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**WORKSHOP HANDBOOK**



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## Prevalence and incidence of lentil viruses in Nepal

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As one of the world's largest lentil producers, Nepal's lentil industry faces significant threats from biotic and abiotic factors. Fungal diseases are well known however the impact of viral diseases on lentil production is less clear. A comprehensive survey was conducted in 21 districts from six provinces and all agroecological regions of Nepal during the 2023-24 lentil growing season to document the presence of lentil viruses. Disease assessments were done in 94 fields using standard survey protocols. A 4911 random and 1785 systematic plant samples were collected and tested for the presence of viruses using tissue-blot immuneassay (TBIA); a battery of polyclonal (PAb) and monoclonal (MAb) antibodies were used. TBIA results showed that the most prevalent viruses affecting lentil were *Pea seed-borne mosaic virus (PSbMV)* (overall incidence in random samples was 12.24%) and luteoviruses (4.95%) that reacted with the broad-spectrum luteovirid MAb (5G4) and other MAbs produced against viruses belong to the genus *Polerovirus*, family *Solemoviridae*. This indicates that there are more luteoviral species in Nepal, which need to be verified by further molecular testing. Other viruses such as *Alfalfa mosaic virus* and *Cucumber mosaic virus* were detected at low incidence (less than 1%). All tested samples were negative to *Faba bean necrotic yellows virus*, *Chickpea chlorotic dwarf virus*, *Pea enation mosaic virus* and *Broad bean stain virus*. The high incidence of *PSbMV* highlights the necessity for seed testing in the lentil seed certification system. The widespread occurrence of viruses in lentils in Nepal has the potential to cause serious yield losses. The results of this survey will provide the basic information to support Nepal's lentil breeding program in developing virus resistant varieties and guide Nepal's seed certification authority in the enforcement of testing for seed-borne viruses in lentil.

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