SUGAR BEET (*Beta vulgaris*)
    Rhizomania; *Beet necrotic yellow vein virus*
    Fungal growth; *Athelia* sp., *Botrytis* sp., *Penicillium* sp.

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Evaluation of USDA-ARS (Ft. Collins) sugar beet germplasm to rhizomania and storability, Idaho, 2010.

Sugar beet germplasm and commercial check cultivars were evaluated in a sprinkler-irrigated sugar beet field near Kimberly, ID where sugar beet was grown in 2009. The soil type was Portneuf silt loam. The field trial relied on natural inoculum for rhizomania (caused by *Beet necrotic yellow vein virus*) development. The seed was treated with clothianidin (2.1 oz a.i. per 100,000 seed) to limit pests and curly top. The plots were planted on 26 Apr to a density of 142,560 seeds/A, and thinned to 47,520 plants/A on 12 Jun. Plots were single rows (22-in. row spacing) and 10 ft long. The experimental design was a randomized complete block design with eight replications per entry. The crop was managed according to standard cultural practices, except for irrigation. The frequency of irrigation was higher than standard practice during Jun to increase the potential for rhizomania disease development, but the total amount of water applied was normal. The percentage of leaves per plot with foliar symptoms (upright narrow yellow leaves) was evaluated on 29 Jul. Root symptoms were evaluated on 13 Oct. Roots were mechanically topped and lifted, with the first ten roots in each plot being evaluated for rhizomania, using a scale of 0-9 (0 = healthy and 9 = dead). The first eight roots were placed in a mesh onion bag and held on the top of a storage pile in an indoor commercial sugar beet storage facility set at 35°F. On 3 Feb 2011, the roots were evaluated for the percentage of surface area covered by fungal growth after 114 days in storage. Data were analyzed using the general linear models procedure (Proc GLM-SAS), and Fisher's protected least significant difference was used for mean comparisons (SAS).

Rhizomania was uniform throughout the plot area and other disease problems were not evident. There were significant differences among entries with both rhizomania rating techniques used; however, the storage data were not significantly different. The foliar rating for rhizomania ranged from 0 to 100%, and gave better separation of germplasm than the root rating. The commercial checks responded as expected for rhizomania.

Entry[z]	Identification	Description	Rhizomania Foliar	Rhizomania DSI	Storage (%)
55	FC-5...............	Inc 2005A020 - halfsibs of FC123mm (FC301); monogerm......................	27 cd	34 a	2
60	FC-10.............	04-FC1037..	16 de	34 a	4
57	FC-7...............	04-FC1038..	31 cd	21 e	4
59	FC-9...............	09-FC1036..	20 cd	24 c-e	7
54	FC-4...............	FC221...	69 b	26 c-e	8
53	FC-3...............	FC220...	57 b	28 bc	9
51	FC-1...............	FC716...	96 a	22 de	10
3	**Angelina**........	Rz1+Rz2..	0 e	16 f	10
56	FC-6...............	04-FC1028..	23 cd	26 cd	11
58	FC-8...............	FC221-1 RhzmR, MM, CTR, LSR ({4918, 2915aa} x {FC902, 607, 709-2})-hs......................	67 b	31 ab	12
2	**Beta G017R**...	Rz2	0 e	15 f	13
52	FC-2...............	FC220-1 SEL - INC 20051030............................	34 c	28 bc	14
7	**EL-SP7322-0**.	rzrz,VYS Inc. SP7322-0,4/05..............................	100 a	31 ab	21
5	**Roberta**	rzrz	89 a	34 a	25
1	**Beta 4430R**....	Rz1	0 e	16 f	29
P > F			<0.0001	<0.0001	0.2935
LSD (*P* ≤ 0.05)			18	5	NS