New Project

TF 198

Developing water and fertiliser saving strategies to improve fruit quality and sustainability of irrigated high-intensity, modern and traditional pear production

Project Number:	TF 198
Title:	Developing water and fertiliser saving strategies to improve fruit quality and sustainability of irrigated high-intensity, modern and traditional pear production
Start and end dates:	01 April 2011 to 31st March 2013
Project Leader:	Dr Mark A. Else, East Malling Research
Industry Representative:	Mark Holden, Adrian Scripps Ltd.
Location:	East Malling Research, Concept Pear Orchard
HDC Cost:	£25,505

SUBJECT TO CONTRACT

Project Summary:

Irrigation of high-intensity orchards is essential to optimise productivity and quality but improved guidelines will be needed as the impacts of climate change alter evaporative demand and summer water availability. Canopy area and structure vary greatly in different high-intensity systems (multi V system, double head system, and single stem 'run thru') and this can be expected to result in very different irrigation requirements. Preliminary data collected in 2010 using sensors that measure soil matric potential have confirmed this and also indicated significant drainage in some of the systems. The results highlight the need to develop targeted irrigation strategies to optimise water use efficiency, yields and fruit quality for each growing system.

Irrigation test regimes (ITRs) will be developed that match demand with supply and reduce losses of water and fertiliser past the rooting zone. Soil matric potentials that 'set' the terminal bud without reducing fruit size or quality will also be identified. The effects of the ITRs on shoot extension, fruit yields and quality will be determined and compared to unscheduled commercial controls. Similar trials ('in-kind' contribution) will be carried out in traditional and modern irrigated orchards at a commercial farm in Kent. The proposed research will provide guidelines to optimise water and nutrient use efficiencies in traditional, modern and high-intensity growing systems on different soil types in the UK.

Aims & Objectives:

(i) Project aims:

1. To optimise water and fertiliser use efficiencies in the high-intensity pear orchard at EMR

2. To improve profitability and sustainability of irrigated pear production

(ii) Project objectives:

1. To identify upper and lower irrigation thresholds in each of the four growing systems
2. To develop irrigation test regimes that optimise water and fertiliser inputs for each growing system
3. To determine the effects of the irrigation regimes on components of fruit quality
4. To develop water-saving irrigation guidelines for high intensity, modern and traditional orchards

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