

AAC Liscard maple pea

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Bing, D.-J., Beauchesne, D., Vera, C. and Balasubramanian, P. 2015. AAC Liscard maple pea. *Can. J. Plant Sci.* **95**: 1279–1281. AAC Liscard is a semi-leafless maple pea (*Pisum sativum* L.) cultivar developed at Agriculture and Agri-Food Canada Lacombe Research Centre, Lacombe, Alberta, Canada. It is a high-yielding cultivar with excellent standability. AAC Liscard is resistant to powdery mildew caused by *Erysiphe pisi* Syd. It has early maturity and medium seed size in the maple pea class. AAC Liscard is adapted to the field pea growing regions in western Canada.

Key words: Maple pea, *Pisum sativum* L., powdery mildew resistance, cultivar description

Bing, D.-J., Beauchesne, D., Vera, C. et Balasubramanian, P. 2015. Le pois perdrix AAC Liscard. *Can. J. Plant Sci.* **95**: 1279–1281. AAC Liscard est une variété de pois perdrix (*Pisum sativum* L.) semi-aphylle créée au centre de recherches d'Agriculture et Agroalimentaire Canada (AAC) à Lacombe, en Alberta (Canada). Ce cultivar à haut rendement se caractérise par un excellent maintien. AAC Liscard résiste au blanc causé par *Erysiphe pisi* Syd. Précoce, il donne des graines de calibre moyen pour la catégorie des pois perdrix. AAC Liscard est bien adapté aux régions de l'Ouest canadien où l'on cultive le pois de plein champ.

Mots clés: Pois perdrix, *Pisum sativum* L., résistance au blanc, description de cultivar

AAC Liscard is a semi-leafless maple pea (*Pisum sativum* L.) cultivar developed at Agriculture and Agri-Food Canada (AAFC) Lacombe Research Centre, Lacombe, Alberta, Canada. It has high seed yield, excellent lodging resistance and early maturity in the maple pea class. AAC Liscard is resistant to powdery mildew caused by *Erysiphe pisi* Syd. It has medium seed size in the maple pea class, tinged yellow seed coat with mottled purple pattern and blocky seed shape. AAC Liscard was issued a Certificate of Eligibility for Certification under the authority of the Canada Seeds Act by the Canadian Seed Growers Association (CSGA) on 2014 Jul. 17 by CSGA. The Certificate number is 1706-2014.

Breeding Methods and Pedigree

AAC Liscard was developed from the cross CDC Acer/Reward made in 2006. CDC Acer is a maple pea cultivar developed at the Crop Development Centre, University of Saskatchewan. It is resistant to powdery mildew, having small seed (thousand-seed weight = 170 g), moderately round shape, tan seed coat color with mottled maple pattern, poor lodging resistance, and late maturity. Reward (Bing et al. 2006a) is a yellow pea cultivar developed at AAFC Morden Research Station. Reward has excellent lodging resistance, medium maturity (92 d) and resistance to powdery mildew. The objectives of the cross were to develop maple pea cultivars that have

higher yield, better lodging resistance and earlier maturity than CDC Acer by incorporating higher yielding potential, better lodging resistance and earlier maturity of Reward. The breeding method for AAC Liscard is pedigree selection in combination with single seed descent for generation advance.

The cross CDC Acer/Reward was made in the greenhouse in the winter of 2005–2006 at AAFC Lacombe Research Centre. The F₁ generation was grown in the field in Lacombe, AB, in the summer of 2006. The F₂ generation was grown in the field in 2007 in Lacombe, AB, and a total of 390 single plants were selected using single seed descent. The harvested plants were advanced to the F₃ generation in the greenhouse at AAFC Lacombe Research Centre in the winter of 2007 using single seed descent. A total of 311 F₄ plants were grown in the field in Lacombe, AB, in 2008, from which 132 plants were selected on the basis of early maturity and good lodging resistance. The F₅ plants were planted in rows in a winter nursery in Brawley, CA, USA, in 2008–2009. The F₆ generation was grown in the field in the summer of 2009 in Lacombe, AB, and a total of 93 single plants were harvested. Seed from each of the harvested plants (F₇) was planted in 1-m² plot in the field in Lacombe, AB, in 2010, and 34 lines, including the line P0609-08, were selected on the basis of visual evaluation for early maturity and good lodging resistance. The selected lines

Table 1. Performance of AAC Liscard and the check cultivars in the advanced yield test in 2012

	Yield (kg ha ⁻¹)	Yield of CDC Acer (%)	DTM ^z	Height (cm) ^y	PHL ^x	TSW (g) ^w	PM ^v
Agassiz (CK)	6355	169	92	109	5	174	R
CDC Striker (CK)	5159	137	93	99	6	212	S
CDC Acer (CK)	3755	100	105	91	7	107	R
Courier (CK)	5290	141	96	96	7	200	S
AAC Liscard	5951	158	89	114	5	159	R
LSD (<i>P</i> = 0.05)	903		–	11	1	–	
Location-year	3		1	2	3	–	

^zDays to maturity.^yPlant height.^xPre-harvest lodging score, 1 = upright, 9 = completely prostrate.^wThousand-seed weight.^vPowdery mildew, R = resistant, S = susceptible.

(F₈) were evaluated in a two-replication preliminary yield test in Melfort, SK, in 2011, and eight lines including P0609-08 were selected based on high seed yield and good lodging resistance. In 2012, these eight lines (F₉) were evaluated in advanced yield tests at three sites, two sites in Lacombe, AB, and one site in Lethbridge, AB. Four lines, including P0609-08, were selected for further evaluation in the field in 2013 at three sites, two sites in Lacombe, AB, and one site in Lethbridge, AB. AAC Liscard is the proposed variety name for P0609-08 in commercial production.

Performance

In the preliminary yield test in 2011 AAC Liscard was compared with four check cultivars for seed yield and lodging resistance. The check cultivars consisted of the green pea cultivar Cooper, yellow pea cultivar Cutlass (Blade et al. 2004), and two commercial maple pea cultivars CDC Acer and Courier. AAC Liscard had higher yield than any of the check cultivars. In particular AAC Liscard yielded 42% higher than CDC Acer and 10% higher than Courier. AAC Liscard had significantly better lodging resistance than the check cultivars. In the advanced yield test in 2012 AAC Liscard was compared with Agassiz (Bing et al. 2006b), a superior yellow pea cultivar grown in Canada and the United States of America, CDC Striker (Warkentin et al. 2004), a superior green pea cultivar in western Canada, and maple pea

cultivars CDC Acer and Courier for yield, maturity, plant height, lodging resistance and seed weight (Table 1). AAC Liscard ranked the second in yield after Agassiz, and had greater yield than CDC Striker, CDC Acer and Courier by 21, 58 and 17%, respectively. AAC Liscard matured at 89 d, 3 d earlier than Agassiz, 4 d earlier than CDC Striker, 16 d earlier than CDC Acer and 7 d earlier than Courier. AAC Liscard was the tallest in plant height (114 cm). AAC Liscard was the same as Agassiz in lodging resistance, but had lower lodging scores than the other check cultivars. In the advanced yield test in 2013 AAC Liscard was similar to Agassiz in seed yield, but 16% higher than Courier (Table 2), which was similar to the results in the 2012 test. Similarly, AAC Liscard was similar to Agassiz, but 8 d earlier than Courier for maturity, consistent with the 2012 test results.

Other Characteristics

The thousand-seed weight (TSW) of AAC Liscard in the advanced yield tests in 2012 and 2013 was 159 g (Table 1) and 164 g (Table 2), respectively, which was larger than the seed size of CDC Acer, but smaller than the seeds of the other check cultivars. The seed coat of AAC Liscard has tinged yellow color with mottled purple patterns, which can sometimes coalesce and make the whole seed dark purple (Fig. 1). The frequency of the fully dark purple seeds is 5–15%. AAC Liscard has blocky

Table 2. Performance of AAC Liscard and the check cultivars in the advanced yield test in 2013

	Yield (kg ha ⁻¹)	Yield of CDC Courier (%)	DTM ^z	Height (cm) ^y	TSW (g) ^x	PM ^w
Agassiz (CK)	8080	117	101	112	194	R
Courier (CK)	6894	100	108	105	216	S
AAC Liscard	8004	116	100	112	164	R
LSD (<i>P</i> = 0.05)	994		3	9	18	
Location-year	3		3	3	3	

^zDays to maturity.^yPlant height.^xThousand-seed weight.^wPowdery mildew, R = resistant, S = susceptible.



Fig. 1. The seed shape and seed coat color of AAC Liscard (experimental name: P0609-08) and the maple pea check cultivars CDC Acer and Courier.

seeds, but the shape is more spherical than the seeds of CDC Acer and Courier (Fig. 1).

AAC Liscard is resistant to powdery mildew caused by *Erysiphe pisi* Syd, similar to the check cultivars Cutlass, Agassiz, Cooper and CDC Acer, whereas CDC Striker and Courier were susceptible to the disease.

Availability of Propagating Material

Breeder seed of AAC Liscard was derived from a single line in the F₉ generation, and is maintained at AAFC

Research Farm, Indian Head, Saskatchewan, Canada S0G 2K0. Exclusive rights for the sale and production of the pedigreed seed have been awarded to Wagon Wheel Seed Corporation., P.O. Box 229, Churchbridge, Saskatchewan, Canada S0L 2N0. The development of AAC Liscard was financially supported by Alberta Pulse Growers Commission, Manitoba Pulse Growers Association, Saskatchewan Pulse Grower Association and the AAFC Growing Forward 1 Pulse Science Cluster Program.

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