

Name: Prof. John Clifton-Brown

Degrees: 1998 PhD, Trinity College Dublin, Ireland.
1992 BA Natural Sciences, Trinity College Dublin, Ireland.

CPD: 2013 PG Certificate in Effective Leadership, Aberystwyth, UK.

Posts held:

2015- present: Personal Chair in Energy Crop Breeding and Modelling.

2011- present: Group leader Energy Crop Breeding & Modelling, a part of the Agricultural & Environmental Sciences Theme, IBERS.

2004 -present: Leader of the *Miscanthus* breeding programme at Aberystwyth
I was recruited to start a *Miscanthus* breeding programme in the Institute for Grassland and Environmental Research (IGER) on the 1st August 2004.

2002-2004: Trinity College Dublin, Ireland. Field coordinator of the CCFLUX and Greengrass projects (EU Frame Work 5, network participant) to quantify greenhouse gas emissions from grassland and arable agriculture in Ireland.

Research background:

In 1990, I started to work on *Miscanthus*, a perennial rhizomatous grass from Eastern Asia. It is a genus with C₄ photosynthesis producing high yields whilst requiring low inputs. I was appointed in 2004, on a research only contract to IGER, to **build up a UK *Miscanthus* breeding programme**. Over the past 14 years I have driven work on *Miscanthus* genetic diversity, ecophysiology, production modelling and carbon mitigation, breeding and agronomy through wide international research collaborations in UK, EU, US and Asia. Since 2007, I have worked extensively with industry and government policy makers to translate breeding research into **societal impact through the commercial uptake** of novel hybrids. Research income since 2004 for development of miscanthus totals >£30m in a succession of interrelated grants. The largest single grant I coordinated was GIANT LINK (2011-2016) worth £6.4m. I was promoted to a personal chair based on merit in December 2015.

Last five years of publications

Clifton-Brown, J., et al. 2017. Progress in upscaling *Miscanthus* biomass production for the European bio-economy with seed-based hybrids. *Global Change Biology Bioenergy* **9**, 6-17.

Davey, C.L.,....Clifton-Brown, J. 2017. Radiation capture and conversion efficiencies of *Miscanthus sacchariflorus*, *M.sinensis* and their naturally occurring hybrid *M.xgiganteus*. *Global Change Biology Bioenergy* **9**, 385-399.

Hastings, A.,.... Clifton-Brown, J. (2017). Economic and Environmental Assessment of Seed and Rhizome Propagated *Miscanthus* in the UK. *Frontiers in Plant Science* **8**.Artn 1058
10.3389/Fpls.2017.01058

Kalinina, O.,.... and Clifton-Brown, J.C. (2017). Extending *Miscanthus* Cultivation with Novel Germplasm at Six Contrasting Sites. *Frontiers in Plant Science* **8**.Artn 563
10.3389/Fpls.2017.00563 Contribution: I ran the experiment and led the writing with Kalinina and team.

Kiesel, A.,.... Clifton-Brown, J., Lewandowski, I. 2017. Site-specific management of *Miscanthus* genotypes for combustion and anaerobic digestion: A comparison of energy yields. *Frontiers in Plant Science*, In Press.

Mccalmont, J.P.,..... and Clifton-Brown, J.C. (2017b). Partitioning of ecosystem respiration of CO₂ released during land-use transition from temperate agricultural grassland to *Miscanthus x giganteus*. *Global Change Biology Bioenergy* 9, 710-724.10.1111/gcbb.12380

Maddison, A.L.,.....Clifton-Brown, J.C.,..... (2017). Predicting future biomass yield in *Miscanthus* using the carbohydrate metabolic profile as a biomarker. *Global Change Biology - Bioenergy* doi: 10.1111/gcbb.12418.

McCalmont, J.P., McNamara, N.P., Donnison, I.S., Farrar, K., Clifton-Brown, J.C. 2017. An interyear comparison of CO₂ flux and carbon budget at a commercial-scale land-use transition from semi-improved grassland to *Miscanthus x giganteus*. *Global Change Biology Bioenergy* 9, 229-245. Doi: 10.1111/gcbb.12323.

Purdy, S.J.,..... Clifton-Brown, J.C., Donnison, I.S., Gallager, J.A. 2017. Could *Miscanthus* replace maize as the preferred substrate for anaerobic digestion in the UK? Future breeding strategies. . *Global Change Biology - Bioenergy*, doi: 10.1111/gcbb.12419. .

Lewandowski, I., Clifton-Brown, J.,.....et al. (2016). Progress on Optimizing *Miscanthus* Biomass Production for the European Bioeconomy: Results of the EU FP7 Project OPTIMISC. *Frontiers in Plant Science* 7.Artn 1620 10.3389/Fpls.2016.01620

Clifton-Brown, J., Schwarz, K.U., Hastings, A. 2015. History of the development of *Miscanthus* as a bioenergy crop: from small beginnings to potential realisation. *Biology and Environment: Proceedings of the Royal Irish Academy* 115, 1-12.

McCalmont, J., Hastings, A., McNamara, N.P., Richter, G.M., Robson, P., Clifton-Brown, J.C. 2015. Environmental Costs and Benefits of Growing *Miscanthus* for Bioenergy in the UK. *Global Change Biology - Bioenergy*, Accepted June 2015. IF. 4.9.

Purdy, S.J., Cunniff, J., Maddison, A.L., Jones, L.E., Barraclough, T., Castle, M., Davey, C.L., Jones, C.M., Shield, I., Gallagher, J., Donnison, I., Clifton-Brown, J. 2015. Seasonal Carbohydrate Dynamics and Climatic Regulation of Senescence in the Perennial Grass, *Miscanthus*. *BioEnergy Research* 8, 28-41. IF 3.5.

Purdy, S.J., Maddison, A.L., Cunniff, J., Donnison, I.S., Clifton-Brown, J.C. 2015b. Non-structural carbohydrate profiles and ratios between soluble sugars and starch serve as indicators of productivity for a bioenergy grass. *AoB PLANTS* doi: 10.1093/aobpla/plv032.

Zatta A, Clifton-Brown J, Robson P, Hastings A, Monti A. 2014. Land use change from C3 grassland to C4 *Miscanthus*: effects on soil carbon content and estimated mitigation benefit after six years. *Global Change Biology - Bioenergy*, DOI: 10.1111/gcbb.12054. Cites 16, IF. 4.9.

Jensen E.....Clifton-Brown J. 2013. Flowering induction in the bioenergy grass *Miscanthus sacchariflorus* is a quantitative short-day response, whilst delayed flowering under long days increases biomass accumulation. *Journal of Experimental Botany* 64, 541-552. Cites: 15, IF. 5.8

Robson P.... Clifton-Brown J, Donnison I, Farrar K. 2013. Accelerating the domestication of a bioenergy crop: identifying and modelling morphological targets for sustainable yield increase in *Miscanthus*. *Journal of Experimental Botany* 64, 4143-4155. Cites: 12, IF. 5.8.

Slavov G.....Clifton-Brown J, Donnison I. 2013. Contrasting geographic patterns of genetic variation for molecular markers vs. phenotypic traits in the energy grass *Miscanthus sinensis*. *Global Change Biology Bioenergy* 5, 562-571. Cites:15. IF. 4.9.