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# Clé des Champs Strawberry

Shahrokh Khanizadeh*, Martine Deschênes, Audrey Levasseur and Odile Carisse: Agriculture and Agri-Food Canada, Horticultural Research and Development Centre, 430 Gouin Blvd., St-Jean-sur-Richelieu, QC, Canada
Rong Cao and Raymond Yang: Agriculture and Agri-Food Canada, Food Research Centre, 93 Stone Road West, Guelph, Ontario, Canada, N1G 5C9
Jennifer DeEll : Ontario Ministry of Agriculture and Food, Box 587, 1283 Blueline Rd & Hwy #3, Simcoe, ON, Canada, N3Y 4N5
Alan Sullivan : University of Guelph, Department of Plant Agriculture, Guelph, ON, Canada, N1G 2W1
Jean-Pierre Privé: Agriculture and Agri-Food Canada, Food and Horticulture Research Centre, Senator Hervé J. Michaud Research Farm, 1045 St. Joseph Rd. Bouctouche, NB, Canada
Kempler, Chaim: Pacific Agri-Food Research Centre, Agassiz Site, 6947 # 7 HIGHWAY, PO BOX 1000, AGASSIZ BC V0M 1A0
Scott Duguid and Suzanne Enns: Agriculture and Agri-Food Canada, Unit 100 - 101 Route 100, Morden, MB, R6M 1Y5

'Clé des Champs' is a new June bearing strawberry cultivar (Fragaria X ananassa Duch.), bred for Eastern Central Canada and climates similar to Quebec conditions. 'Clé des Champs' was released for pick your own and shipping because it has very attractive light red, glossy and firm fruit, which have an excellent shelf life compared to 'Kent'.

## Origin

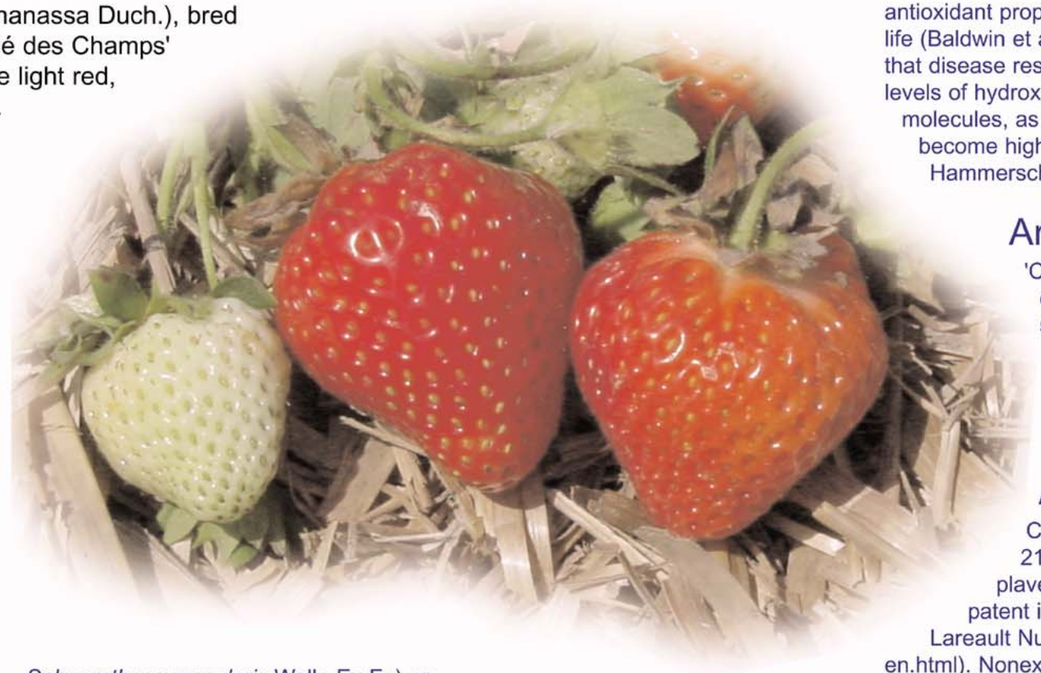
'Clé des Champs', tested as LL9324-24, is a progeny resulting from a cross between 'SJ89244-6E' and 'SJ8518-11' made in 1993 by S. Khanizadeh. 'Clé des Champs' has been tested at the Agriculture and Agri-Food Canada (AAFC) sub-station in L'Acadie, Quebec since 1994, and during 2000-2004 by our partners Phytoclone Inc. and Lareault Nurseries in Quebec. It has been also tested by other AAFC research centers (Atlantic Food and Horticulture Research Centre, Bouctouche NB), as well as in Ontario. 'Clé des Champs' is presently being tested in another AAFC research center (Manitoba) and also in Europe by Meiosis (Bradbourne House, Stable Block, East Malling, Kent ME19 6DZ).

## Description and performance

Plants of 'Clé des Champs' are vigorous, and produce about five inflorescences per crown. They can tolerate winter temperatures below -30°C with 10 cm straw mulch cover. Petioles are short with three, medium green, cupped and obtuse leaflets, with obtuse teeth. The terminal leaflets are slightly longer than broad, have a 1.25 length:width ratio, and the flowers are perfect.

'Clé des Champs' produces attractive large, light red, shiny fruit. The fruit shape is globose-conic. The flesh is orange-red almost throughout and very firm. Fresh fruit store well for up to 5 days at room temperature (20°C) with no sign of mold or deterioration compared to 'Kent' which fruit deterioration observed after 2 days.

A completely randomized design with four replicates was set up in 2002 and also in 2003 to compare 'Clé des Champs' with selected known commercially grown cultivars. 'Clé des Champs' produces similar yield to 'Kent' and 'Jewel'. Similar to 'Jewel', 'Clé des Champs' produces larger size and firmer fruits compared to 'Kent'. 'Clé des Champs' is a midseason cultivar and 50% of primary fruit are ripe 2 to 3 days after Kent. It is moderately susceptible to leaf spot and leaf scorch. No symptoms of powdery mildew (caused by *Sphaerotheca macularis* Wallr. Ex Fr.) or gray mold (caused by *Botrytis cinerea* Pers. Ex Fr.) have been noted since 1999. 'Clé des Champs' has similar flavour to 'Jewel' and 'Kent' with similar soluble solid and acidity.



Chemical analysis of the fruit by an HPLC method (Rekika et. al. 2005) revealed that 'Clé des Champs' was higher in hydroxycinnamic acids (5.88 ppm p-coumaric acid equivalent) and benzoic acids (27.2 ppm gallic acid equivalent) than 'Kent' and 'Jewel' cultivars (4 and 4.3 ppm; 10.7 and 15.6 ppm, respectively). In contrast, fruit of 'Clé des Champs' contain lower amounts of anthocyanins and flavonols (114.5 ppm cyanidins-3-galactoside equivalent and 4.5 ppm quercitin-3-galactoside equivalent) than 'Jewel' (140.2 and 6.4 ppm, respectively) but slightly higher amounts than 'Kent' (103.8 and 4.2 ppm, respectively). The high potential of 'Clé des Champs' fruit (high firmness, long shelf life, no symptoms of gray mold fruit rot and powdery mildew disease) could be due to its high content of phenolic compounds, benzoic and hydroxycinnamic acids, as well as their high antioxidant capacity (Rekika et al., 2005; Wang et al., 1994).

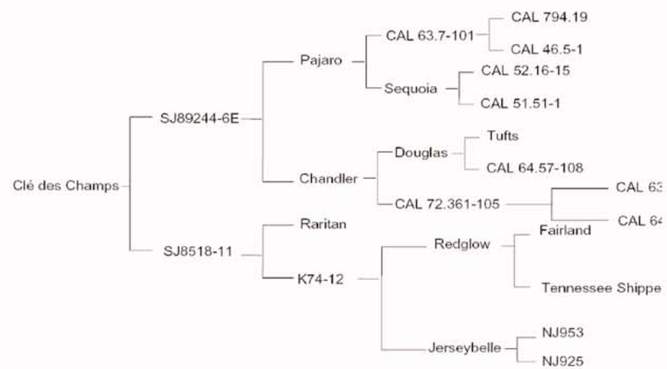
Previous findings showed that benzoic acids have antibacterial, antifungal and antioxidant properties to prevent food spoilage and to enhance quality and shelf life (Baldwin et al., 1995; Khan et al., 1999). Lindhard Pedersen (2003) found that disease resistance of five black currant cultivars was correlated to high levels of hydroxycinnamic acid derivatives. These acids can react with organic molecules, as amino acid and synthesis of toxic secondary metabolites become highly toxic to pathogen proliferation (Nicholson and Hammerschmidt, 1992).

## Area of adaptation

'Clé des Champs' is recommended for Eastern Central Canada, especially in areas where the climate is similar to that in the strawberry production areas of Quebec. Typically, strawberry production in Quebec occurs in areas with winter temperatures below -25°C and warm and humid summers with unpredictable mixture of sun and rain (drought some seasons, constant rain other seasons).

## Availability

Canadian Plant Breeder's Rights were granted (Certificate No. 2100, http://www.inspection.gc.ca/english/plaveg/pbrpov/cropreport/str/app00004503e.shtml) and a U.S. plant patent is pending. The plants of 'Clé des Champs' 'are available from Lareault Nursery in Quebec (http://www.lareault.com/cle-des-champs-en.html). Nonexclusive multiplication licenses can be obtained from Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec. European nurseries may obtain a multiplication license from Meiosis Ltd. (Bradbourne House, Stable Block, East Malling, Kent, UK ME19 6DZ). A limited number of plants are available for research purposes from the corresponding author (SK).




**Acknowledgements:** The author (SK) would like to acknowlege the contrbution of the Luc Lareault Nursey and Phytoclone Inc. for their suport in development of this new cultivar.

Additional information on this and other new lines can be obtained from www.khanizadeh.info or http://res2.agr.gc.ca/stjean/personnel/khanizadeh_e.htm

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