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NEW HOT PAPERS - 2009

September 2009

Rana Munns & Mark Tester talk with *ScienceWatch.com* and answer a few questions about this month's New Hot Paper in the field of Plant & Animal Science.

**Article Title: Mechanisms of salinity tolerance**

Authors: Munns, R; Tester, M

Journal: ANNU REV PLANT BIOL

Volume: 59

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Page: :651-681

Year: 2008

* CSIRO Plant Ind, Canberra, ACT, Australia.

* CSIRO Plant Ind, Canberra, ACT, Australia.

* Australian Ctr Plant Funct Genom, Adelaide, SA, Australia.

* Univ Adelaide, Adelaide, SA 5005, Australia.

SW: Why do you think your paper is highly cited?

Salinity is a topic that attracts significant attention in plant science, as it is of both intellectual and applied interest. This review synthesizes thinking based on a sum of 50 years' experience from the two authors, both of whom have separately published well-regarded reviews in the past.

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

The paper describes a new synthesis of knowledge, clearly proposing three main components of salinity tolerance and outlining approaches that might be taken to quantify them and also tackle their molecular basis through genetics.

SW: Would you summarize the significance of your paper in layman's terms?

Salinity tolerance is complex and, for the field to make progress, this complexity needs to be simplified by dividing up the plant responses into separate components whereby each of these components can be studied separately. This review provides the framework for such future studies.

SW: How did you become involved in this research, and were there any problems along the way?

Rana Munns moved into this research as a young postdoctoral researcher, and she has been involved in studying salinity tolerance ever since. Mark Tester has more recently moved into salinity research, in the process of seeking to apply his knowledge of membrane transport to a whole plant physiological issue of practical



Coauthor
Mark Tester

relevance.

SW: Where do you see your research leading in the future?

In the short term, genetic studies of salinity tolerance are undoubtedly an emphasis, using high-throughput physiological assays to allow positional cloning of genes conferring tolerance to the various salinity tolerance components.

Looking ahead, our research will deliver genetic material to plant breeders for commercialization. We want to overcome the difficulties of the practical deployment of scientific advances, such as so often blights significant breakthroughs. The example of cystic fibrosis is salutary—where a range of difficulties have thus far limited the therapeutic benefits of wonderful research breakthroughs.

SW: Do you foresee any social or political implications for your research?

Yes, the implications are significant, both for helping agriculture in developing countries to improve the salinity tolerance of plants relevant to food production and environmental sustainability and also for the consideration of the benefits of genetically modified crops in developed countries.

Mark Tester, Ph.D.

Professor

Australian Centre for Plant Functional Genomics

Director

Australian Plant Phenomics Facility

The University of Adelaide

Glen Osmond, AU

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Dr. Rana Ellen Munns, FAA

Chief Research Scientist

CSIRO Plant Industry

Canberra, Australian Capital Territory, AU

[Web](#)

KEYWORDS: SALT TOLERANCE; SALINITY STRESS; SODIUM TOXICITY; CHLORIDE; STRESS TOLERANCE.

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