

NEW SCIENTIST - FUTURE OF FOOD AND AGRICULTURE

Saturday November 28 2020

Approx 1,500 attended on-line from around the world.

Speakers	Comments
<p>HOW ROBOTS ARE REDEFINING THE FUTURE OF FARMING</p> <p>Kit Franklin, Harper Adams University Senior Lecturer Agricultural Engineering</p> <p>Chat comments from farmers: Tech companies want to take your data and then want to sell it back to you!</p>	<p>Technology</p> <ul style="list-style-type: none"> • Steer tractors to 20mm using latest GPNS • Auto systems for machinery linked to mapping eg to switch boom nozzles on or off and for seed drills etc. • Spectral PF techniques – multi spectral coloured maps eg red for unhealthy plants. • Machine vision – cameras can identify crops ahead and for example hoe around lettuces without damaging the crops. <p>Issues – yields not increasing as much as expected with new technology because soil health is poor.</p> <p>Large machines I predict will be replaced by “a swarm” of smaller ones eg instead of one big vehicle, 10-15 small ones. If we plough with large vehicle 1900 tonnes of soil can be moved per hectare losing nutrients and carbon. If use small robots to inject seed over 150 times reduction.</p> <p>Sensors being used much more. Establish volume of grass using a platemeter. There is also a sensor that picks up flights of insects in pastures and in arable crops.</p> <p>Best innovations are co-created by farmers and food producers, the innovation companies and investors.</p> <p>Smart farmers – the ones looking to the future – are the ones that banks or companies look to invest in. Noticed advances particularly in New Zealand where subsidies have finished, also Australia and US</p>
<p>Farmer North Carolina: have herd of Pineywood cattle that eat brambles, shrubs and require less pasture. Left 60% farm in tree that capture 400 tonnes of carbon. Would like to be paid for this.</p>	<p>Vertical farming and other types of solutions eg Qatar – created bigger dairies overnight by flying in dairy cattle from around the world because of problems with neighbours. Best innovations come in times of global down-terms. Sometimes forced to act because of legislation eg Denmark has pesticide tax. Anti-</p>

	<p>biotic resistance – farmers breeding to find the most resilient strains to reduce incidence of internal pests.</p> <p>Brexit, Agricultural Bill and Covid perfect storm. Feeding 9 billion people sustainably by 2050 is the biggest challenge.</p>
<p>CELLULAR AGRICULTURE FOR SUSTAINABLE FOOD PRODUCTION</p> <p>Anneli Ritani Principal scientist, Industrial Biotechnology at VTT</p>	<p>Cellular agriculture – grow organisms like microbes or animal plant cells in bioreactors to provide food instead of using animals and fields. Sited in big cities close to restaurants and consumers, deserts etc.</p>
<p>Dr Anthony Dodd, John Innes Centre Karl Schneider, Farmers Weekly editor (chair) Charlie Guy, CEO Lettus Grow (vert farming) Dr Jen Bromley, head of plant R&D Vertical Futures</p>	<p>Growing up –</p> <p>Can grow food where you wouldn't expect to grow it.</p> <p>R&D Futures has vertical farm in warehouse in central London. Allows us to reduce food miles and carbon footprint.</p> <p>Also used Middle East in areas where traditional agriculture not possible due to lack of water. SE Asia Singapore has 30x30 plan – to produce 30% of own produce by 2030.</p> <p>Lettus Grow – set up by group of diff specialists at Uni - can grow food in containers 1 or 10 using hydroponics (water solution is the growing medium) or aeroponics (growing solution is dispensed in a mist - aerosol). Can eliminate pests and microbes.</p> <p>Can control conditions to change flavour or smell of crop.</p> <p>Could shorten supply chains – might be norm post-Covid.</p>
<p>Rosario Michel Villareal – lecturer in Supply Chain Management.</p>	<p>Covid has seen the development of farmers markets, box schemes and community-supported agriculture. Change in consumer behaviour and they need to press supermarkets to supply local products and also to look at eating more seasonally.</p>
<p>3 new technologies</p>	<p>CROVER – grain storage monitor. 20% stored grain is lost due to pests or bacterial damage microtoxins.</p> <p>That is 603million tonnes every year.</p> <p>Device swims through grain and checks it in the silos. Early action can then be taken.</p> <p>Came of out Phd Uni of Edinburgh– locomotion in bulk solids. Can also be used in ocean floor sands, pellets and other granular materials.</p> <p>SLUGBOT – helps reduce farmers' need to use pesticides by controlling crop-munching pest.</p> <p>COLD PLASMA – multitude of uses in farming and the supply chain. Cold plasma can destroy</p>

	<p>microorganisms and bacteria. Plasmas are ionized gases. Can remove harmful fungal growths in grain. Antibacterial, antifungal, sporocidal, virucidal activity. Special lab at Queens University to explore plasma uses in agri-food industry. Alternative to disinfectant and could clean air in animal sheds. No chemical residues so safer.</p>
<p>Other sessions looked at areas including lab-grown meat, using insects for protein and reducing waste, best way of farming for nature, sustainable sea-food, gene-editing in food and farming etc.</p>	