Dear Committee members,

I'm a lecturer at Charles Sturt University and I teach subjects in Crop Science.

I think it is important to listen from young agriculture university students which will be dealing with issues of drought resilience for years to come. Also, many of our students have been directly affected by the drought situation.

I conducted a quick survey by requesting our Ag students to provide ideas/thoughts of what they think the University could do for them, or their farm or their communities in terms of education and/or research.

Below I have listed 11 contributions from Undergrad students; what is important to them. I have left their contributions as is, without any changes.

I encourage the Committee to commit some time to properly survey young Ag students on what they think it is necessary for dealing with drought in Rural Australia. These young Ag students, and recent graduates, will pivotal in implementing drought resilience initiatives in their farms, their communities, their regions.

Regards
Sergio

PS: I have the student's permission to include their suggestion, name, year of study and town of residence in this submission.

Name: Laura Hunt
Year of Study: 4th year
Town of residence: Maffra, Victoria
Education/Research Suggestion/Idea: Incorporation of economic aspects of drought to be integrated into economics/ business management subjects. This would be useful for those returning to work/ starting work on properties to make appropriate management decisions regarding crop choice, whether to cut for hay or grain, when to sell off or down size livestock etc. Furthermore this would be beneficial for those entering advisory roles. Expanding on this point, there could be a farm management decision subject. To teach student decision making process and many relevant factors that may influence a decision. I also agree with your suggestion to incorporate drought related research variety trials I think this would be relevant to many growers.

Name: Janet Stephens
Year of Study:
Town of residence:
Education/Research Suggestion/Idea: Regenerative farming systems need to be studies and on farm tours, technological monitoring systems , new hybridized crops and animals which are drought tolerant, study tour to Israel to check out desert systems etc.

Name: Ahmed T Khater
Year of Study: 2
Town of residence: Liverpool Sydney
Education/Research Suggestion/Idea: New crop farming systems. Aquaponics was utilised by the ancient Egyptians and Aztecs during drought conditions. It uses less than 25% of traditional water requirements, produces a much higher yeild, in some cases 58kgs per m2, it's organic, no fertilizer input, fish harvest in conjunction with crop harvest further increasing profitability, facility operates year round. It's a really interesting method of farming that's been overlooked in Australia, but could be our knight in shining armor. I study this method of agriculture intensively with the addition of modern day technology it will be far more efficient, c02 injection, renewables, gray water, aeroponic misters etc. I basically want to establish a modern aquaponics facility incorporating AI technology and monitoring sensors. The potential is phenomenal, especially its implementation in places like the Murray darling also the use in temperature climates to grow tropical cultivars year round. More than happy to help if you need further research, articles, slide show presentations etc

Name: Stacey Holzapfel
Year of Study: 2nd year
Town of residence: Flaggy Creek, Victoria
Education/Research Suggestion/Idea: Education/workshops on water retention in the soil- how it works, how it changes with soil type and structure, how to measure soil water and improve and change water movement a storage in the soil. I think this should be the first point of action (before seeking different plant species) as many farms may have access to more soil water than they are aware of and, therefore, may not need to change other parts of the production system. Following this, making water monitoring equipment widely available and encouraging farms to participate in research on the topic would increase interest in being involved in drought resilience projects.

Name: John Kelsh
Year of Study: 3rd year
Town of residence: Minnipa, SA
Education/Research Suggestion/Idea: I'd like to see some broadacre research into comparative management techniques impact on soil moisture retention over summer and subsequent effects on yield. Also, I can't help but think that with the number of automated weather stations (and the vast number of metrics they are measuring i.e. soil moisture) that are being setup there should be a common platform available to submit environmental data i.e. to the Bureau of Meteorology for analysis and development of guidelines such as optimal flowering period. With data being submitted constantly metrics like optimal flowering period could change based on a five or ten-year rolling average. And funding the development of a sowing date app.

Name: Jessica Wyse
Year of Study: Final year
Town of residence: Beachmere, QLD
Education/Research Suggestion/Idea: Increased on farm research into future viable pasture species that can be adapted from northern Australian pasture enterprises or from African pasture enterprises, and introduced into southern Australian enterprises. Introduce more educational training into Agricultural degrees to assist with combating the drought, via teaching sustainable methods of managing different land types/enterprises through drought periods.

Name: Andrew Corrigan
Year of Study: 1
Town of residence: Burrumbuttock
Education/Research Suggestion/Idea: Educating farmers to learn about better management of resources (soil & water). Creating farmer associations where farmers can come together with other specialists like researchers, DPI and agronomists to discuss, what others are doing, what's working what's not working, etc.

Name: Jade O'Neill
Year of Study: Commencing honours
Town of residence: Orange NSW
Education/Research Suggestion/Idea: Development of more drought tolerant crops - e.g. barley grass can persist through drought conditions, can the plants genetics be researched to determine if the genetic trait/s that support persistence can be modified to support fodder and grazing crops through genetic modification?

Name: Jordan Bathgate
Year of Study: Fourth year
Town of residence: Wagga Wagga
Education/Research Suggestion/Idea: As an agriculture student, I can say that we did not have a single lecture dealing with the preparation for drought on farms. I think at least one or two lectures on this topic would be helpful. Also, after speaking to some farmers and witnessing their on farm management, it is clear to me that public extension services for agriculture should be increased. This should coincide with providing more advice on continual feed storage to manage/prepare for drought.

Name: Patrick Hawkins
Year of Study: Undergraduate going into Honours

Town of residence: Wagga Wagga

Education/Research Suggestion/Idea: A focus on mapping quantitative trait loci as a means for determining drought tolerance in species to help breed cultivars suited for dry season planting. In addition exploring time of sowing as an opportunity to retain soil moisture; can we extend the fallow period with a later sown crop and what are the implications to soil moisture retained.

Name: Jack Maloney

Year of Study: Undergraduate going into Honours

Town of residence: Wagga Wagga

Education/Research Suggestion/Idea:

A bachelor of agriculture being the diverse discipline that it is, many of my peers will graduate having gained many things and destined for many different paths. This makes teaching very specific topics such as water policy difficult, especially when people with PhDs devote their whole career to staying abreast of developments of policy and their implications. It is an area which changes frequently so I can see why it was glossed over, if not ignored entirely, however I do think that some of the more complex legal and economic aspects of agriculture did tend to be put in the “too hard” basket.

As a student who hopes to be involved in research, I would have loved to have done more work on plant physiology to understand and perhaps propagate drought resistant traits, and maybe even see the development of transgenic plants in person, but I also understand that this is not something that someone who wants to go manage the family farm better needs to know, and I think the development of the ag courses starting next year may be beneficial from this regard. This is bittersweet though, as I did enjoy and get a lot out of the classes I did which I would not have picked had I had any option.