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References

Registation of Six Great Northern Bean Germplasm Lines with Enhanced Resistance to Rust and Bean Common Mosaic and Necrosis Potyviruses

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Great northern bean (Phaseolus vulgaris L.) germplasm lines BelMiNeb–Rust and Mosaic Resistant (BMN-RMR)-8 (Reg. No. GP-247, PI 642014), BMN-RMR-9 (Reg. No. GP-248, PI 642015), BMN-RMR-10 (Reg. No. GP-249, PI 642016), BMN-RMR-11 (Reg. No. GP-250, PI 642017), BMN-RMR-12 (Reg. No. GP-251, PI 642018), and BMN-RMR-13 (Reg. No. GP-252, PI 642019) were developed by the USDA-ARS Beltsville Agricultural Research Center, Beltsville, MD, in cooperation with the Michigan and Nebraska Agricultural Experiment Stations. To our knowledge, these are the only great northern bean lines in the world to combine four genes for resistance to the hypervariable bean rust pathogen, Uromyces appendiculatus (Pers.:Pers.) Unger, with two genes for resistance to strains of the seed-borne bean common mosaic necrosis (BCMV) potyvirus and white-seeded great northern dry bean germplasm yielding and upright, short vine type II growth habit.

Rust is a disease of dry and snap beans that occurs typically as epidemics east of the continental divide throughout many countries in the Americas, particularly in the US and southwards to southern Africa. In the US and other parts of the world, rust epidemics can cause yield losses that approach 100% (Lindgren et al., 1995). The BCMV potyvirus and BCMNV potyvirus affect seed production in the western US and other areas of the world, particularly damaging to snap beans and to dry bean varieties of certain commercial classes. Rust epidemics approach 100% (Lindgren et al., 1995). The BCMV potyvirus and BCMNV potyvirus affect seed production in the western US and other areas of the world, particularly damaging to snap beans and to dry bean varieties of certain commercial classes. Rust epidemics approach 100% (Lindgren et al., 1995). The BCMV potyvirus and BCMNV potyvirus affect seed production in the western US and other areas of the world, particularly damaging to snap beans and to dry bean varieties of certain commercial classes. Rust epidemics approach 100% (Lindgren et al., 1995). The BCMV potyvirus and BCMNV potyvirus affect seed production in the western US and other areas of the world, particularly damaging to snap beans and to dry bean varieties of certain commercial classes. Rust epidemics approach 100% (Lindgren et al., 1995). The BCMV potyvirus and BCMNV potyvirus affect seed production in the western US and other areas of the world, particularly damaging to snap beans and to dry bean varieties of certain commercial classes.

Gene pyramidng for the development of multiple disease resistance genes is the most cost-effective strategy for world-wide control of rust and BCMV and BCMNV in the great northern dry bean germplasm.