Strawberry Fertigation Future issues

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Future Issues facing UK growers

- Restrictions on soil fumigation
  - Soil-less production

- Environmental concern over nutrient leaching particularly NO_3 & PO_4
- Restrictions in water use
  - Improved irrigation monitoring & scheduling

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Soil-less Media Systems

- **Bags or troughs (Peat or Peat/Coir)**
- **Table top or placed on beds**

Equipment

- In-line injectors (eg Dosatron)
- Dosing (ec) control systems (eg Heron)
- Irrigation controller
- Timer, Solarimeter, Evaposensor
- Irrigation drip lines (PCN - pressure compensated non leakage)

Initial Check

- Residual fertiliser levels in bag/trough
- Water analysis - overall conductivity, bicarbonate hardness, excess NaCl
- Equipment limitations
- Varieties/system/media

Maximum values for water

Na	35 mg/l
Cl	53 mg/l
SO_4	144 mg/l
B	0.33 mg/l
Fe	1.0 mg/l
Zn	0.35 mg/l

Suggested Feed - Elsanta

	Starter	Fruiting
NH_4 - N	14	14
NO_3 - N	100	120
P	46	46
K	175	250
Mg	20	30
Ca	140	125

Micro nutrients

	Starter	Fruiting
Fe	1.5	1.5
Mn	0.8	0.8
Zn	0.5	0.5
Bo	0.15	0.15
Cu	0.05	0.15
Mo	0.05	0.05

60 day crop

- **Bags/troughs should have only low level of fertiliser to start, pH 5.5 - 5.8**
- **N can be 120 - 140 mg/l**
- **Fe 1.25**
- **For coir leach through with $CaNO_3$ 10 kg/100 litre diluted 1:200**

Coir Grown Crops

- Much higher N requirement - use 160 - 170 mg/l total
- Lower Potassium requirement initially, but excess will leach out
- Higher Calcium requirement (suggest 160 mg/l), but not possible to mix with Phosphate or Sulphates in single tank
- Iron EDDHA rather than EDTA

Everest

- Nitrate N, 110 mg/l starter, 150 - 170 mg/l fruiting
- Ammonium N, 14 mg/l starter and fruiting
- Recent trial showed yield benefit from increasing Nitrate N to 170 mg/l and Ammonium N to 35 mg/l
- K, 200 mg/l starter, 300 mg/l fruiting
- otherwise similar to Elsanta feed

Diamante, Jubilee

- Use a high Calcium starter 150 - 160 mg/l
- Otherwise treat as Elsanta rather than Everest (lower N, K in fruiting feed)
- May need extra N towards latter half of picking season if losing vigour
- Conductivity keep around 2.0 uS but drop towards end of season if lacking vigour
- Watch for Cl damage if high level in water

Conductivity

- Starter 1.0 - 1.6 mS, but increase rapidly on overwintered crops
- Fruiting feed around 1.8 mS, reduce to 1.6 if hot/dry, increase to 2.0 mS if damp overcast conditions
- Can allow everbearers to go over 2.0 mS
- Runoff should be up to 0.2mS > input

Soil & Plant Monitoring

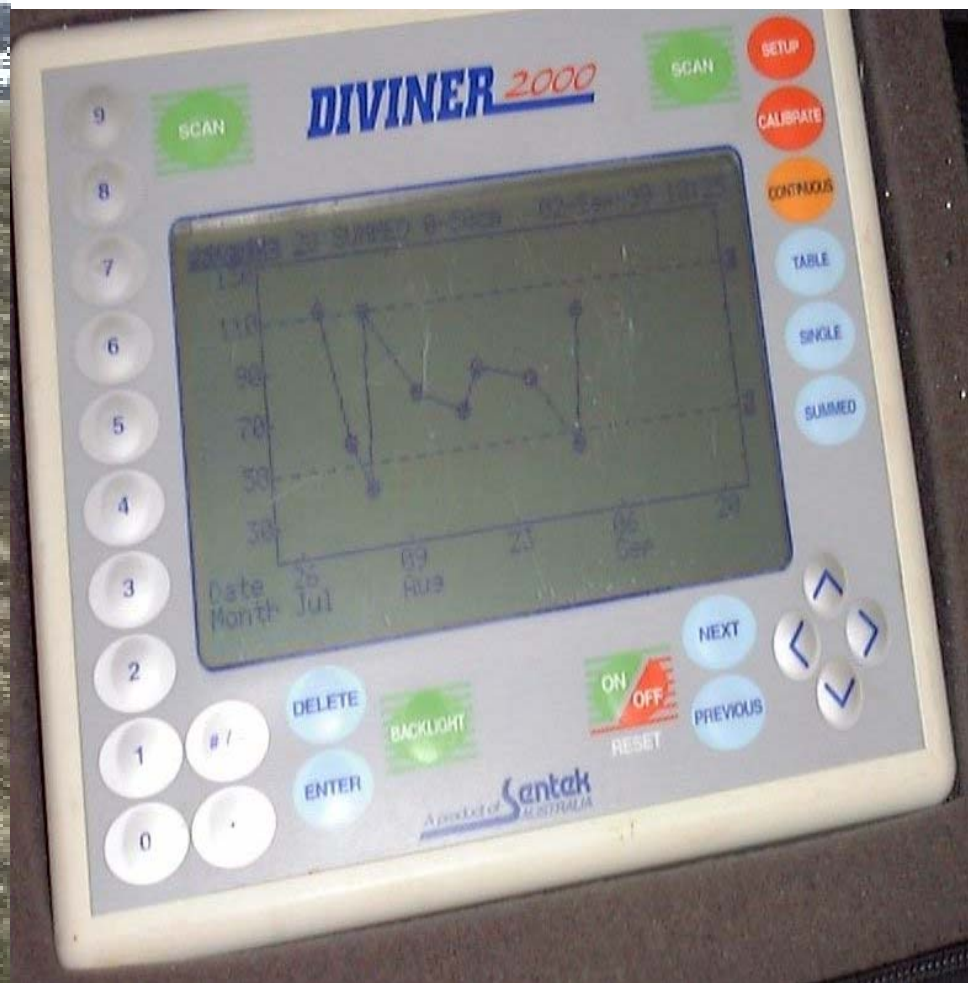
- **Leaf / sap analysis**
  - **Fine tune nutrients to plant's requirement**
- **Soil moisture monitoring**
  - **To improve quality and yield**
  - **To reduce runoff with water and fertiliser leaching**

Equipment Available

- Neutron
- Capacitance
  - TDR (time domain reflectometry)
  - FDR (frequency domain reflectometry)
- Data logging or
- Manual reading

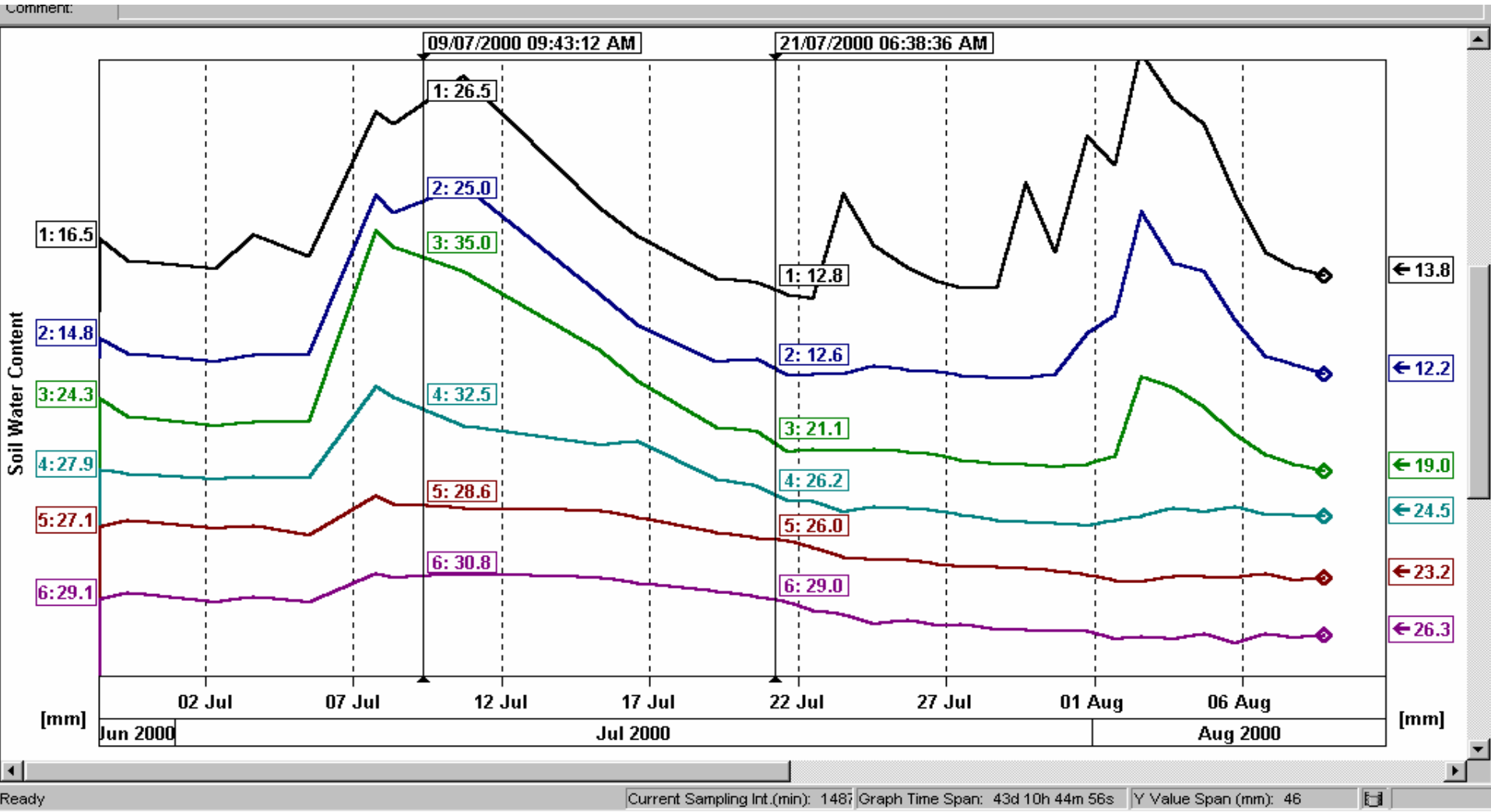

Theta Probe
type ML2x
AT
DELTA DEVICES

The Diviner in action and the display



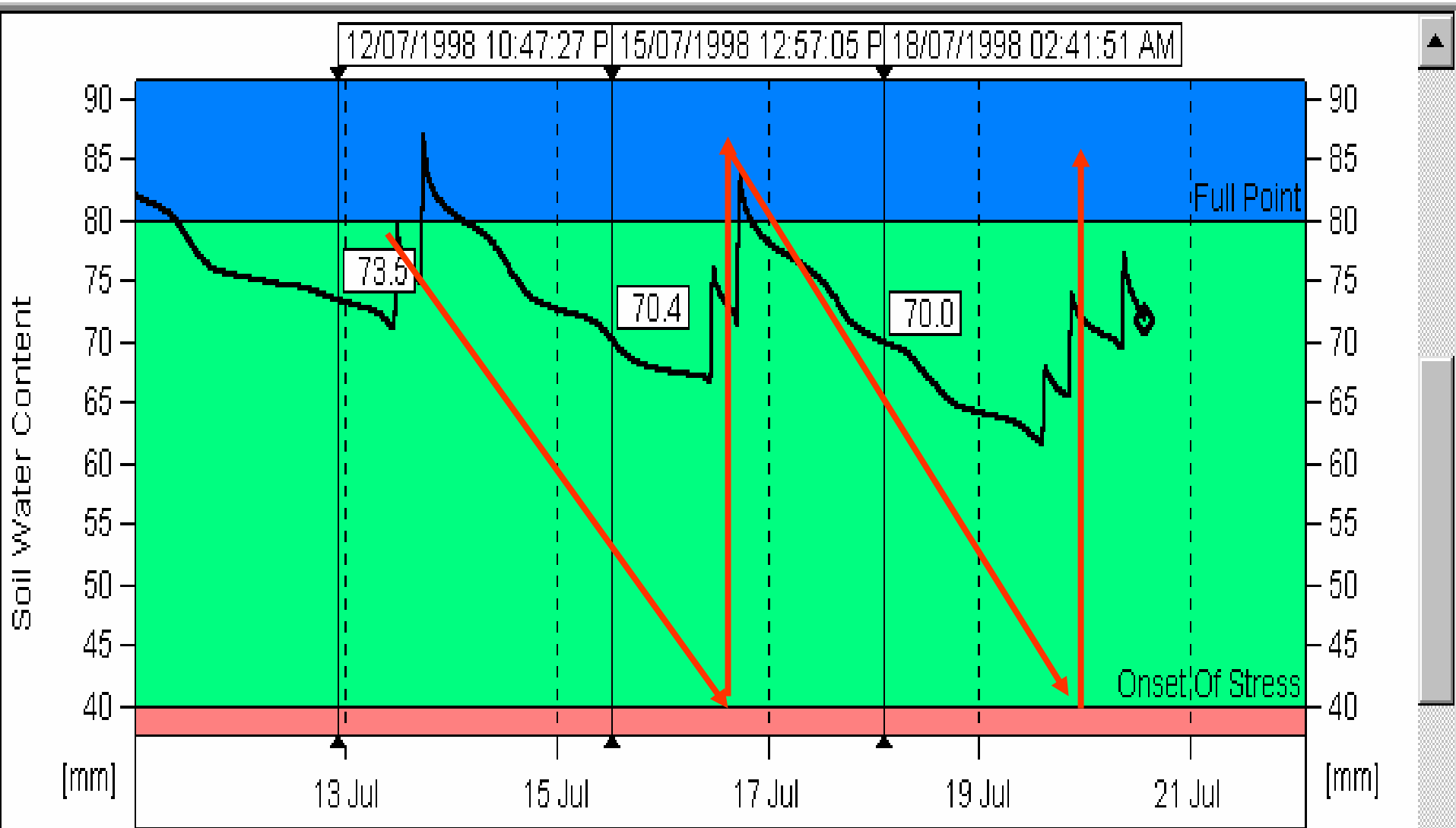
Diviner data;

It shows the relative water use and content of each 10cm depth of soil. There is very little water use below the top 30cms, due to shallow rooting of this particular crop.



An example of EnviroSCAn data in raspberries.

Alternative strategy for altering taste, shelf life etc?



Benefits and usage

- Schedule irrigation
- Avoid runoff
- Impose regulated deficits
- Closed-loop feedback irrigation control

The End

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