IDAHO AGRICULTURAL EXPERIMENT STATION
Moscow, Idaho

Announces the Release of

GARY
Hard White Winter Wheat

Gary hard white winter wheat (*Triticum aestivum* L.) was released in 2001 by the Idaho Agricultural Experiment Station. Gary is a semi-dwarf wheat adapted to rain-fed production zones of the Pacific Northwest area of the United States. It has end-use quality suited to both domestic bread use and Asian noodle products. Gary is named in honor of Gary Lee, former weed scientist, chairman of the UI Plant, Soils, and Entomological Sciences Department, and Director of the Idaho Experiment Station.

Gary is a selection from a first backcross made in 1987, A879W, with the parentage 'Manning'*2 / 'Survivor'. Plants of the BC_1 generation were harvested in bulk and planted in the field at Aberdeen 1988. Subsequent selection for snow mold (*Typhula* spp.) among red seeded selections of the BC_1F_2 derived population indicated that the population had good agronomic characteristics and disease resistance. When interest in hard white wheat was renewed in the PNW, we reevaluated hard red winter populations that had produced hard white segregants, of which A879W was one. The BC_1F_3 seed harvested in bulk from the plot planted in 1988 was planted at Aberdeen in 1991. Heads were selected from the population in 1992 and planted to $BC_1F_{3:4}$ head rows in the fall of 1993. One of the head rows, designated A879W-5, was selected based on resistance to common bunt (causal organism *Tilletia tritici* (Bjerk) Wint.) and advanced to yield testing in 1994. A879W-5 was evaluated in yield trials from 1994 to 1998 and was advanced to the Western Regional Nursery in 1998 identified as IDO550. Pure line $BC_1F_{3:9}$

heads of IDO550 were selected in 1999 and evaluated for uniformity and trueness-to-type in 2000. Approximately 100 head row $BC_1F_{3:9}$ selections harvested in 2000 were composited to form breeder seed of Gary.

Gary has a prostrate juvenile growth habit with blue green foliage and no waxy bloom. The flag leaves of Gary are erect with auricles that are glabrous and green to yellow green in color. The heads of Gary are lax and awned. Gary's glumes are long, medium wide, with a squared shoulder shape, and an acute beak. Gary flowers at a medium maturity, approximately 258 d after planting, 3 d earlier than 'Bonneville' and 1 d later than Manning. In southeastern Idaho rain-fed production, Gary's mature height is approximately 89 cm, 5 cm taller than Manning and 8 cm shorter than Bonneville. At maturity, Gary has white chaff color. Seed of Gary is medium sized, approximately 35 mg per kernel compared with 31 mg for Manning and Utah 100, 37 mg for Bonneville, and 40 mg per kernel for Weston. Seed is elliptical in shape, with angular cheeks, and a short, uncollared brush. The seed crease is wide and shallow in depth. Gary is highly resistant to dwarf bunt (*T. controversa* Kühn in Rabenh.), similar to the cultivars Bonneville and 'Utah 100'. In 3 yr of Western Regional Testing in Idaho and Washington, Gary had moderate adult plant resistance to stripe rust (causal organism *Puccinia striiformis*, Westend), and seedling resistance when innoculated with *P. striiformis* races CDL37, CDL43, and CDL45. In the same trials, Gary had moderate resistance to Pacific Northwest races of leaf rust (causal organism *P. recondita* Rob. ex Desm. f. sp. *tritici*)). Gary is moderately tolerant to snow mold, similar to Manning.

In southeastern Idaho rain fed yield trials, 1997 to 2000 (14 site-years), Gary had an average yield of 4.2 Mg ha^{-1} compared with 3.8 Mg ha^{-1} for Bonneville, 3.9 Mg ha^{-1} for 'Weston', 4.1 Mg ha^{-1} for 'Manning', and 4.2 Mg ha^{-1} for 'Utah 100'. Gary is similar in test

weight to 'Utah 100' (773 kg m^{-3} and 780 kg m^{-3}, respectively), yet less than Manning and Bonneville (782 kg m^{-3} and 798 kg m^{-3}, respectively). Based on milling and baking evaluations by the University of Idaho Wheat Quality Laboratory, Gary has good quality characteristics. Milling quality of Gary in 14 site-years of southeastern Idaho trials was similar to Manning and Utah 100, yet lower than Bonneville. Gary has strong dough mixing characteristics with a mixograph mixing time of 3.7 min to peak dough development compared with 3.0 min for Bonneville and 3.1 min for Manning and Utah 100. Loaf volumes for bread baked from Gary flour is similar to Bonneville when corrected for protein content, yet smaller than Manning and Utah 100. Alkali noodle color brightness and brightness stability of Gary is excellent, similar to 'Eltan' soft white winter wheat. In seven environments in southeastern Idaho, Gary had an average alkali noodle brightness of 86.9 CIE units with a decline in brightness over 24 hr of 5.8 CIE units. In the Pacific Northwest Wheat Quality Council evaluations, Gary's Chinese noodle hardness texture, as measured by Tx-TA2 texture analysis was favorable compared to 'Idaho 377s' and Manning. The hardness after cooking was 1436 g for Gary, 1366 g for Manning, and 1299 g for Idaho 377s.

Seed of Gary will be maintained by the University of Idaho, Foundation Seed Program and may be obtained by contacting the Foundation Seed Director, University of Idaho, Kimberly Research and Extension Center, Kimberly, ID.

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Director, Idaho Agricultural Experiment Station Date

Moscow, Idaho