

USWA-9 (seed lot 95-2519) is an F₅ derived F₁₁ bulk from the cross NW-59/A55. It has an upright II-A plant habit, late maturity (112 days) in the 1995 Othello replicated yield trial, and a very high yield of 4223 pounds per acre. Seed size of USWA-9 is comparable to commercial small red cultivars (1333 seed per pound). It has complete resistance to CTV, good resistance to the root rot complex of the Pacific Northwest, and is a first release of a small red with the combined BCMV resistance of the *I bc-2² genes*. This combination provides complete resistance to all known endemic strains of BCMV and the recently imported exotic strains (NL-3, 5, 8) of bean common mosaic necrosis virus; which can cause lethal systemic necrosis (black root) in unprotected dominant *I* gene cultivars. The presence of the *bc-2²* gene was unexpected, since neither parent was reported to have *i bc-2²* at its release. However, one of the progenitors of NW-59 was Red Mexican 'UI-35', which is known to have *i bc-2²* resistance. Since the NW-59 release was a combination of late generation single plant selections, the *bc-2²* gene may have been in the release population at a low level.

RELEASE OF TWO LARGE SEEDED GREAT NORTHERN DRY BEAN GERMPLASM LINES, USWA-12 AND USWA-13, WITH VIRUS RESISTANCE

The Agricultural Research Service, U. S. Department of Agriculture, and the Agricultural Research Centers of Washington State University, the University of Idaho, and Oregon State University announce the release of two large seeded, virus resistant great northern dry bean germplasm lines, USWA-12 and USWA-13.

Complete resistance to all strains of bean common mosaic virus (BCMV) and curly top virus (CTV) is needed in the bean seed production areas of the arid western states. Most commercial great northern cultivars are criticized by industry buyers as being too small (1300 to 1600 seed per pound). For the first time these releases combine large seed size (1050 to 1250 seed per pound) with resistance to BCMV and CTV. These lines were developed by Dr. Matt J. Silbernagel, Research Plant Pathologist (retired), USDA-ARS, and Dr. An N. Hang, Agronomist, Washington State University. Both are located at the WSU-Irrigated Agriculture Research and Extension Center, 24106 N. Bunn Road, Prosser, WA 99350-9687.

USWA-12 (seed lot 95-2115) is an F₅ derived F₁₁ population from a cross GN-WM-85-45//JM-24/'Limelight'. GN-WM-85-45 is a University of Nebraska white mold tolerant breeding line developed by Dr. D. Coyne. It is a sister line to Nebraska great northern 'Starlight', which has large, bright, white seed. JM-24 is a USDA-ARS great northern germplasm release developed by Dr. D. W. Burke and Dr. J. Meiners; which has dominant *I* resistance to BCMV and complete CTV resistance (presumed to be due to two dominant epistatic genes). Limelight is a very early, large, flat, white-seeded, bush line, which was released as a substitute for a lima bean in Canada. Plants of USWA-12 have a II-B plant habit (CIAT classification), which is an indeterminate, upright vine with long tendrils. Leaves are medium sized, medium green color. Pods are borne low to high on the plant. Maturity is midseason to late (106 days), about 10 days later than Starlight (94 days) at Othello, WA, in 1995 replicated yield trials. Seed size of USWA-12 is roughly equivalent to Starlight (1100-1200 per pound) and it yields 3000 to 4000 pounds per acre. USWA-12 has dominant *I* resistance to BCMV and complete resistance to CTV.

USWA-13 (95-2921) is an F_7 derived F_{12} bulk population derived from a cross JM-24/'Anfa'//GN-WM-85-45. Anfa is an upright, short vine, small-seeded great northern type developed in France by Dr. E. Marx, LeGrains Calliard; with resistance to BCMV, anthracnose, and halo blight. Plant habit of USWA-13 is II-B. Maturity and yields were close to 'UI-59' and 'Alpine' in the Washington and Idaho 1995 Cooperative Dry Bean Nursery trials. Seed size was much larger, 1100-1200 seed per pound, for USWA-13 versus 1300-1400 seed per pound for the control cultivars. This tendency for large seed size was also seen in 1995 trials in Colorado and Nebraska. The seed is plump with an attractive bright white color obtained from its Nebraska parent. USWA-13 has dominant *I* resistance to BCMV, but occasionally showed a trace of CTV in the field, indicating possible variability for this character, or it may have only one of the two dominant resistance factors.

RELEASE OF PINTO DRY BEAN GERMPLASM LINES USWA-19 AND USWA-20 WITH VIRUS AND ROOT ROT RESISTANCE

The Agricultural Research Service, U. S. Department of Agriculture, and the Agricultural Research Centers of Washington State University, the University of Idaho, and Oregon State University announce the release of two pinto dry bean germplasm lines, USWA-19 and USWA-20, with resistance to bean common mosaic virus (BCMV), curly top virus (CTV), and the root rot complex present in the Pacific Northwest. Complete resistance to all strains of BCMV and CTV is needed in the bean seed production areas of the arid western states.

Both USWA-19 and USWA-20 are bulk populations from the cross 'Othello'/'Sierra'. Othello is an early-maturing USDA pinto cultivar developed by Dr. D. W. Burke (USDA-ARS, Prosser, WA) with complete resistance to CTV (presumed to be due to two dominant epistatic genes), recessive *i bc-2²* resistance to BCMV, and some tolerance to the root rot complex in the Pacific Northwest. Sierra was developed at Michigan State University by Dr. J. D. Kelly as the first upright pinto, which has a strong root system, is late maturing, is susceptible to all strains of BCMV, and has the *Ur-3* gene for rust resistance. The lines being released were developed by Dr. Matt J. Silbernagel, Research Plant Pathologist (retired), USDA-ARS, and Dr. An N. Hang, Agronomist, Washington State University. Both are located at the WSU-Irrigated Agriculture Research and Extension Center, 24106 N. Bunn Road, Prosser, WA 99350-9687.

USWA-19 (seed lot 95-2118) early season plant habit is II-B but by maturity it is III-A. It was also tested as 93-1071 in 1994 and 94-4913 in 1995. In various replicated yield trials, USWA-19 yielded about the same or slightly better than Othello and varied in maturity from the same as Othello (88 days) to 5-7 days later. USWA-19 consistently has a larger seed (1050 to 1200 seed per pound) than Othello (1200 to 1300 seed per pound). Complete resistance to CTV and recessive *i bc-2²* resistance to BCMV is the same as Othello. USWA-19 had good rust resistance in the 1994 rust trials at North Platte, NE. USWA-19 seems to have combined all of the known disease resistances of both parents including a strong tolerance to the root rot complex. This root rot tolerance was demonstrated in 1995 replicated yield trials at Othello, WA, where USWA-19 yielded 4094 pounds per acre (in old bean land), while the control Othello produced 3602 pounds per acre.