RESULTS - UNIFORM SNAP BEAN RUST NURSERY, 1978

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For several years a uniform snap bean rust nursery has been grown at several locations in the United States. In 1978, the locations and cooperators were as follows: Salisbury (Frank Schales) and Beltsville (Jack Meiners), Maryland; Centerton, New Jersey (Joe Steinke); Charleston, South Carolina (Jim Wyatt) and Crossville, Tennessee (Charles Mullins and Jim Hilty). The nursery included 66 cultivars and breeding lines submitted by public and private breeders. Each entry was planted in duplicate in 10 or 20 foot rows depending on location. Four cultivars with known reaction to rust strains were included as indicators of the pathogenicity of rust populations present. At Beltsville, spreader rows were inoculated with three collections of rust from Maryland; and at Salisbury, with one collection from that location. Nurseries at Charleston, Centerton, and Crossville were not inoculated.

Heavy rust epidemics developed at all locations except Charleston, resulting in good exposure of test entries to infection. Rust strains present varied between locations as indicated by reaction of indicator cultivars. Only Slenderette was susceptible at Salisbury; Slenderette and Pinto U. I. 111 at Centerton; and Slenderette, Pinto U. I. 111, and Mountaineer White Half Runner at Beltsville and Crossville, Aurora was immune at all locations.

The following entries were moderately resistant or better at all locations: G698, G699, G700, G701, and Tidal Wave. The latter cultivar appears to be a true "slow ruster" since it is susceptible to all collections of rust in greenhouse inoculations.

The following were susceptible at only one location: Centerton - Exp. 121, Green Isle, Spartan Pride; Crossville - GP 467, GP 76017; Beltsville - Gaelic, GG 409-1, GG 447, WHP-1, #9399; Salisbury - none.

Cultivars and lines moderately resistant or better at two locations are as follows: Centerton and Crossville - Bush Romano 14, Roma 572, Romano 76146, Romano 76147; Centerton and Salisbury - BBL Advance, BBL 94, GP 76065, 7BP-198, WHP-3; Crossville and Beltsville - none; Crossville and Salisbury - Bronco, ID-16, ID-28, Rainier; Beltsville and Salisbury - Aristocrop, B-4000-3, BBL 72115, BBL 73043, Code 160, E-4206, E 5201, E 6208, Gator Green 15, Lake Largo, 77-1369, 77-1370.

Those moderately resistant or better at one location were: Centerton - Roma, 75-1498; Crossville - none; Beltsville - Lake Seneca; Salisbury - BBL 73149, E 5202, E 6207.

The following ten cultivars were susceptible at all locations: Blue Max, BBL 92, BBL Rio, Eastern Butterwax, Golden Butterwax, Goldrush, Grand Canyon, Greenway, Vitagreen, Triumph. Ten breeding lines were susceptible at all locations also.
The cultivars and breeding lines, Cape, Code 121, Custer, E 7201 W, Earligreen, Gina, GP 75023, 757005, 757008, 757009, 757012 and Spurt, moderately resistant or better in previous years at all locations, were not included in the 1978 uniform snap bean rust nursery.

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DEVELOPMENT OF RESISTANCE TO WISCONSIN'S BEAN ROOT ROT COMPLEX

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The bean (Phaseolus vulgaris L.) root rot disease in Wisconsin is caused by several fungi including Pythium spp., Fusarium solani f. sp. phaseoli and Rhizoctonia solani. No satisfactory control measure is available although certain plant introductions and bean lines have very helpful levels of resistance. In 1971, we made selections of resistant plants from several promising bean lines being tested in our root rot nursery at the Wisconsin Hancock Experimental Farm. Subsequently, we have crossed these resistant selections with one another and with selections from the cultivars Gloria and State Half Runner. Crosses to the susceptible cultivar 'Tenderwhite' were made to obtain proper maturity, good plant habit and processing-type pods. These researches resulted in the recent public release of the first bush beans with resistance to Wisconsin's bean root rot complex. These new beans have been designated Wisconsin (RRR) 77 and Wisconsin (RRR) 83. Tests in 1977 on infested soil showed that yields of processing beans were increased 400% by the use of these new beans in comparison with a standard susceptible cultivar. These studies also revealed that some of our newest breeding lines, evidently containing other resistance genes from additional sources, had higher levels of root rot resistance and increased processing bean yields 950%.

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PRELIMINARY INVESTIGATIONS OF PATHOGENIC VARIABILITY EXPRESSED BY Isariopsis griseola

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Angular leaf spot of dry edible beans is caused by the fungus, Isariopsis griseola, which is widespread and can cause serious yield losses in various regions of Latin America and other parts of the world. Investigations were recently initiated at CIAT to develop methodology required to evaluate resistance inherent in dry bean germ plasm and breeding progeny.

Abundant sporulation by the pathogen has been achieved by growing isolates in the laboratory on V-8 medium (200 ml V-8 juice, 3 g. CaCO₃, 18 g.