

MEASURES TO PREVENT THE RUGOSE VIRUS



Tomato Brown Rugose Fruit Virus (ToBRFV) is a pathogen that can infect tomatoes as the main crop impacted by ToBRFV. The virus is problematic, as it has the ability to overcome all known genetic tobamovirus resistances and cause severe symptoms in Infected plants on leaves, fruit calyx and the fruit itself with behaves very similar to others within the tobamovirus group but symptoms may be much more severe, especially on the fruit. Any case symptom expression of plants infected with ToBRFV may vary according to environmental and growing conditions, especially light and temperature.



LEAF

Symptoms caused by of this virus are mosaic with leaf distortion (bubbling) and shoestring, and fern leaf.



CALYX

Calyx symptoms include distinct discoloration (browning) of the veins of the calyx in an early stage of the fruit development or drying out and browning of the end of the calyx tips.



FRUIT

Plants infected by this virus may produce undersize fruits with a rough surface or complete fruit abortion may occur. Fruit coloration is affected with symptoms occurring as blotching, pale color and/or brown necrotic spots. The number of fruits produced is reduced and fruits could be unmarketable or reduced in quality.

The virus can be spread easily from plant to plant and can survive for long periods in infected crop debris, in the soil or on contaminated surfaces. Spread can occur very readily by mechanical transfer, especially in protected or high input culture systems where plants are pruned, staked, handled and touched frequently. As the virus is primarily transmitted via contact, a suite of prophylactic measures should be followed to minimise the chances of the virus entering and spreading within a crop.

RECOMMENDATIONS FOR PEOPLE WORKING IN THE PLANT GROWING AREA

Growing recommendations



Use certified seed from trusted seedbeds.



Inspect the plants regularly. If symptomatic plants are discovered, eliminate all plants within a minimum of 1.5 meters beyond the outermost infected plant. Create a quarantine perimeter maintaining inside the infected plants furrows plus the adjacent. In this space, cultivation tasks must be done with special attention, such as work the quarantine area independently with exclusive or disposable clothes and install disinfectant mats and hand disinfectant dispensers placed at the exit of the isolate area.



All containers that hosted infested plants must be sterilized or destroyed. All infected plants, debris and contaminated substrate shall be removed and incinerated.



Do not touch any plants or fruits without wearing gloves and only when it is absolutely necessary. If a plant seems abnormal, remove it from the growing area, but change gloves just after having touched it.



Never bring with you and within your car any part of plant nor fruit if it is not hermetically sealed in a plastic bag which that will be opened only under controlled and sanitized conditions by trained people in a lab.

Self-hygiene recommendations



Pull off gloves from wrist upwards so the glove ends up inside out. Pack clothing in a hermetic bag before exit, to bring it for washing (or to throw away if it is disposable clothes). Make sure the disposable clothing is indeed being discarded in the appropriate waste bin for immediate destruction.



Wash hands with soap on arrival and departure from the production site and between the business units (greenhouse, canteen, toilets, etc). Disinfect hands using whenever at disposal strategically placed disinfectant dispensers at all entrances.



Do not use your electronic devices inside the growing area. If you have to do so, the whole device has to be carefully disinfected before exiting it outside. Avoid bringing jewellery, watches and phones in production areas. Clean glasses with alcohol tissues between visits.



Make people aware of the importance of good hygiene practice.

RECOMMENDATIONS FOR PEOPLE WORKING IN THE PLANT GROWING AREA

Recommendations in the production area



Be aware that the use of cuttings can be a serious factor of disease spreading. Disinfect the cutting tools periodically during the day and at the end of the workday, whenever we move to another greenhouse and after being used on an affected area



Allow only the necessary people to enter the place of production or join the visit.



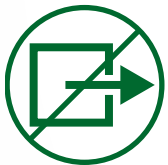
Insure that anyone entering the place of production wear clean clothing, new or disinfected coveralls, new or disinfected boots and gloves. Alternatively, the use of disposable overalls, gowns and gloves is recommended. Make sure you have always at your disposal and for people under your responsibility enough personal protection equipment.



Use disinfectant mats that should be placed at each entrance. Disinfectant mats are also meant to be used by passing machinery. Make sure the disinfectant is always effective.



Follow good hygiene practices by recommending to clean work booths with disinfectants and to sanitize tool.



Do not bring anything outside which could come from the inside growing area.



Never park your car nearby the growing zona.