

Internal Order No. 530655

APPENDIX “A” – VARIETY DESCRIPTION

Crop: Navy Bean

Variety Name: Experimental Name: ACUG 14-1, Proposed Variety Name: AAC Shock

Origin and Breeding:

The navy bean (*Phaseolus vulgaris* L.) line ACUG 14-1 was developed by the collaborative AAFC/University of Guelph Bean Breeding Program. It was tested in the Ontario Navy Bean Registration Trials in 2014 and 2015. ACUG 14-1 is a selection from the cross HR164/W4170a-96060 made in the growth room in fall 2006. The cross, was designed to improve plant architecture and resistance to common bacterial blight (caused by *Xanthomonas axonopodis* pv. *phaseoli*) while maintaining the seed quality characteristics of the navy bean market class. HR164 was an elite line from the cross HR70 and OAC 95-4. HR70, registered as AC Compass, was used for its high yielding potential as mid-season navy bean with semi-upright plant type. OAC 95-4, registered as OAC Rex, was used to incorporate high yield potential and upright plant type with semi-upright growth habit (Type 2a) and resistance to common bacterial blight (CBB). W4170a-96060 is a F6 plant row selection from the cross HR93/OAC Rex. HR93 registered as AC Cruiser was used for high yield potential, and desirable plant and seed type, and disease resistance.

The F1 generation was planted at the AAFC-Harrow in the summer of 2007, where it was bulk harvested by hand. The F2 generation was planted in the fall in a greenhouse at Harrow and harvested as plant bulks which in turn were planted in summer 2008 at Harrow for F3 advance and were bulk harvested with combine. The F4 grown in 2009 summer at Harrow was bulk harvested with combine and single plants were selected from the F5 at Harrow in 2010. Selection criteria were upright plant architecture, maturity, seed size and disease resistance. In 2011, F5:6 progeny rows were tested at Harrow. Main criteria for selection were high yield potential, and desirable plant and seed type, and disease resistance. The line ACUG 14-1 was selected out of the progeny rows and tested in the preliminary and advanced yield trials in 2012 and 2013, respectively, in replicated trials in Elora and St. Thomas, ON, and was advanced to the Ontario Navy Bean Cooperative Registration Trials. ACUG 14-1 was tested in the Ontario Navy Bean Cooperative Registration Trials in 2014 and 2015 under the guidelines set by the Ontario Pulse Crop Committee (OPCC). As a part of these tests, the line was also evaluated for its cooking and canning quality attributes in the Bean Pilot Plant at AAFC Lethbridge. Data from the field trials and canning tests will be submitted to OPCC at the annual meeting in February 2016 to request support for registration of ACUG 14-1.

ACUG 14-1 was planted in isolation plots for purification and multiplication of seed and further increased in the greenhouse in 2014. Plots will be grown in trial ground in Idaho in summer of 2016 for pre-breeder seed production with breeder seed production expected in summer 2017.

Performance:

Based on a two year average, ACUG 14-1 Navy bean line with maturity similar to check cultivars OAC Thunder, Lightning, and AC Compass yielded significantly higher (11%) than the average of the check cultivars (Table 1). ACUG 14-1 may be recommended for mid-season to full-season maturity areas in Ontario. ACUG 14-1 has a larger seed mass (7%) than Lightning. ACUG 14-1 has indeterminate (type II) growth habit with short vine and high podding nodes with average lodging resistance. In canning quality evaluations in 2014 and 2015, ACUG 14-1 had an acceptable cooking and canning quality, similar to the check cultivars (Table 2). ACUG 14-1 may be recommended for bean growing areas with 2600 or more CHU in Ontario.

Maintenance of Breeder Seed: Agriculture and Agri-Food Canada, Harrow, ON will maintain and distribute the breeder seed.