

A large, stylized graphic on the left side of the slide. It consists of several overlapping, rounded shapes in shades of blue and green. A white microphone icon is centered within one of the blue shapes.

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Farm Director, GH Hoyles

Crop Production, Renewable Energy & Water – Agenda



- Background
- Business Units
 - Crop Production
 - Renewable Energy
 - Water Management
- Future Thoughts
- Summary



Crop Production, Renewable Energy & Water – Background



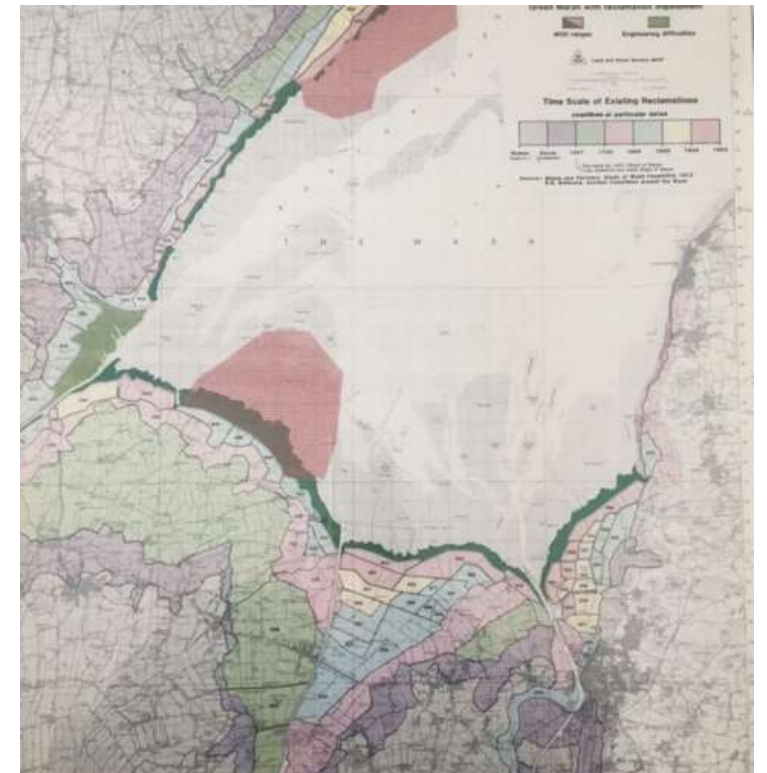
- Newcastle Uni, MDS, G's Fresh, GHH
- 4th generation family farm
- Rent land from father, uncle & FBT's
- 14,000t of fresh produce and combinables
- Farm Philosophy: BASICS FIRST



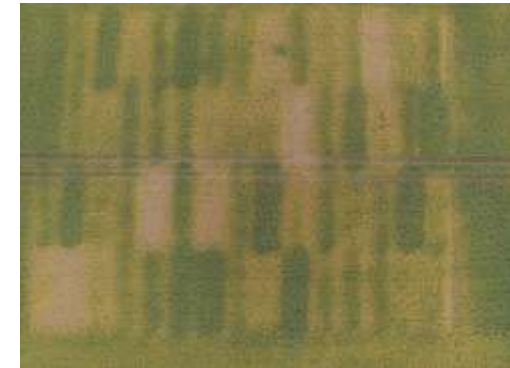
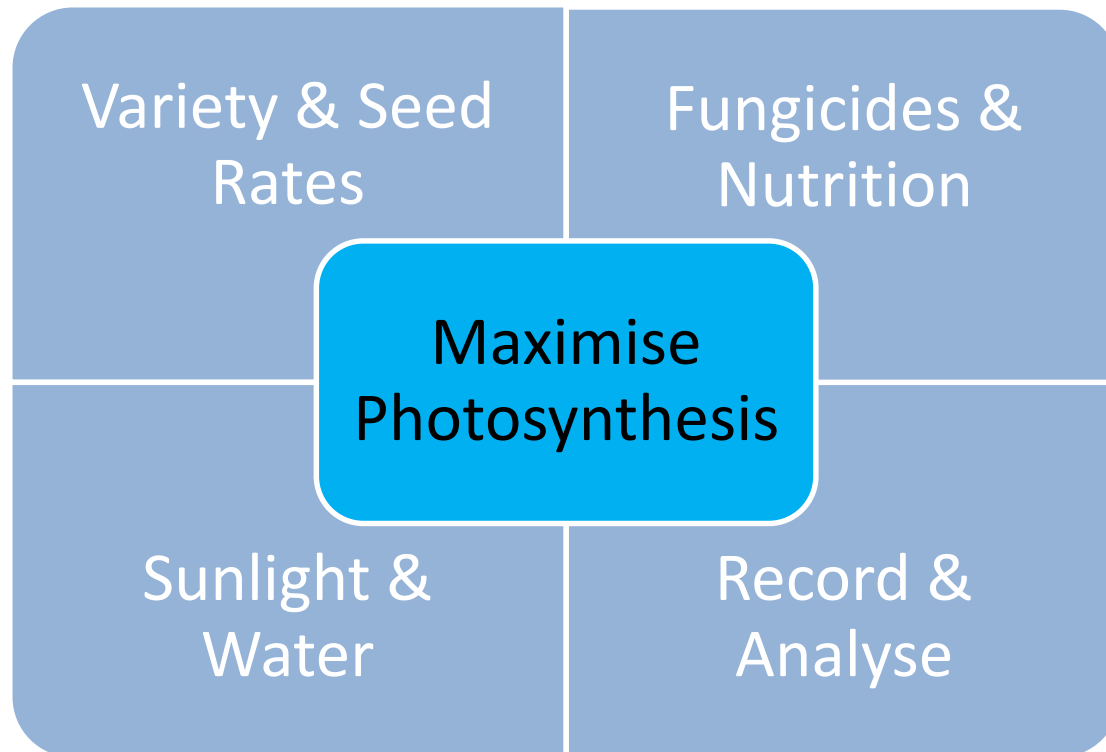
Crop Production, Renewable Energy & Water – Background



- 700ha of Wisbech Series Grade 1 silt
- Rotation: POT>WW>VEG>BEET>VP>VEG>MUS
- 10yr average rainfall 650mm / yr
- LEAF, F2F, Nurture, Red Tractor
- Mid Tier Countryside Stewardship
- 5 full time staff, 8 seasonal
- 7 tractors 130-250hp (500-1,000h)
- 4 teleporters/forklifts (400-600h)
- 1 combine (350ha)
- 1 potato/beetroot harvester (7,000t)
- 1 36m self propelled sprayer (5,000ha)



Crop Production – Attention to detail



Crop Production – Precision



- RTK GPS
- Variable Rate seed & fert
- Plant Vision NDVI scanning
- Fertiliser Placement
- Leaf Tissue Analysis
- Tyre choice & pressures
- GPS soil and pest sampling



Plant  vision



Crop Production – Collaboration



Local;

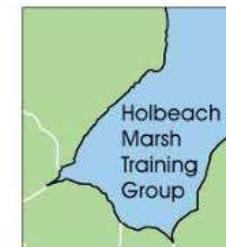
- Contractors
- Co-operatives
- Customers



Crop Production – Trials



2019 Farm Trials...
worked with;



Renewable Energy



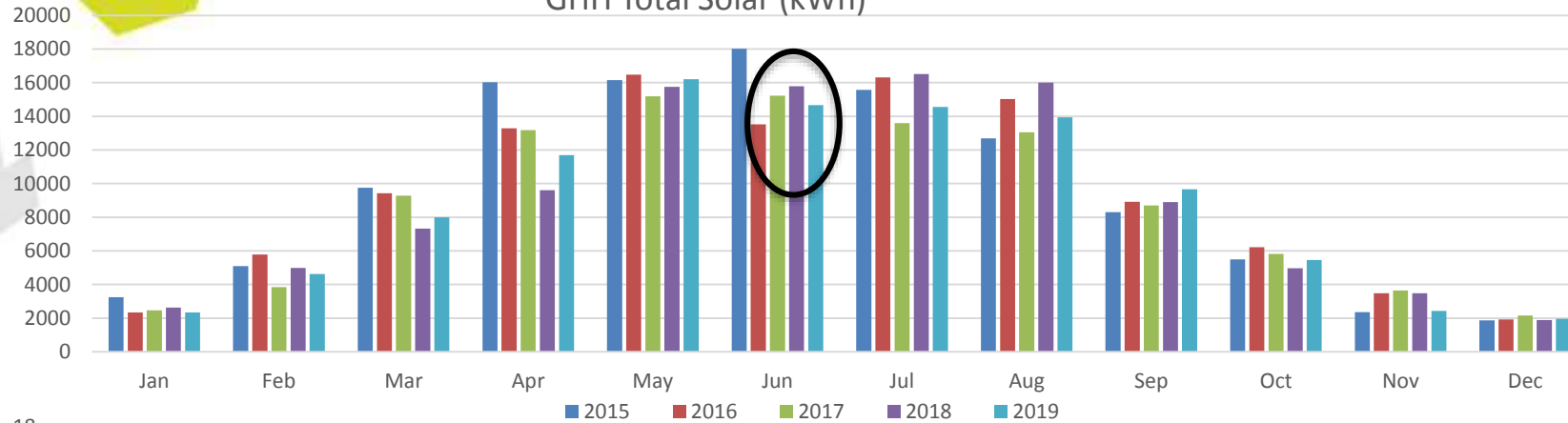
- 130kW Solar (2011 & 2015)
- 100kW Turbine (2014)
- Annual income £95k & £30k saved



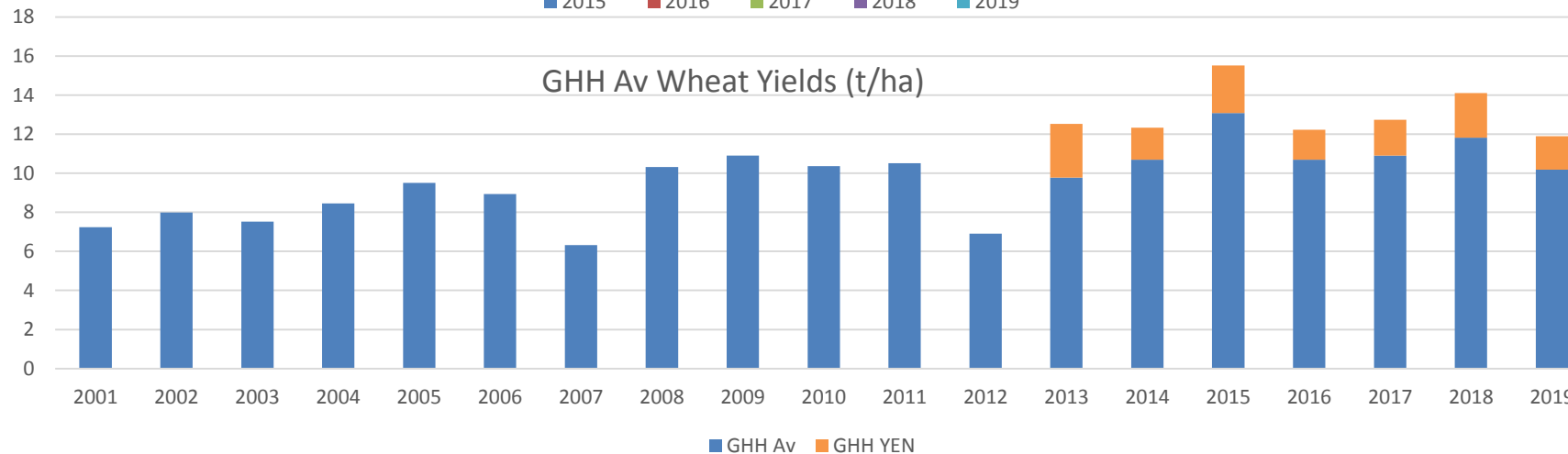
Renewable Energy – Solar



GHH Total Solar (kWh)



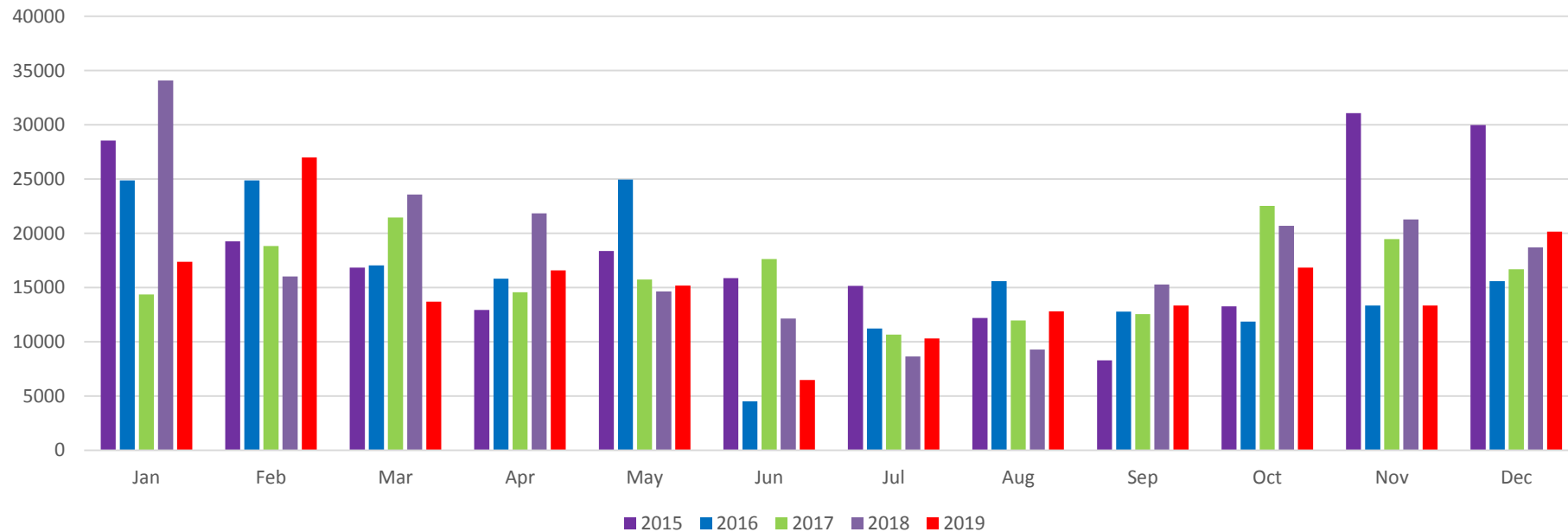
GHH Av Wheat Yields (t/ha)



Renewable Energy – Wind



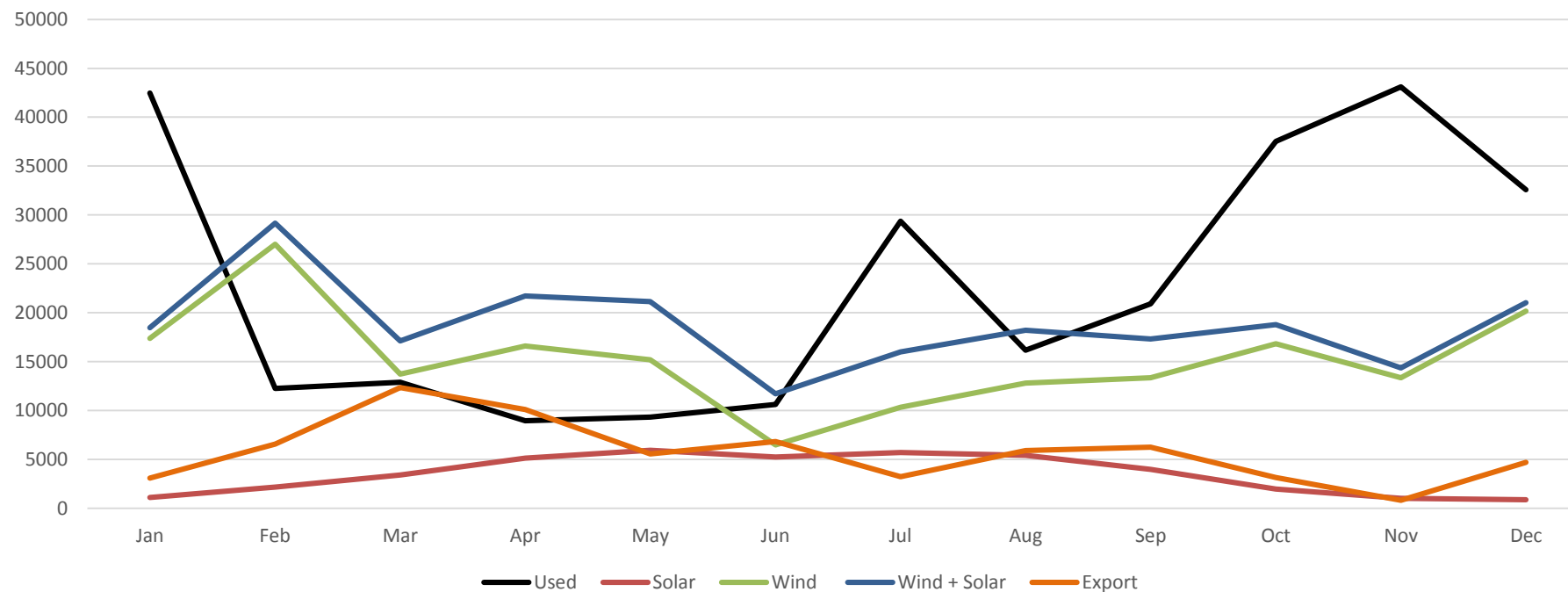
Monmouth Farm Wind Energy Production (kWh)



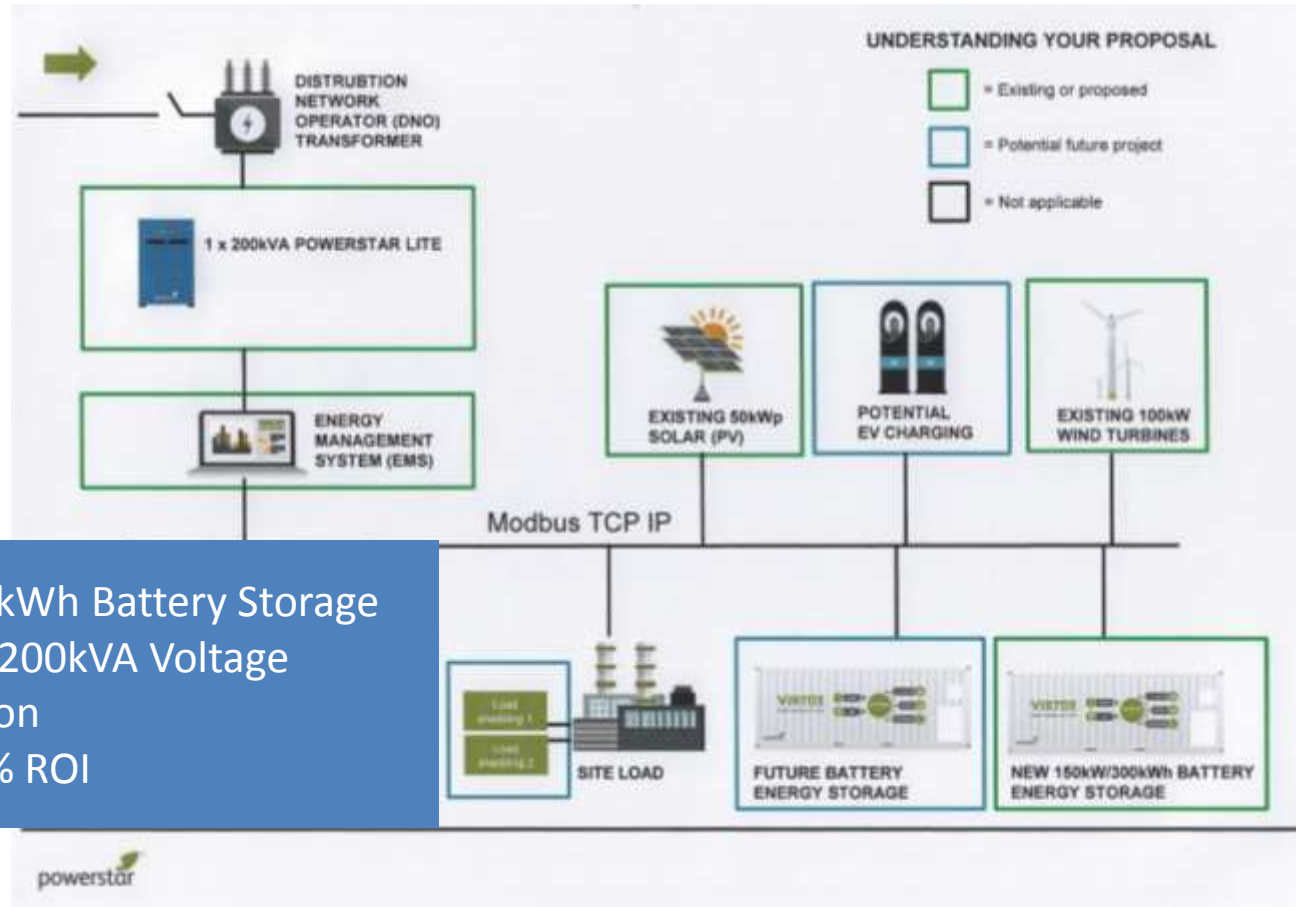
Renewable Energy – Use Profile



Monmouth Farm Energy Production & Use 2019 (kWh)



Renewable Energy – Battery Storage & VO?

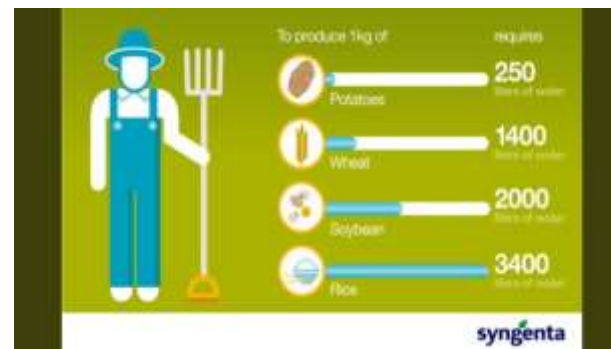


- Virtue 300kWh Battery Storage
- Powerstar 200kVA Voltage Optimisation
- £250k, 12% ROI



Water Management

- Drainage
- Irrigation
- Salinity
- Rainfall



Water Management – Drainage



- 12km of private drains
- 6km of Board drains
- Under drains 20-22m
- £30k/yr on levy's, maintenance & jetting

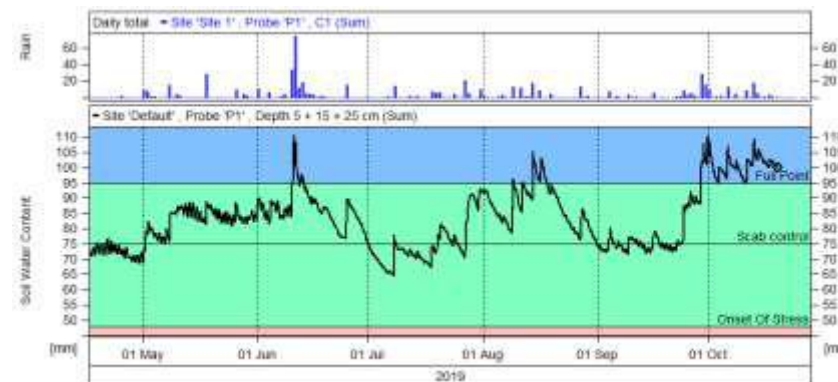




Water Management – Irrigation



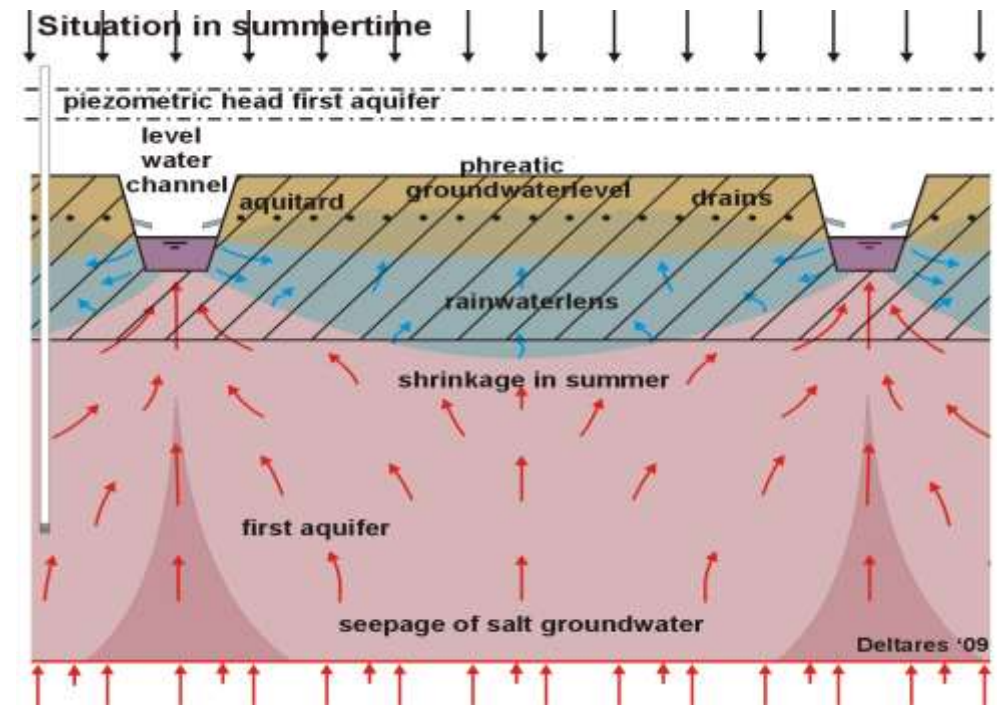
- x2 reservoirs (23m gallon / 100,000m³)
- Year round Abstraction Licenses; flow rate restricted
- 9km underground mains, hydrants every 72m
- Irrigation scheduling – probes, spade
- Selling water & services



Water Management – Managing Salinity



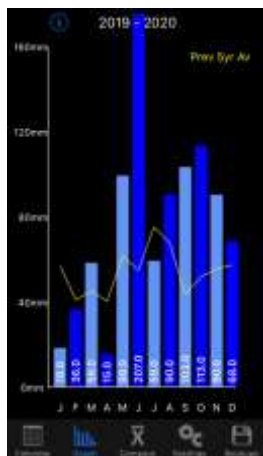
- Rivers, drains, creeks – water sampling
- Rainwater harvesting
- Floating electric pumps with conductivity meters



Water Management – Rainfall



- 2018 Drought. 2019 Floods.
- 10yr av rainfall 650mm
- June 2019; 70mm in 1 day, 200mm in 2 weeks



2010	641
2011	531
2012	401
2013	817
2014	557
2015	772
2016	547
2017	628
2018	685
2019	580
2019	956
10 Yr Av =	649 (855)

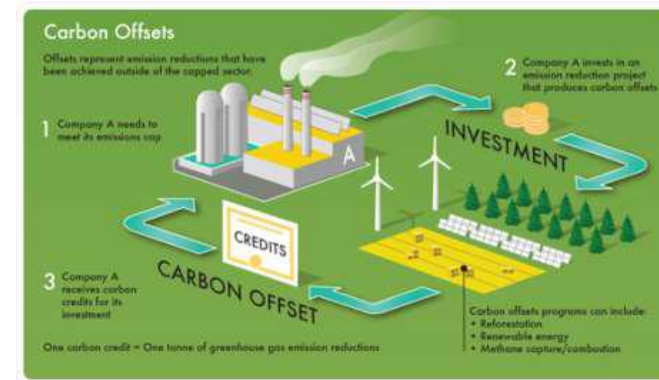




Final Thoughts – Diversification



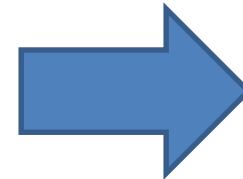
- Indoor Agriculture
- Carbon Sequestration
- Carbon Trading
- Self Sufficiency
- Halophytes
- Branding



Final Thoughts – Threats & Opportunities



- Loss of Active Ingredients
- Cheap Food
- Veganism
- CO₂, N₂O & NH₃ emissions
- Water
- Public Perception



- Stay teachable
- Embrace technology
- Focus on customers
- Deliver Value
- Surround yourself with great people



Automation Biodiversity Carbon Data Empower

Thank you!

 @dgwhoyles

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