

Digital Farmers: Bringing AgTech to Life

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Students Session

The knowledge required to support new practices must change to future proof the agricultural workforce. How is education and training changing to accommodate digital agriculture?

Most appreciate that we will need an adaptable workforce.

Adaptable because we expect continuous change.

Changing requirements and changing possibilities.

Future proof ? Or try and remain current?



Changing requirements

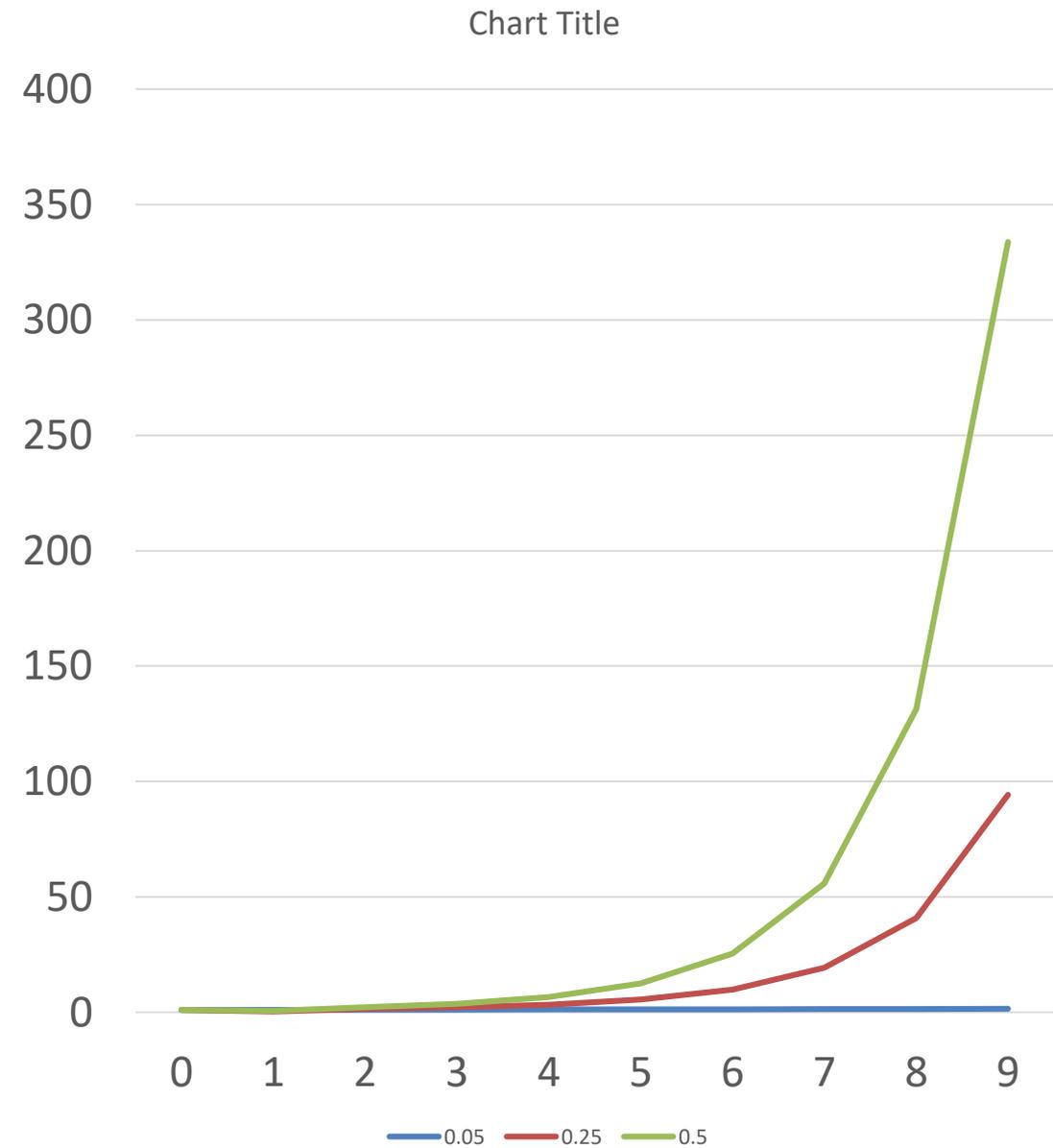
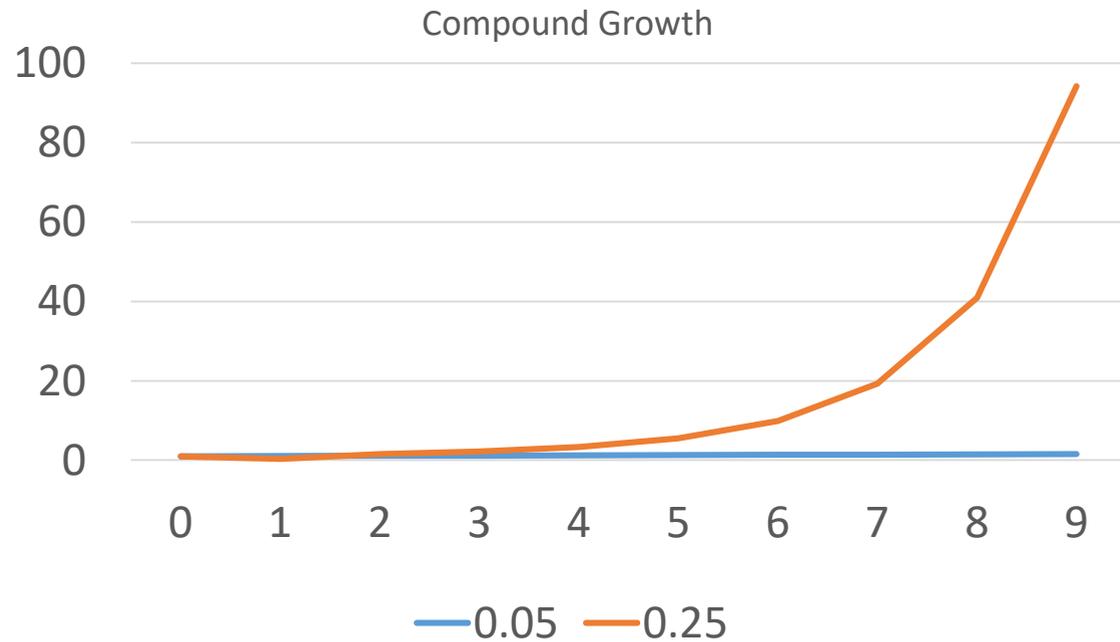
The business of farming
Consumer preferences
Food quality and integrity.
Environmental standards.
Animal Welfare.
Health and safety.

Changing possibilities

Technology Push.
Sensing and IOT.
AI, Machine learning.
Data science.



Widening gap between the rate of technological growth and growth in productivity.



A sustained growth rate of 5% would be quite respectable.



Biological growth is limited

- Top ten per cent produce at 80% of biological max.
- Average grower 52% (Maize, K. Cassman)

- Trends in farm size.
- Trends in farm labour inputs.
- Trends in food / commodity prices.
- Trends in consumer demand.

- Careers without ownership options.
- Syndicated ownership.



Education and training. How can we identify needs and structures to best meet needs

Farming

Service Industry

Product developers,
innovators,

Is Ag 4.01 just a continuation from other mechanisation revolutions. Australia first settled and after second world war. How do we harness IOT and data science.

How can the Ag service industry give good service to farmers? Data science could provide them with a number of tools.

How do we harness the new possibilities. Data Science, data comms mathematics, are likely to be hugely important.



Conventional Structure: Questions in my mind

- **Science Degrees:**

- Are we trying to cram too much in? Indiscriminate use of written material. Filling the student up with content.
- Having previously given students death by Powerpoint are we now giving them death by pdf.
- Are degrees over-assessed? It has become a slog to get through assignments rather than learn from them.
- Students don't have time to see the integration of knowledge, it all become compartmentalised.

- **Ag Commerce Degrees:**

- Probably somewhat similar to science degrees, as taught alongside and often seen as the poor cousin.
- Require much greater emphasis on data science analytics etc.

- **Engineering Degrees:**

- Traditional engineering degrees have morphed into a hybridisation of engineering and mechatronics. Biological engineering.
- Requires further change to bring in further elements such as software development, data science, remote sensing.



Changing the teaching environment (personal view)

- **Hacks and competitions are nothing new.** Early Australian Ag history, competitions to make mechanical reapers etc. Post war efforts.
- **System Thinking** is not new: Personal visit to Australia in the mid 1980's to look at how things were being done.
- **Project work**, has successfully demonstrated how problem solving abilities can be developed. Project based learning is not a series of assignments.
- Not just school leavers but **life long learners**: How can we cultivate a system that allows this type of learning opportunity to be realised? Science, business, technology nexus.

Greater emphasis on problem solving in a real world situations to give context and less emphasis on passive teaching and learning.



Establishment of Massey Agritech Partnership

Joining forces in the areas of Precision Agriculture, Horticulture and Post Harvest engineering, Remote Sensing, Robotics and Automation.

Three professors and their research groups are forming the **nucleus of the new research partnership**.

Industry facing, All three groups have a track record in contract research and we are looking to consolidate and expand that.

Build connections between local, national and international businesses, **Commercialisation**

Build capacity by creating a number of learning, research and teaching opportunities.

Promote **responsiveness and flexibility** in working with industry.

Provide leadership and assistance to local, national and international businesses.

Maintain and enhance **collaboration with international research** bodies.



How do we make progress?

- Is your market big enough or do you really need to be more involved?
- Better cooperation between all of the various parties involved. Do we need to learn how work cooperatively?
- We all need to own the problem. But know what problem we want to own and have a clear idea of what we want to achieve.
- Look at structures for education and training.
 - Look at the appropriateness of qualifications, are certain qualification out of date?
 - Would degree apprenticeships and other mechanisms be worth considering.
- Create an enlivened environment / culture which creates real engagement.

