

Katherine Cools (nee Downes) BSc MSc PhD

Qualifications / Awards PhD, Postharvest physiology and biochemistry (Defra HortLink)
Cranfield University
MRes, Biological Sciences,
University of London
BSc, Natural Sciences with Industrial Placement
(Rothamsted Research)
University of Bath
Tindall Trophy for best PhD in Postharvest.
Award for best presentation at the Cranfield Postgraduate
Conference.

Year of Birth 1984

Nationality British

Contact cwa@cwa.uk.com
<http://www.cwa.international>
+44 (0) 20 7242 8444

Current Position at CWA

Postharvest Bioscience Consultant

Specific Expertise and Experience

Katherine Cools' research has focused on new methods to extend postharvest fruit and vegetable storage life and the effect these techniques have on the biochemistry and physiology of the produce. She has worked on several government-funded research projects investigating mechanisms relating to dormancy in non-climacteric fresh produce.

As an independent consultant, Katherine has provided specialist knowledge on experimental design, execution and analysis of postharvest storage and shelf-life trials as well as project management of academic and industry led research projects.

Technical Skills

Design, execution and analysis of storage trials for vegetable crops and soft fruits.

Application of postharvest treatments to enhance or maintain fruit and vegetable quality.

Biochemical analysis using GC and HPLC coupled with ELSD, RID, DAD or QTOF

Experience in molecular biology techniques (i.e. RT-PCR, Q-PCR, microarray, etc)

Experience in proteomic techniques (i.e. SDS-PAGE, immunoprecipitation)

Summary of Previous Employment

2022-present **Director of Cools AgriScience Consultancy Limited**

2015 to 2022 **Independent Postharvest BioScience Consultant**

2010 to 2015 **Cranfield University, UK**

Research Fellow

Projects included:

- Reducing Postharvest Losses and Wastage in UK Potato Storage due to Sprouting (DEFRA, 2010 – 2012)
- Controlling Dormancy and Sprouting in Potato and Onion (BBSRC HaPI, – 2013)
- Industrial contract research.

2004 to 2005

Rothamsted Research, Harpenden, UK

Research Assistant Department of Plant Pathogen and Interactions

Publications

Tosetti, R., Water, A., Chope, G.A., Cools, K. *et al.*, (2021) New insights into the effects of ethylene on ABA catabolism, sweetening and dormancy in stored potato tubers. *Postharvest Biology and Technology*, 173.

Tosetti, R., Elmi, F., Pradas, I., Cools, K. *et al.*, (2020) Continuous exposure to ethylene differentially affects senescence in receptacle and achene tissues in strawberry fruit. *Frontiers in Plant Science*. 11.

Collings, E., Alamar, C., Cools, K. *et al.*, (2018) Spatial changes in leaf biochemistry profile of two cultivars following cold storage under two different vapour pressure deficit (VPD) conditions. *Food Chemistry*, 277.

Cools, K., Terry, L.A., (2018) The effect of processing on the glucosinolates profile in mustard seed. *Food Chemistry*. 252, 343-348.

Collings, E.R., Alamar, M.C., Cools, K., Redfern, S., Terry, L.A., (2018) Effect of UV-C on the physiology and biochemistry profile of fresh *Piper nigrum* berries. *Postharvest Biology and Technology*. 136, 161-165.

Alamar, M.C., Collings, E., Cools, K., Terry, L.A., (2017) Impact of controlled atmosphere scheduling on strawberry and imported avocado fruit. *Postharvest Biology and Technology*. 134, 76-86.

Foukaraki, S.G., Cools, K. (joint first author), Terry, L.A., (2016) Differential effect of ethylene supplementation and inhibition on abscisic acid metabolism of potato (*Solanum tuberosum* L.) tubers during storage. *Postharvest Biology and Technology*. 112, 87-94.

Foukaraki, S.G., Cools, K., Chope, G.A., (2016) Impact of ethylene and 1-MCP on physiology and sugar accumulation in processing potatoes. *Postharvest Biology and Technology*. 114, 95-103

Cools, K., Alamar, M.C., Terry, L.A., (2014) Controlling sprouting in potato tubers using ultra-violet-C irradiance. *Postharvest Biology and Technology*. 98, 106-114.

Foukaraki, S.G., Cools, K., Terry, L.A., (2014) Effect of transition between ethylene and air storage on postharvest quality of six UK-grown potato cultivars. *Journal of Horticultural Science and Biotechnology*. 89, 599-906.

Cools, K., Terry, L.A., (2012). Comparative study between extraction techniques and column separation for the quantification of sinigrin and total isothiocyanates in mustard seed. *Journal of Chromatography B*. 901, 115- 118.

Chope, G.A., Cools, K., Hammond, J.P., Thompson, A.J., Terry, L.A., (2012). Physiological, biochemical and transcriptional analysis of onion bulbs during storage. *Annals of Botany* 109, 819-831.

Cools, K., Chope, G.A., Hammond, J.P., Thompson, A.J., Terry, L.A., (2011). Ethylene and 1-methylcyclopropene differentially regulate gene expression during onion sprout suppression. *Plant Physiology* 156, 1639-1652.

Benitez, V., Molla, E., Martin-Cabrejas, M.A., Aguilera, Y., Lopez-Andreu, F.J., Cools, K., Terry, L.A., Esteban, R.M. (2011) Characterization of industrial onion wastes (*Allium cepa* L.): Dietary fibre and bioactive compounds. *Plant Foods for Human Nutrition* 66, 48-57.

Cools, K., Chope, G.A., Terry, L.A., (2010). Fate of flavonoids in the outer skins of onion (*Allium cepa* L.) throughout curing. *Journal of Agricultural and Food Chemistry* 58, 11709-11715.

Downes, K., Terry, L.A., (2010). A new ACN-free method for HPLC-ELSD quantification of fructooligosaccharides in onion. *Talanta* 82, 118-124.

Downes, K., Chope, G.A., Terry, L.A., (2010). Postharvest application of ethylene and 1-methylcyclopropene either before or after curing affects onion (*Allium cepa* L.) bulb quality during long-term cold storage. *Postharvest Biology and Technology* 55, 36-44.

Downes, K., Chope, G.A., Terry, L.A., (2009). Effect of curing at different temperatures on biochemical composition of onion (*Allium cepa* L.) skin from three freshly cured and cold stored UK-grown onion cultivars. *Postharvest Biology and Technology* 54, 80-86.

Karolewski, Z., Fitt, B.D.L., Latunde-Dada, A.O., Foster, S.J., Todd, A.D., Downes, K. and Evans, N. (2006). Visual and PCR assessment of light leaf spot (*Pyrenopeziza brassicae*) on winter oilseed rape (*Brassica napus*) cultivars. *Plant Pathology*, 55, 387-400.

Book Chapters

Cools, K., Terry, L.A., (2012) Extraction and quantification of sugars and fructans from vegetable matter. In: Preedy, V.R. (Ed.), *Food and Nutritional Components in Focus No. 3, Dietary Sugars: Chemistry, Analysis, Function and Effects*, The Royal Society of Chemistry, London, UK.

Chope, G.A., Cools, K., Terry, L.A., (2011). Alliums (onion, garlic, shallot and leek). In: Terry, L.A. (Ed.), *Health promoting properties of fruits and vegetables*, CABI publishing, Wallingford, UK.

Cools, K., Vicente, A., Terry, L.A., (2011) Methodologies for extraction, isolation, characterization and quantification of bioactive compounds. In: Terry, L.A. (Ed.), *Health promoting properties of fruits and vegetables*, CABI publishing, Wallingford, UK.

Currah, L., Cools, K., Terry, L.A., (2011). Onions, shallots and garlic. In: Rees, D., Farrell, G., Orchard, J. (Eds.), *Crop Post-harvest: Science and Technology, Perishables*, Blackwell Scientific Publications, Oxford, UK.