HANSON, LINDA E.\*, AMY L. HILL, and LEE PANELLA, USDA-ARS, SBRU, 1701 Centre Avenue, Fort Collins, CO 80526. Diversity in *Fusarium* from sugarbeet.

Fusarium yellows of sugar beet can cause reductions in root yield in addition to reducing sucrose percentage and purity in the root. The primary causal agent is Fusarium oxysporum f. sp. betae (FOB), although F. acuminatum can cause Fusarium yellows symptoms. Fusarium species also can cause root rot or seedling symptoms in sugar beet. We investigated the variability in isolates of Fusarium isolated from sugar beet in respect to their pathogenicity and virulence on sugar beet in greenhouse tests. FOB isolates also were examined for genetic variability. Five-week-old beet plants (Fusarium-susceptible germplasm FC716) were inoculated by dipping roots in spore suspensions of the different isolates. In addition to isolates of F. oxysporum, isolates of F. solani, F. acuminatum, F. avenaceum, and F. verticillioides also were pathogenic in our greenhouse assay. Several additional species were isolated from sugar beet roots. Isolates of FOB were analyzed by RAPD analysis using nine primers. Based on RAPD patterns, FOB and non-pathogenic isolates clustered together. Some FOB strains from different georgraphic regions showed divergent patterns. By DNA sequence analysis, a small subset of these isolates also showed significant variability in the beta-tubulin gene. Thus FOB is a diverse group within F. oxysporum. When isolates were tested on different sugar beet germplasm and varieties, some isolates gave different reactions with different varieties. This may indicate the existence of races within FOB.

resistance octure at varying levels for different variaties. We have measured commercial variables with segregation levels of 30-80% resistant plants. The must welely used segregating variatiy is Beta (546. Our screening data indicate that this variety is made up of about 70% essistant plants and 30% susceptible plants. Therefore, segregation level is an important component to a variaties level of resistance. In order to establish the level of (essenance for a variety a component to a variaties level of resistance. In order to establish the level of the variaty. In the plant, into a going that must be available to determine the transtance level of the variety. In the objective of our study of a to determine the transtance level of the variety. In the objective of our study of a to data and allow techn periods for gravitonies expering that will prior the more consistent test and show being the proved include for gravitonies expering that will be to obtain consistent results. The prior the more consistent must be available in the previous of the variety. In the objective of our study of a to data and allow tester prediction of how a variety will perform an the field.

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During the writter of 2002-03 and 2003-04, sugar beet varieties from Western Sugar Cooperative, plus several sugar beet root aphild (SBNA) transtant and runceptible checks, were construed for SBMA magnatice in a greathouse trul at the University of Nebraska Panhandle Assessed and Extension Centers During 2002 (1), 30 varieties from Western Sugar were screened in 10 ceptications (plants). The 2001 (1), 30 varieties from Western Sugar were Sugar replicated (1) times. Varience that were categorized as moderately reastant and screened in 10 ceptications (plants). The 2001 (1), 30 varieties from Western Sugar were Sugar replicated (1) times. Varience that were categorized as moderately reastant and inditional 20 replications (plants). Based on our current ability to sustain a SPRA colore (or conform infectation and the availability of space with optimal highling, we can only the three replications with up to 24 entries per replication in a given run. This requires four runs to complete the inam variety screen (12 replication). Additional runs are required to provide the segregation data required to serve vietter. On run requires out to provide the segregation data required to serve vietter. On run requires out to provide the segregation data required to serve vietter. On run requires and work to provide the start of a variatione (or SPRA colore).

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