INSTRUMENTATION with measuring limits and accuracy

About eight different sizes of the drains are installed in fields. Differences in sizes vary because of the differences in the predicted runoff from each field; flow is measured in metres cubed per 15 minute timeslot. Runoff flow is measured at a V-notch ceramic weir with through signal transmission to a Teledyne ISCO 4230 bubbler flow meter.

**Multi-parameter water quality sonde (6600 V2 model)**

Temperature: limits -5 to +50°C; accuracy ±0.15oC

Conductivity: limits 0 to 100 mS/cm; accuracy ±0.5% of reading + 0.001 mS/cm

Turbidity: limits 0 to 1000NTU;

accuracy ±2% of reading or 0.3 NTU, whichever is greater

Dissolved Oxygen: limits 0 to 50 mg/litre;

accuracy (for 0 to 20 mg/L) ± 0.2 mg/l or 2% of reading, whichever is greater; (for 20 to 50 mg/L) ±6% of reading

Ammonium: limits 0 to 200mg/l; accuracy ±10% of reading or 2 mg/l, whichever is greater

**Nitratax plus sc**

0.1 - 50 mg/l NO2 and NO3–N.

Accuracy: ± 3 % of measured value +0.5 mg/l (with standard solutions)

**ProPS-UV process (photometer Zeiss, Germany)**

dissolved organic carbon, ±2% of measured value +0.5 mg/l

Rainfall is measured with a tipping bucket rain gauge. Soil temperature and moisture are measured by an Adcon SM1 model soil moisture and temperature sensor.

All the farm monitoring components are linked remotely by Adcon advantage Pro 6.1 software. The Adcon Advantage software is a sensor-based technology which requires conventional radio transmitters (Adcon, 2004). All the instruments are checked for malfunctions and calibrations problems weekly by a dedicated member of the North Wyke Farm Platform (Mr Bruce Griffiths). Data are subjected to the quality assurance with an in-house program, DATASHEPHERD-FLUMES. The soil moisture, rainfall and soil temperature data were also treated with DATASHEPHERD-PROBES, an in-house quality assurance program (Dr Anita Shepherd).