

ABSTRACT

Root rot in sugarbeets caused by fungi and bacteria is a considerable problem in the western United States. In October 2004 and 2005, a survey was conducted on recently harvested sugarbeet roots throughout southern Idaho and eastern Oregon to identify the fungi and bacteria associated with root rot. Isolations were made from 533 and 287 roots for fungi and bacteria, respectively. Fungal isolations were conducted on potato dextrose agar (PDA) and water agar supplemented with streptomycin sulfate (200 mg/L). All cultures were hyphal tipped onto PDA for identification. Isolates of *Fusarium* spp. were also placed onto carnation leaf agar. Bacterial and yeast isolations were conducted on yeast extract-dextrose-calcium carbonate agar (YDC) and King's medium B at 30°C. Representative colonies were restreaked onto YDC and grouped based on growth habit, color, gram stain, and cell shape. One third of the bacterial isolates from each group were then placed on GN2 MicroPlates (Biolog Inc.) for metabolic fingerprinting. Thirty bacterial and yeast isolates representative of the groups identified were submitted to Microbial ID (MIDI Labs) for 16S rRNA and 28S rRNA sequencing, respectively. A total of 362 potential pathogenic fungal isolates were obtained: *Fusarium oxysporum* (29% of isolates), *Rhizoctonia solani* (18%), *Fusarium acuminatum* (18%), *Rhizopus* spp. (16%), *Phoma betae* (7%), oomycetes (6%), *Fusarium culmorum* (3%), and *Fusarium equiseti* (3%). A 197 fungal isolates considered saprophytes were found. A total of 396 bacterial and yeast isolates were obtained: lactic acid bacteria (41% of isolates), acetic acid bacteria (29%), enteric bacteria (17%), and yeast (13%). The lactic acid bacterial group contained *Leuconostoc mesenteroides* (80%) and *Lactobacillus plantarum* (20%). *Gluconobacter asaii* comprised 92% of the isolates from the acetic acid group. Given the diversity of organisms isolated, controlling root rots in sugarbeets will continue to be a challenge.