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VARIETY OF VIRUSES AFFECTING CEREALS IN THE FAR EAST

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Viral diseases of plants are important factor affecting the yield of crops and the commodity qualities of agricultural production. Nowadays, over 80 virus species affecting *Poaceae* plants are described, and more than 40 of them infect cultivated cereals.

Barley stripe mosaic virus (BSMV) (*Virgaviridae*, *Hordeivirus*) is the most common virus in the Far East. The virus is quite contagious and easily transmitted mechanically. BSMV is characterized by very high level of vertical transmission by seeds (up to 90–100%). This biological peculiarity of the virus as well as the presence of wild host plants (especially weeds, for example *Setaria viridis*, and *Avena fatua*) allows BSMV to survive for a long time in agro- and natural biocenoses. Wheat stripe mosaic virus is another member of *Hordeivirus* detected in a restricted amount in cereals. It affects oats, barley, wheat, and corn. This pathogen is spread by *Aceria tulipae* mites. One more hordeivirus – poa semylatent virus (PSV) – is transmitted mechanically and affects oats, wheat and barley.

Northern cereal mosaic virus (NCMV) (*Mononegavirales*, *Rhabdoviridae*, *Cytorhabdovirus*) is one of the most important virus detected in barley and other cereal crops in the Far East. External symptoms of the cereal disease were expressed in dwarfism, increased bushiness and mosaic on leaves and leaf sheaths. The virus was most widely spread in oats of Amur Region. The pathogen is transmitted by *Laodelfax striatellus*. This pathogen can be reserved in wild cereals: *Calamagrostis langsdorfii*, *Agrostis gigantea*, *A. stolonifera*, *Alopecurus pratensis*, and annual weeds.

Brome mosaic virus (BMV) (*Bromoviridae*, *Bromovirus*) was registered in barley plants with symptoms similar to stripe mosaic, but without necrotic spots. It has isometric (28–30 nm) virions and easily transmitted mechanically by both imago and larvae of *Oulema melanopus*, *Chaetocema aridula*, and *Phylotreta vittula*. This pathogen has many natural hosts including *Bromopsis inermis*, *Eritrigia repens*, *Spodiopogon sibiricus*, *Calamagrostis langsdorfii*, *Echinochloa crusgali*, and *Phleum pratense*.

Rice stripe mosaic virus (RSV) (*Bunyavirales*, *Phenuiviridae*, *Tenuivirus*) transmitted by *Laodelphax stiatella* was identified due to immunochemical approaches. New Tenuivirus named Russian oat mosaic virus (ROMV) was first revealed in oats, and then in barley with bush dwarfism in Primorye Territory.

Barley yellow dwarf virus (BYDV) (*Luteoviridae*, *Luteovirus*) was detected in

the Far East. It is a dangerous pathogen easily transmitted by aphids (*Sitobion avenae*, *Schizaphis gramina*, and *Rhopalosiphum padi*). The virus has isometric (30 nm) virions and not transmitted mechanically.

In the Far East 6 phytoviruses causing corn diseases were documented: barley yellow dwarf virus (BYDV), maize dwarf mosaic virus (MDMV), barley stripe mosaic virus and viruses not peculiar for cereals, such as cucumis mosaic virus (CMV), bean yellow mosaic virus (BYMV), and alfalfa mosaic virus (AMV). Almost all of the above viruses are transmitted by aphids (except BMV).

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