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Disease Notes

First Report of *Potato mop-top virus* in North Dakota

N. David, Department of Plant Sciences, North Dakota State University, Fargo 58108; **I. Mallik**, Department of Plant Pathology, North Dakota State University, Fargo 58108; **J. M. Crosslin**, USDA-ARS Vegetable and Forage Crops Research Unit, Prosser, WA 99350; and **N. C. Gudmestad**, Department of Plant Pathology, North Dakota State University, Fargo 58108

Potato mop-top virus (PMTV) is the type member of the genus *Pomovirus*. PMTV is an important pathogen of potato, causing significant economic losses in Northern Europe, North and South America, and Asia (3). PMTV in the United States was first reported in Maine (2). PMTV is vectored by the plasmodiophoromycete *Spongospora subterranea* cv. *subterranea*, which causes powdery scab of potato (1). *S. subterranea* and PMTV are usually associated with cool and humid environments. In the spring of 2010, six potato tubers of cv. Russet Burbank were received from a commercial potato farm in Grand Forks County in North Dakota. The tubers had multiple, internal, concentric, necrotic arcs and circles. The presence of PMTV in the necrotic lesions was verified by a positive double-antibody sandwich-ELISA (Agden Ltd., Ayr, Scotland). The tuber lesions had an absorbance value (405 nm) at least two times greater than that of the negative control sample, which consisted of a healthy tuber. Total RNA was extracted from lesions of six different tubers that tested positive by ELISA using a Total RNA Isolation kit (Promega Corp. Madison, WI). These extracts were tested for PMTV by reverse transcription (RT)-PCR using two different sets of primers. The primer set H360/C819 targeted the coat protein (CP) of PMTV and yielded an amplicon of 460 bp (4). The amplicons generated from the necrotic lesions were cloned (TOPO Cloning; Invitrogen, Carlsbad, CA) and sequenced. Another set of primers, pmtF4/pmtR4, designed to bind to a region in RNA 2 of PMTV, yielded a 417-bp amplicon that also was cloned and sequenced (3). The sequences from all six tuber lesions were identical for the respective primer sets. A consensus sequence for each primer pair was submitted to GenBank (Accession No. HM776171 for primers pmtF4/pmtR4 and No. HM776172 for primers H360/C819). The sequences obtained from the H360/C819 and pmtF4/pmtR4 amplicons were 99% identical to the corresponding regions of PMTV isolates from Northern Europe (GenBank Accession Nos. AM503629 and AJ277556, respectively). Freeze-dried, necrotic tuber tissue from all six tubers was also tested at a USDA Laboratory in Prosser, WA by RT-PCR with the H360/C819 primer pair (4), confirming the results above. Cloning and sequencing of one of the amplicons revealed 100% similarity to the sequence described above for these primers (GenBank Accession No. HM776172), confirming the presence of PMTV in the symptomatic tubers. None of the symptomatic tubers tested positive for *Tobacco rattle virus, Tomato spotted wilt virus, Alfalfa mosaic virus, Potato leafroll virus*, or the necrotic strains of *Potato virus Y* by RT-PCR. To our knowledge this is the first report of PMTV in North Dakota.

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