



LEADING EDGE

Leading Edge, supported by the Society for Engineering in Agriculture and the Australian Centre for Precision Agriculture, provides a local and worldwide window on engineering and PA research.

Cloud seeding backed by “best radar in the world”

By Gary Alcorn

A current four-year cloud seeding program using the world’s most advanced dual Doppler weather radar tracking system in south-east Queensland could have worldwide application.

According to the Australian Centre for Sustainable Catchments (ACSC) head Professor Roger Stone at the University of Southern Queensland, early results indicate seeding favourable storm clouds can yield up to 30 per cent more rain per seeded event.

“But clouds ain’t clouds when it comes to cloud seeding. The new hilltop research site at Redbank Plains near Ipswich is using the latest computer technologies to identify and track the most likely candidates,” Roger said.

“We have a team of US National Centre for Atmospheric Research scientists working at Redbank with several of our national and state agencies learning all there is to know about how to harvest more rain from

summer storms to boost dam catchments and aquifers,” he said.

The state government is fully sponsoring this project which is managed by the Queensland Climate Change Centre of Excellence, part of the Environmental Protection Agency.

Professor Stone, a climatologist, heads a Scientific Advisory Group which includes scientists from the Australian Bureau of Meteorology, which acquired the dual Doppler radar unit, Centre for Australian Weather and Climate Research (CSIRO and BoM), Monash University and USQ.

“I guess clouds are a lot like people, they may look very similar on the outside but investigators find major internal differences which affect their potential to produce useful rain.

“Techniques that will work on those deep convection cauliflower formations in south-east Queensland would have to be modified to trigger rainfall from different

formations in say Tasmania or Victoria,” he said.

“SAG’s mission is to do some research to refine cloud seeding systems if we are to squeeze extra rain out of suitable formations to trigger a planting opportunity or increase dam storage levels for irrigators,” Roger said.

So far it appears that current warm and cold cloud seeding methods using minute seeding particles from sodium flares have increased rain cell duration by as much as 55 minutes in SEQ. The state government believes benefits to Queensland will include:

- The development of research and science capabilities across a range of disciplines such as cloud physics, radar technology, project management and atmospheric research;
- This will be valuable in future state, national and international collaborations investigating possible climate change adaptation strategies;



The CP2 Redbank Plains Dual Doppler Radar.
(PHOTO: Bureau of Meteorology)



SAWS Aero Commander festooned with cloud droplet, atmospheric and aerosol measuring instrumentation.
(PHOTO: US NCAR).

- Improve our understanding of the impact pollutants and aerosols may be having on south-east Queensland rainfall; and,
- Determining the potential for warm and cold cloud seeding as a region specific engineering response to the effects of climate change.

“Additionally, it has already been recognised that this research will help our further understanding and forecasting of the vicious storms that affect southern Queensland,” Roger said.

AUSTRALIA IS ‘COST’ EFFECTIVE

Lingering droughts and flooding rains have made Australian scientists and engineers world leaders in agricultural and climate research when it comes to forecasting yield and production trends.

That’s the message a national team received when they met European Cooperation in the fields of Scientific and Technical Research (COST) officials in Brussels in September 2008.

Team member and climate change pioneer Professor Roger Stone said the invitation to meet with top COST executives was part of the federal government’s policy to increase cooperation between the European Union and Australia.

“We had strong representation in applied research relating to agriculture, climate change, understanding drought which could lead to increased exports of our intellectual property in these fields,” Roger said.

Australia could benefit from access to major research funds from COST as a result of the three days of presentations by major Australian agencies such as CSIRO, Australian Research Committee, National Health and Medical Research Council, Dept of Innovation, Industry, Science and Research, Australian National University and USQ.

“Our ag research is very highly regarded, there was strong interest in specific projects such as managing flooding along the Rhine River in Germany because of our expertise in stream gauging, modelling and climate research,” he said.

Nanotechnologies offer huge potential for both continents through cooperative research while spatial mapping analysis and mathematical analysis systems interested COST members.

“The Europeans were very impressed with our close ties with China in agricultural and climate research. I believe the Queensland China Research Fellowship scheme has been a major influence in this relationship,” Roger said.



Society for Engineering in Agriculture

The society contributes to the development of a strong engineering involvement in agriculture to aid economic growth and environmental sustainability for the entire Australian community.

Who can join SEAg?

Membership is open to anyone interested in the application of engineering to agriculture and related industries. This includes scientists, farmers, surveyors, technical officers, engineers, manufacturers, distributors and processors.

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