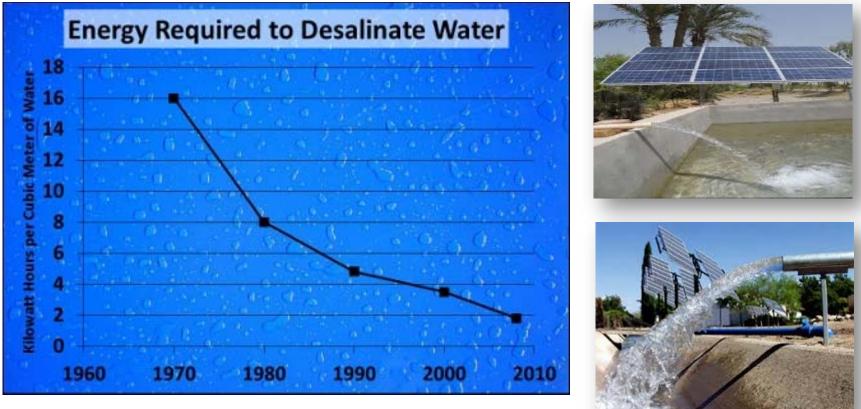
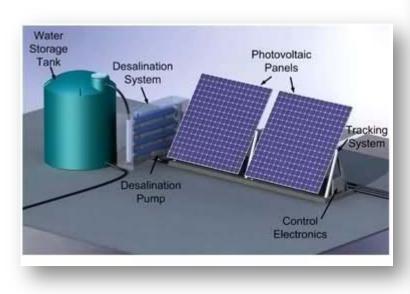
AGUA DE MAR DESALINIZADA



OSMOSIS INVERSA y PRESURIZACION DEL AGUA PARA TRANSPORTE CON FOTO – ELECTRICIDAD. GRAFENO

AGRICULTURA REGADA CON AGUA DE MAR DESALINIZADA

CONSUMO HIDRICO 7.500 m³ ha⁻¹
AÑO 2014: * U\$ 0,35 / m³ = U\$ 2.625 ha⁻¹
AÑO 2016: * U\$ 0,01/ m³ = U\$ 75 ha⁻¹





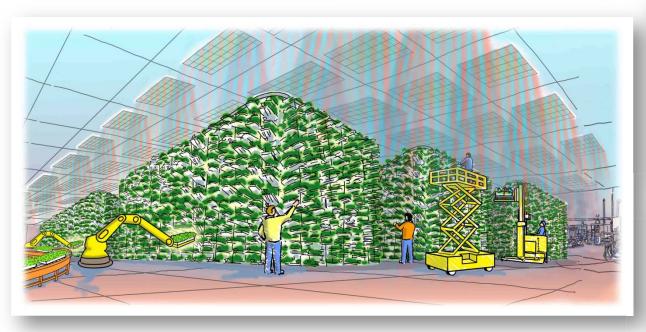


AGRICULTURA CON AGUA DESALINIZADA



i UN NUEVO ORDENAMIENTO TERRITORIAL !





IMAGINEMOS LAS IMPLICANCIAS SOCIO – ECONOMICAS Y POLITICAS!!!!

- FULL ALIMENTACION A NIVEL GLOBAL
- SALUD Y DESARROLLO SUSTENTABLES
- REDISTRIBUCION DE LA POBLACION
- SUSTENTABILDAD MEDIO AMBIENTAL
- CONTROL DE CO₂ y O₂ A TRAVES DE LA FOTOSINTESIS (como era «antes»)

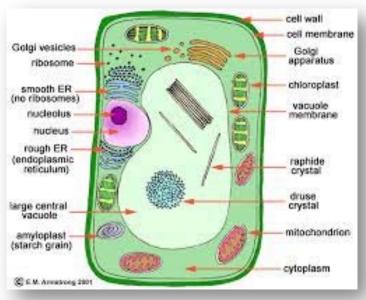


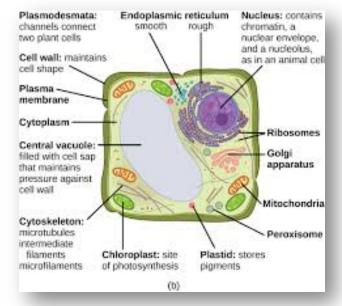




AGUA EN SERES VIVOS

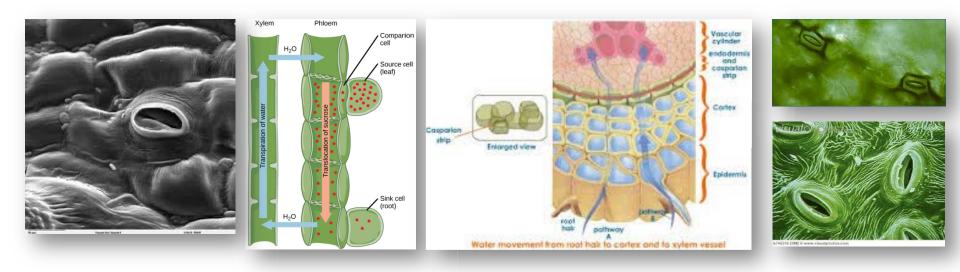
- CONSTITUCION FISIOLOGICA A NIVEL CELULAR. – ACCION DE ENZIMAS (CONCENTRACION).
 - FUNCIONAMIENTO PROTOPLASMATICO.





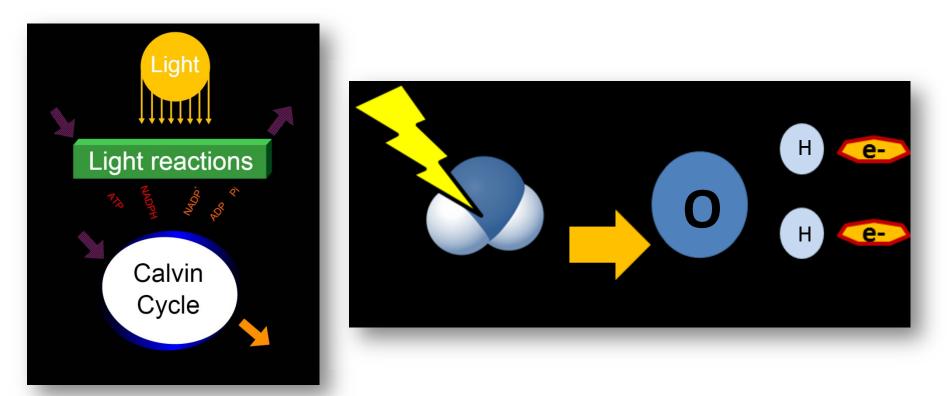
AGUA EN SERES VEGETALES

- FLUJO TRANSPIRATIVO EN LAS PLANTAS.
 - TRASLOCACION DE FOTOSINTATOS y SUS DERIVADOS.
 - APERTURA ESTOMATICA Y EFICIENCIA DE USO DEL AGUA: *¡UNA MARAVILLA DE LA NATURALEZA!*



NUESTRAS AMIGAS, LAS PLANTAS

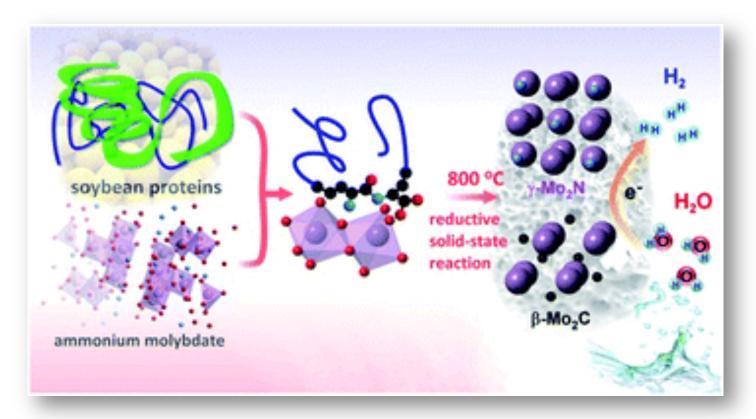
 FOTOLISIS DEL AGUA EN LA FOTOSINTESIS: HIDROGENO PARA GUARDAR ENERGIA EN ENLACES C – H; LIBERACION DE O₂ GASEOSO



SINTESIS BIOLOGICA DEL AGUA

 Shilpa y Shweta Iyer (mellizas de 16 años, estudiantes secundarias)

Energy Environ. Sci., 2013. Vol 6: 1818-1826



OTROS AVANCES CIENTIFICOS PARA EL INCREMENTO DE LA EFICIENCIA DEL USO DE AGUA POR LAS PLANTAS

- Genética convencional y inter especies
- Signaling: Hormonal Hidráulica Eléctrica
- Medición y estimación de ETo, Kc, ETc (Samuel Ortega-Farias)
- Métodos de Riego del futuro (presente)
- Tecnologías de la Información y Agricultura de Precisión (Stanley Best)
 - Digitalización, imágenes, telemetría, inteligencia artificial.....



GENETICA «CONVENCIONAL»: SELECCIÓN MASAL - HIBRIDOS





Beaver x Solssons DH population (Sutton Borwington 2005)





Plant Breeding for Water-Limited Environments

🙆 Springer

Limitations to Efficient Water Use in Crop Production





Less water stressed

More water stressed



MANIPULACION «Ingeniería» GENETICA

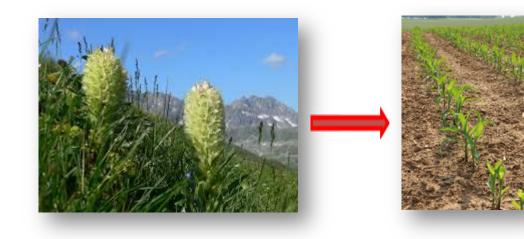
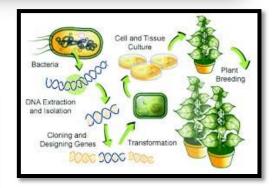
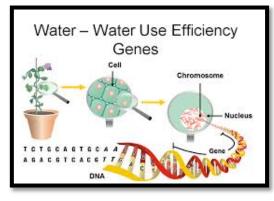




Fig. 3 - Mutant soybean trials (Photo courtesy of Q. Liang, NAFA)





GENETIC RESOURCES, CHROMOSOME ENGINEERING, AND CROP IMPROVEMENT SERIES



GENETIC RESOURCES, Chromosome Engineering, and Crop Improvement

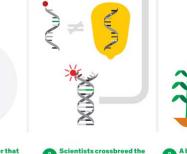


EDITED BY RAM J. SINGH AND PREM P. JAUHAR

Also available as a printed book see title verso for ISBN details



DNA is a ladderlike structure with rungs made up of four types of chemicals. Adenine binds only to thymine, and guanine binds only to cytosine.



Scientists discover that
corn with a particular
mutation—a change in a single spot—
is better able to tolerate drought.
they build a genetic probe containing
the mutant DNA sequence and a
chemical that lights up when the DNA
the sequence binds to its complement.
containing

Scientists crossbreed the drought-tolerant plants with a high-yield variety. But which of the thousands of resulting seeds has both genetic traits? To find out, robots extract DNA from the seeds and add the probe. The probe binds only to a complementary DNA sequence. Abreeder can then growand sell—only those seeds that are both high yield and drought tolerant. Or the process can be repeated to add other traits, such as disease resistance.

GENETICA PARA ESPECIES MAS EFICIENTES EN EL USO DE AGUA

Participatory Plant Breeding, Biodiversity, Genetic Resources, Gender and Climate Changes



ESFUERZOS MULTI – DIMENSIONALES Y MULTI - DISCIPLINARIOS

MEDICION Y ESTIMACION DE ET









Evapotranspiration in the Soil-Plant-Atmosphere System

D Springer







METODOS DE RIEGO DEL FUTURO









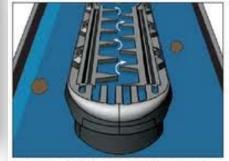












Industry's widest flow path for superior clog resistance.

CONVERSANDO CON LAS PLANTAS ACERCA DE SU SITUACION HIDRICA

• NEUROFISIOLOGIA DE PLANTAS



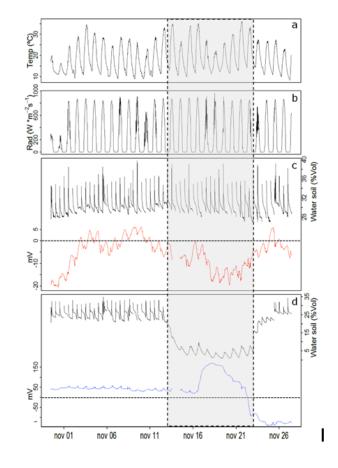
 RESPUESTA ELECTRICA DE LAS PLANTAS ANTE EL ESTRÉS HIDRICO

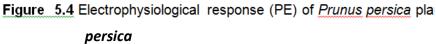


Gurovich, L. 2012. Electrophysiology of Woody Plants, Electrophysiology - From Plants to Heart, (Chapter 1). Saeed Oraii (Ed.), ISBN: 978-953-51-0006-5, InTech









Ríos-Rojas, L; Tapia, F. and **Gurovich, L**. 2014. Water stress electrophysiology assessment in fruit bearing woody plants. Journal of Plant Physiology Vol. 171: 799-806

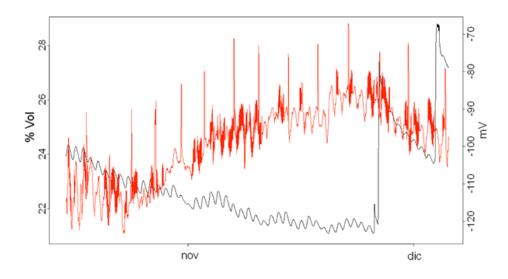


Figure 5.6 Electrophysiological response (PE) of <u>Actinidia chinensis</u> plants in water restriction. PE: red line; Soil moisture: black line.

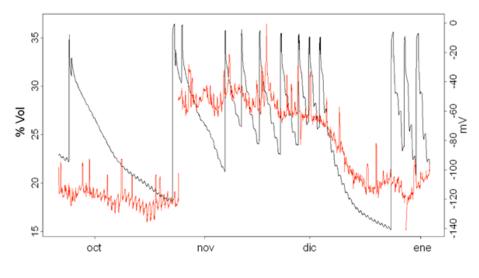
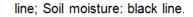


Figure 5.8. Electrophysiological response (PE) of Prunus persica plants. PE: red



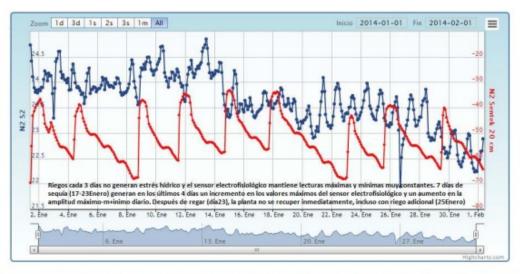


Figura 12. Respuesta de una planta de Kiwi cv. Hayward con periodos cortos de restricción hídrica.



Ríos-Rojas, L.; Morales-Moraga, D.; José A. Alcalde, J. and **Gurovich, L. 2014.** Use of plant woody species electrical potential for irrigation scheduling. J. Plant Signaling and Behavior. Accepted for publication.

Figura 13. Respuesta de una planta de Kiwi cv. Hayward al riego, después de una restricción prolongada.

EMISORES DE RIEGO DEL FUTURO



