must have been tested and found free of all the diseases listed in Annex 1.</p> <p>Any plants found to be infected with the diseases listed in Annex 1, or exhibiting suspicious symptoms should be removed immediately.</p>
Documentation	<p>The Director or other person responsible for the production of the plants must provide documentary evidence to show that the material has been produced under the conditions described above and that all the necessary tests were carried out and no evidence of infection was found.</p> <p>This evidence must be provided to the purchaser of the nuclear stock material before it can be used as parent material to produce Foundation cuttings or planted to give a Super Elite stoolbed.</p>
Reference for further details	EPPO 1994 Certification scheme for Rubus, EPPO Bulletin 24, 854-873. 1994. Martin RR (Ed.) 2004. Recommended procedures for detection of viruses in small fruit crops. Proceedings of Tenth International Symposium on Small Fruit Virus Diseases. Acta Hort. 656:199-207, 2004.



Required methods of testing for diseases for *Rubus* nuclear stock material

Disease	Test method and indicator plant
<p>Raspberry:</p> <p>Black raspberry necrosis virus</p> <p>Raspberry leaf mottle virus</p> <p>Raspberry leaf spot virus</p> <p>Raspberry yellow spot</p> <p>Rubus yellow net virus</p> <p>Raspberry vein chlorosis rhabdovirus</p> <p>Cucumber mosaic cucumovirus</p> <p>Arabidopsis mosaic nepovirus</p> <p>Cherry leaf roll nepovirus</p> <p>Raspberry ringspot nepovirus</p> <p>Strawberry latent ringspot nepovirus</p> <p>Tomato black ring nepovirus</p> <p>Apple mosaic ilarvirus</p> <p>Raspberry bushy dwarf virus</p> <p>Rubus stunt phytoplasma</p> <p>Raspberry root rot <i>Phytophthora fragariae</i> var <i>rubi</i> or other <i>Phytophthora</i> spp</p>	<p>Graft inoculation to <i>Rubus occidentalis</i></p> <p>Graft inoculation to <i>R. occidentalis</i> or <i>Rubus idaeus</i> cv. Mailing Landmark</p> <p>Graft inoculation to <i>R. occidentalis</i> or <i>R. idaeus</i> cv. Norfolk Giant</p> <p>Graft inoculation to <i>R. occidentalis</i> or <i>R. idaeus</i> cv Mailing Promise</p> <p>Graft inoculation to <i>R. occidentalis</i> or <i>R. macraei</i></p> <p>Graft inoculation to <i>R. idaeus</i> cv. Mailing Delight or Norfolk Giant</p> <p>Mechanical inoculation to test plants of <i>Chenopodium quinoa</i>, <i>Cucumis sativus</i> or <i>Nicotiana clevelandi</i> as applicable. The nepoviruses should be confirmed serologically.</p> <p>ELISA</p> <p>Graft inoculation to <i>R. idaeus</i> cv. Mailing Landmark or Norfolk Giant</p> <p>Root sampled and tested by a root tip bait test. Alternatively the plants may be derived from micropropagation or stem cuttings taken from plants shown to be free from the above viruses.</p>
<p>Blackberry and Hybrid Cultivars:</p> <p>Black raspberry necrosis virus</p> <p>Rubus yellow net virus</p> <p>Cucumber mosaic cucumovirus</p> <p>Arabidopsis mosaic nepovirus</p> <p>Cherry leaf roll nepovirus</p> <p>Raspberry ringspot nepovirus</p> <p>Strawberry latent ringspot nepovirus</p> <p>Tomato black ring nepovirus</p> <p>Apple mosaic ilarvirus</p> <p>Raspberry bushy dwarf virus</p> <p>Rubus stunt phytoplasma</p>	<p>Graft inoculation to <i>R. occidentalis</i></p> <p>Graft inoculation to <i>R. occidentalis</i> or <i>R. macraei</i></p> <p>Mechanical inoculation to test plants of <i>Chenopodium quinoa</i>, <i>Cucumis sativus</i> or <i>Nicotiana clevelandi</i> as applicable. The nepoviruses should be confirmed serologically.</p> <p>ELISA</p> <p>Graft inoculation to <i>R. idaeus</i> cv. Mailing Landmark or Norfolk Giant</p>

Notes:

- For graft inoculation tests, one indicator plant should be used for each virus being tested for. Test plants should be observed for one growing season, if done late in the season they should be continued until the following spring.
Alternative indicator plants may be acceptable depending on the country of origin of the material, Fera should be consulted in such cases.
- For mechanical inoculation tests on herbaceous indicators, plants should be observed for up to 4 weeks. Identification of specific viruses will require serological tests applied to extracts from the herbaceous indicators.