Transcript for the Plant Virology course, week 3 part 2

3. 1. (00:10 00:21) Welcome to Part Two of the "Plant Virology" course entitled "Disease symptoms caused by plant viruses"

3.2. (00:21 00:30) Chlorosis is a partial absence of normal green color of plant tissues.

3.3 (00:30 00:45) Chlorotic patches not always resemble mosaic patterns.

3.4. (00:45 00:51) Chlorosis is produced by the destruction of the chlorophyll or the partial failure of the plant to develop.

3.5. (00:51 00:58) Yellowing is a complete absence of chlorophyll in normally green tissue.

3.6. (00:58 01:05) The symptoms of beet yellowing - only yellow background is visible.

3.7. (01:05 01:17) Albinism – it is a disease symptom characterized by the disappearance of both the green color and the red-yellow color caused by different carotenoids pigments and the infected organs become white.

3.8. (01:17 01:28) Chlorotic line pattern: irregular single or multiple lines or chlorotic bands.

3.9. (01:28 01:38) Most typical chlorotic line pattern resembles the shape of an oak-leaf.

3.10. (01:38 01:42) Line pattern as a ring formation or ring spotting - a couple of examples of ringspots on the leaves of:

3.11. (01:42 01:53) *Phillodendron*

3.12. (01:53 01:57) Orchid

3.13. (01:57 02:02) Peach

3.14. (02:02 02:07) Sour cherry

3.15. (02:07 02:19) Necrosis – it is the death of cells or tissue or plant parts.

3.16. (02:19 02:26) Necrotic spots and rings on infected leaves.

3.17. (02:26 02:40) In the site of necrotic lesions the leaf tissue is perforated – empty holes.

3.18. (02:40 02:46) Necrosis may occur on different plants organs, such as:

3.19. (02:46 02:54) Large necrotic lesions on the leaves

3.20. (02:54 03:01) Necrosis of the edge of the leaf blade

3.21. (03:01 03:05) Leaf veins necrosis

3.22. (03:05 03:09) Necrotic spots or lesions on stems

3.23. (03:09 03:19) Phloem tissue necrosis – potato tubers

3.24. (03:19 03:30) Malformations and deformations of infected organs:

3.25. (03:30 03:33) Deformations of flowers – *Chrysanthemum*

3.26. (03:33 03:39) Deformations of the shape of the tubers

3.27. (03:39 03:43) Necrotic spots on plum fruits - Plum pox virus

3.28. (03:43 03:54) Curling – abnormal bending of leaves from the unequal development of its two sides, and rugosity – wrinkling, ridging or puckering of normally flat leaves

3.29. (03:54 03:57) Abnormal, retarded growth of leaves.

3.30. (03:57 04:14) Leaf narrowing or fern-leaf symptoms as a result of restricted expansion of laminar tissue, or also shoe-stringing symptoms, when only the main veins of lamina remain.

3.31. (04:14 04:26) Enations - abnormal outgrowth of the host tissue

3.32. (04:26 04:34) Enations occur mostly….

3.33. (04:34 04:41)… on the underside of the veins on leaves

3.34. (04:41 05:34) Internal or microscopic symptoms are connected mostly with histological or anatomical abnormalities. Apart from the mentioned “necrosis of vascular tissue elements”, most prevalent internal symptoms are “inclusion bodies” as specific cytological alterations in virus-infected plant cells. There are cytoplasmic or intranuclear crystalline inclusions, and an amorphous type of inclusions. There are also specific alterations of the host cell membrane system.

3.35. (05:34 05:43) Cylindrical (pinwheel) inclusions formed by viruses from *Potyviridae* family.

3.36. (05:43 06:46) Only a few viruses (e.g., Tulip breaking virus, Plum pox virus or Potato leaf roll virus) cause disease symptoms so specific and characteristic that they can be used for diagnostic purposes. Very often even typical symptoms do not provide enough specific information to decide the cause of an infectious plant disease. For the appropriate detection and identification of viral pathogens of plants we have to use many laboratory techniques. The types of symptoms presented caused by plant viruses vary with the genus, the species or the variety of plant hosts, genus or even strain of pathogen, and time of infection. They are modified by climate conditions. They are different during single infection by one species of virus and completely different if there is a mixed infection by a complex of many viruses. It may lead even to a more severe disease than the individual virus components – synergistic effect. Don’t forget that there are plant viruses, called latent viruses (e.g, some of Carlaviruses), which cause no visible symptoms in the infected plant. They are symptomless viruses.

3.37. (06:46 06:50) Thank you for your attention.