

## The Sensory Quality of Carrots: Effects of Some Cultural Factors

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In France, carrots are one of the main outdoor vegetable as regard to area (14 000 ha) and total marketable production (624 858 tons, fresh market and processing) (Scandella, 2010). The sensory qualities of carrots bring more and more importance for the different operators intervening in the commercialization of carrots and also for French consumers. Different parameters can influence them: the first one is the varieties (Simon *et al.*, 1981; Seljåsen, 2000; Cottet *et al.*, 2007); the second is the importance of the growing soil and storage (Simon *et al.*, 1982; Villeneuve *et al.*, 1994; Villeneuve, 1997); the other one can be the incidence of package type (Seljåsen *et al.* (2004). Thus the aim of the present investigation was to explore the relationship between the sensory quality and biochemical composition of carrots and different growing parameters. For the incidence of duration of growing season, in 2008 we compared three duration of growing season for two nantaise type varieties (Maestro - Vilmorin- and Dordogne -Syngenta seeds-: 117 days (sown June 20<sup>th</sup>, harvest November 12<sup>th</sup>), 125 days and (July 10<sup>th</sup>; November 12<sup>th</sup>) 145 days (July 25<sup>th</sup>; November 12<sup>th</sup>). In 2009, the carrots (variety Maestro -Vilmorin-) are sown at the same time (week 27) in five different fields of the carrot area of Aquitaine; they were harvested at two times: 120 days after sowing (week 45) and 150 days (week 49). The sensory analysis was performed by a sensory panel trained specifically for carrot. Prior to each experiment the panel was calibrated according to international standards and the sensory terms (14 descriptors) established for carrot by Cottet *et al.* (2007) are used. Concurrently, the usual physicochemical parameters were measured. In 2008, the results revealed a significant difference between the batches sown at the first and last dates: the shorter duration gives a more rubbery carrot and the longer duration gives a more firm one. We also observe some differences between the two varieties: Dordogne is crunchy and Maestro is more piquant and harsh. Globally, carrots of shorter cycles are less differentiated: fewer firms during cutting, less crunchy, less juicy and more rubbery. For the chemical composition the shorter cycles present less sucrose and more fructose and glucose for the two varieties experimented. But, if we observe an evolution of the composition of terpenoids in the Maestro variety, they are no differences for the Dordogne variety. This variety seems not affected by the duration cycle for terpenoids. In 2009, we observe some difference between the duration of cycle (120 or 150 days) but also between fields. Our results indicate the importance of the cycle duration on the perception of sensory quality by trained panel. We also observe some physicochemical differences.