

AAC Peace River field pea

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Received 17 July 2012, accepted 2 November 2012.

Bing, D. J., Beauchesne, D., McLaren, D., Vera, C. and Gehl, D. 2013. AAC Peace River field pea. *Can. J. Plant Sci.* **93**: 337–339. AAC Peace River is a semi-leafless, yellow cotyledon field pea (*Pisum sativum* L.) cultivar developed at Agriculture and Agri-Food Canada, Lacombe Research Centre, Lacombe, Alberta, Canada. It is an early-maturing cultivar and is resistant to powdery mildew caused by *Erysiphe pisi* Syd. AAC Peace River is adapted to all field growing regions in western Canada, and is especially suited to regions with short growing seasons.

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

Bing, D. J., Beauchesne, D., McLaren, D., Vera, C. et Gehl, D. 2013. Le pois de grande culture AAC Peace River. *Can. J. Plant Sci.* **93**: 337–339. AAC Peace River est une variété semi-aphylle de pois de grande culture (*Pisum sativum* L.) à cotylédons jaunes créée à la station de recherches de Lacombe d'Agriculture et Agroalimentaire Canada, à Lacombe, en Alberta (Canada). Ce cultivar précoce résiste au blanc causé par *Erysiphe pisi* Syd. AAC Peace River est adapté à toutes les régions de l'Ouest canadien où on cultive le pois en pleine terre, particulièrement à celles caractérisées par une courte période végétative.

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

AAC Peace River is a semi-leafless, yellow cotyledon field pea (*Pisum sativum* L.) cultivar developed at Agriculture and Agri-Food Canada (AAFC), Lacombe Research Centre, Lacombe, Alberta, Canada. It has early maturity, medium seed size, and is resistant to powdery mildew caused by *Erysiphe pisi* Syd (syn. *E. polygoni* DC.). AAC Peace River is adapted to all field pea growing regions in western Canada, and is especially suited to the regions with short growing seasons. AAC Peace River was registered on 2012 Mar. 28 at the Variety Registration Office, Canadian Food Inspection Agency. The registration number is 7169.

Breeding Methods and Pedigree

AAC Peace River was developed from the cross P9561098//Eclipse/MP1566. P9561098 was a breeding line developed at AAFC Morden Research Station, Morden, Manitoba, Canada, which was later registered as cultivar Canstar (Bing et al. 2006). Eclipse was a cultivar developed by Cebeco Zaden, the Netherlands. MP1566 was a high yielding, but powdery mildew susceptible breeding line developed at AAFC Morden Research Station from the cross Montana/Miko.

The breeding method used to develop AAC Peace River was pedigree selection combined with single seed

descent. The cross P9561098//Eclipse/MP1566 was made in the greenhouse at the AAFC Morden Research Station, MB in the early spring of 2001. The F₁ was grown in the field in Morden, MB, in the summer of 2001. The F₂ was planted at two sites in the field in 2002 in Morden, MB. A total of 112 powdery mildew resistant plants were selected from the F₂ population, and advanced to the F₃ in the greenhouse at the AAFC Morden Research Station in the winter of 2002 using single seed descent. A total of 472 seeds harvested from the F₃ were planted in the F₄ nurseries in Morden, MB, and Lacombe, AB, in 2003, and 119 single plants were selected on the basis of early maturity. The selected plants were grown in 1-m² plots in the field in 2004 in Lacombe, AB, from which 13 lines were selected on the basis of early maturity, good lodging resistance and high yield potential. These selected lines were evaluated in a replicated preliminary yield test in 2005 in Morden, MB, and Lacombe, AB. Among the 13 breeding lines, P0117-03 had good lodging resistance, round seed shape, medium seed size, and early maturity. Breeding line P0117-03 was evaluated in a replicated yield test at eight sites in western Canada in 2006: two sites in Lacombe, AB, one site in Westlock, AB, two sites in Morden, MB, one site in Saskatoon, SK, and one site in

Swift Current, SK. It was further purified by rogueing off-type plants in the seed increase nurseries in Lacombe, AB, and Morden, MB, in 2007. Line P0117-03 was entered into the 2008–2009 Western Canada Field Pea Cooperative Registration Test-B as entry MP1864, and evaluated at a total of 20 station-years. The test locations were Fort St. John, BC; Barrhead, Namao and Lacombe, AB; Scott, Outlook, Rosthern, Saskatoon, Melfort and Indian Head, SK; Brandon and Morden, MB. The pre-breeder seed of AAC Peace River was derived from a single F₈ line, and the first breeder seed was produced in the F₉.

Performance

In the Pea Cooperative Registration Test over 20 station-years, the yield of AAC Peace River was similar to the yield of the check cultivar Eclipse, but it was 8% lower than the yield of Cutlass (Table 1). AAC Peace River was significantly earlier in maturity than Eclipse and Cutlass by 6 and 4 d, respectively. It had a plant height of 71 cm, similar to the check cultivars. AAC Peace River had a lodging resistance score of 4, similar to Cutlass, but higher than Eclipse.

Other Characteristics

Thousand-seed weight of AAC Peace River was 222 g, significantly smaller than that of Eclipse and Cutlass by 25 and 14 g, respectively. The small seed size can be an advantage in pea production because it can reduce the seed cost for planting. The seed shape of AAC Peace River was less spherical than that of Eclipse and Cutlass. AAC Peace River was similar to the check cultivars in seed coat breakage. The seed protein content of AAC Peace River was 22.5%, similar to Cutlass, but significantly lower than Eclipse (24.1%).

As part of the Pea Cooperative Registration Test, AAC Peace River was evaluated in a disease nursery at AAFC Morden Research Station in 2008 and 2009 for its reactions to mycosphaerella blight [caused by *Mycosphaerella pinodes* (Berk. & Blox.) Vestergr.], powdery mildew and fusarium wilt [caused by race 2 of *Fusarium oxysporum* Schlecht. emend. Syd. & Hans. f. sp. *pisi* (van Hall) Syd. & Hans]. AAC Peace River had an average disease core of 6.0 for mycosphaerella blight, similar to the check cultivars. AAC Peace River was resistant to powdery mildew, similar to Eclipse and Cutlass. Fusarium wilt score was rated as the percentage of wilted plants at the stage of early pod formation. AAC Peace River had an average disease infection score of 22.2%. It should be noted that the fusarium infection scores varied considerably between the 2 yr for both AAC Peace River and the check cultivars. In 2008 AAC Peace River and Eclipse were highly susceptible whereas Cutlass was moderately susceptible. In contrast, AAC Peace River and the check cultivars had little disease infections in 2009. Thus, it appears that AAC Peace River is susceptible to fusarium wilt. Thus, growers are advised to take appropriate measures to mitigate

Table 1. Agronomic performance, seed quality and disease resistance of AAC Peace River and the check cultivars in the 2008–2009 Field Pea Co-operative Registration Test

	Yield (kg ha ⁻¹)	DTM (d) ^z	Height (cm) ^y	PHL (1–9) ^x	TSW ^w	Shape ^v	SCB (%) ^u	Protein (%)	MB (1–9) ^t		PM (1–9) ^s		FW (%) ^r	
									2008	2009	2008	2009	2008	2009
AAC Peace River	5264	97	71	4	222	3.5	4.7	22.5	7.0	5.0	0	0	41.7	2.7
Eclipse (CK)	5228	103	69	3	247	2.8	3.1	24.1	9.0	3.7	0	0	41.7	8.3
Cutlass (CK)	5696	101	71	4	236	2.8	3.3	22.5	8.3	4.0	0	0	15.0	4.0
LSD (<i>p</i> = 0.05)	288	1	3	1	7	0.2	2.7	1.1	1.2	1.0	0	0	24.7	8.5
Station-year	20	20	20	18	20	20.0	8.0	2.0	1	1	1	1	1	1

^zDays to maturity.

^yPlant height (cm).

^xPre-harvest lodging score, 1 = upright, 9 = prostrate.

^wThousand seed weight (g).

^vSeed shape, 1 = round, 5 = cubed.

^uMycosphaerella blight, 0 = no disease, 9 = whole plant severely blighted.

^tPowdery mildew, 0 = no disease, 9 = whole plant severely mildewed.

^rFusarium wilt, percentage of the wilted plants.

infection of the disease when growing AAC Peace River in fusarium wilt prevalent areas.

Availability of Propagating Material

Breeder seed of AAC Peace River is maintained at the Agriculture and Agri-Food Canada, Research Farm, Indian Head, Saskatchewan, Canada S0G 2K0. Exclusive rights for the sale and production of the pedigreed seed for commercial production have been awarded to Hadland Seed Farm Ltd., P.O. Box 89, Baldonnel, British Columbia, Canada V0C 1C0.

The authors acknowledge the financial support from Manitoba Pulse Growers Association and the Alberta Pulse Growers Commission for the development of AAC Peace River, and Mr. Al Sloan for his contributions in the development of this cultivar.

Bing, D.-J., Sloan, A., Conner, R., Warkentin, T., Xue, A., Gan, Y., Vera, C., Turkington, K., Clayton, G., Orr, D. and Gehl, D. 2006. Canstar field pea. *Can. J. Plant Sci.* **86**: 751–752.