
US Citrus Industry Priorities

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Citrus Research Board

National Citrus Research Council

The US Citrus Industry

- Florida 750,000 acres
 - Primarily a juice industry
 - Approximately 15 percent to fresh market
 - California 280,000 acres
 - Primarily a fresh pack industry
 - Texas 28,000 acres
 - Primarily grapefruit
 - Arizona 28,000 acres
 - Primarily oranges and lemons
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“Strategic Plans are Worthless,
Strategic Planning is Essential”

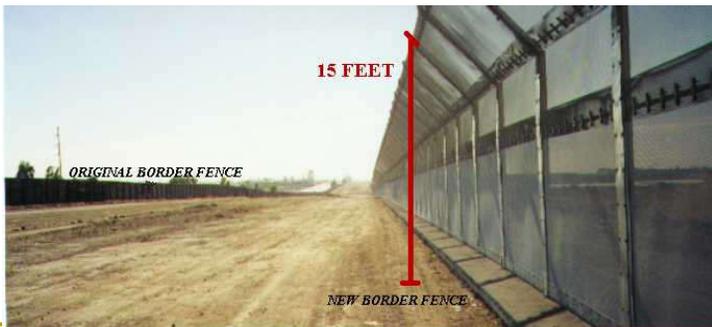
Dr. David Sharp
Deputy Chief Scientist
Los Alamos National Laboratory
Attributed to Gen. Dwight D. Eisenhower

Why do strategic planning?

- To create a method for group strategic thinking.
 - To act as check points along a defined long term pathway.
 - To provide access points for industry participation and buy-in.
 - Because someone said we should.....
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Agriculture Faces a Potentially Crippling Labor Crisis

- Many crops are facing labor shortage
 - In some cases, fruit is left rotting on trees
- Some growers paid more than \$20 per bin in 2005
- The risk of employing undocumented workers is growing



Proposed 2,000-mile border fence



Global Competition

- Foreign production with lower labor costs
 - Cost of transportation
 - Energy miles per unit comparison
 - Global consumption trends
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“Energy Miles” Comparison

■ Automobile:	1
■ Air	43
■ Highway Truck	740
■ Rail Carload	2,400
■ Ocean Vessel	3,800



Mechanization Programs so far...



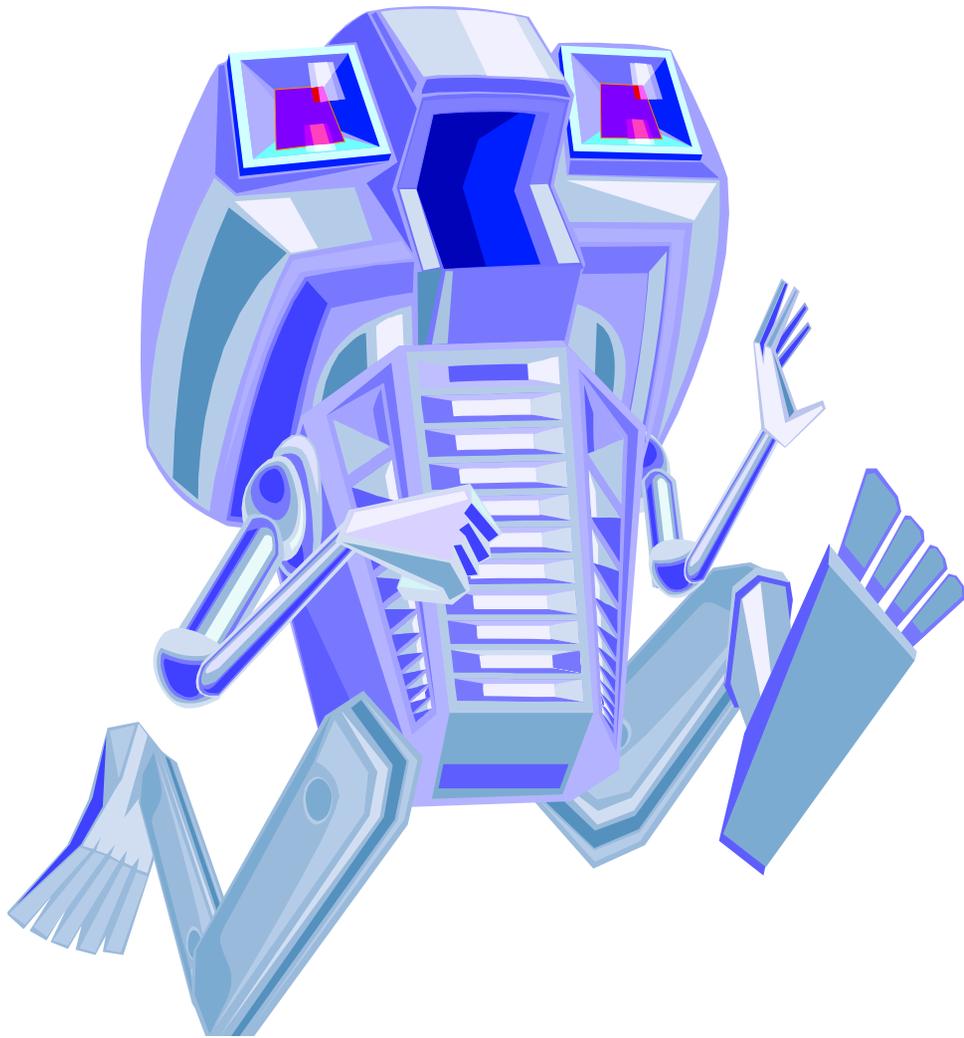






What we need are machines
that function like humans

But without the issues of human
behavior....



Crop Management System

Not just a harvester

Production Management

- Crop Size
 - Fruit Quality
 - Pest Populations
 - Disease Incidence
 - Water Stress
 - Fertility Demands
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Marketing Management

- Knowing total crop size
 - Fruit size and quality
 - Pick to Order
 - Only pick and handle marketable fruit.
 - Reduce unnecessary labor at field and packing house.
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Systems needs

- Mechanically harvest juice product.
 - Mechanically harvest fresh products.
 - Detect pest and disease populations.
 - Analyze. tree health
 - Apply crop protection tools.
 - Track crop production on a per tree basis.
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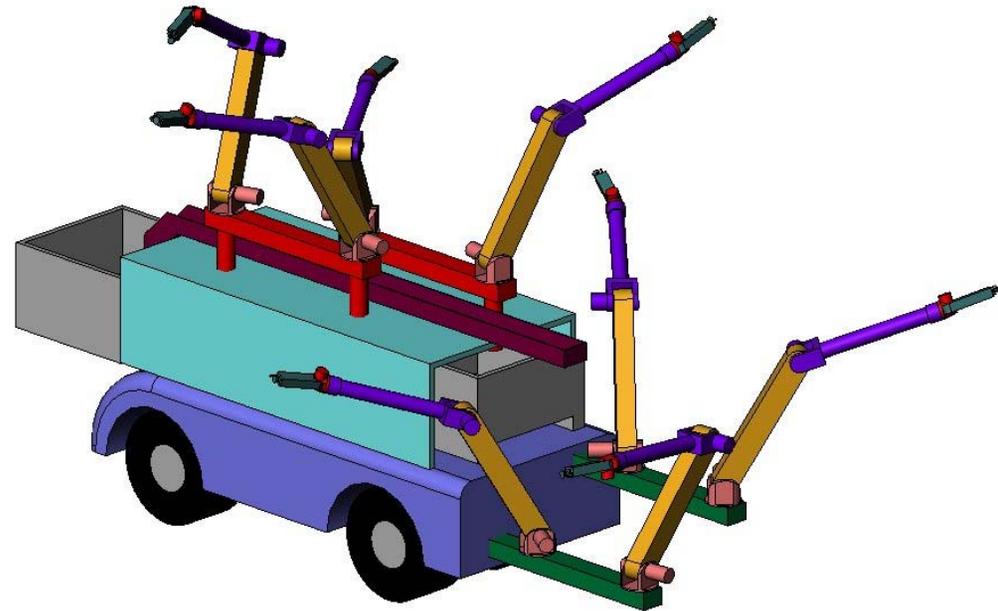
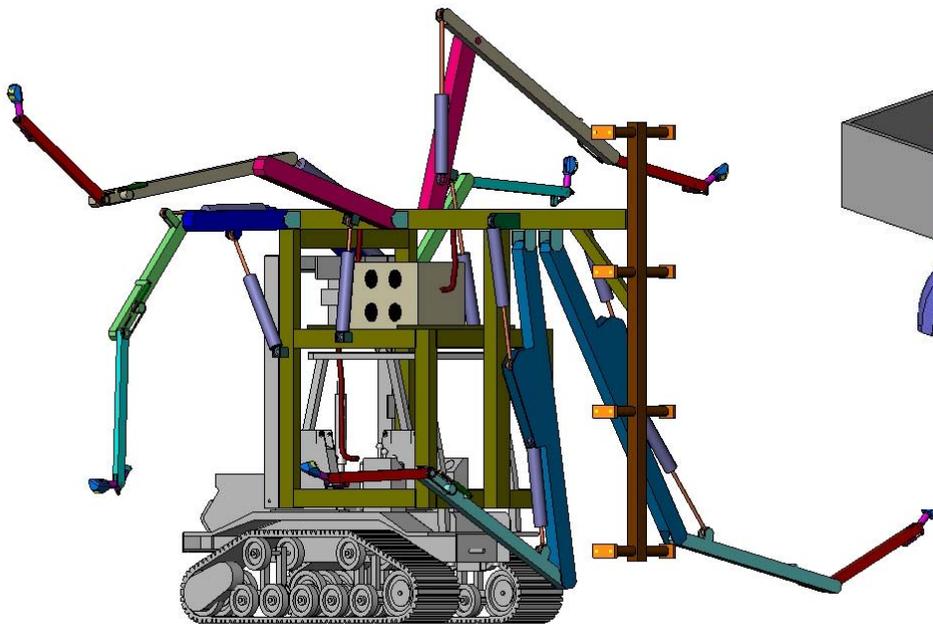
One system under development

A multiple commodity program





The Two-Robot System Provides a Management System Platform

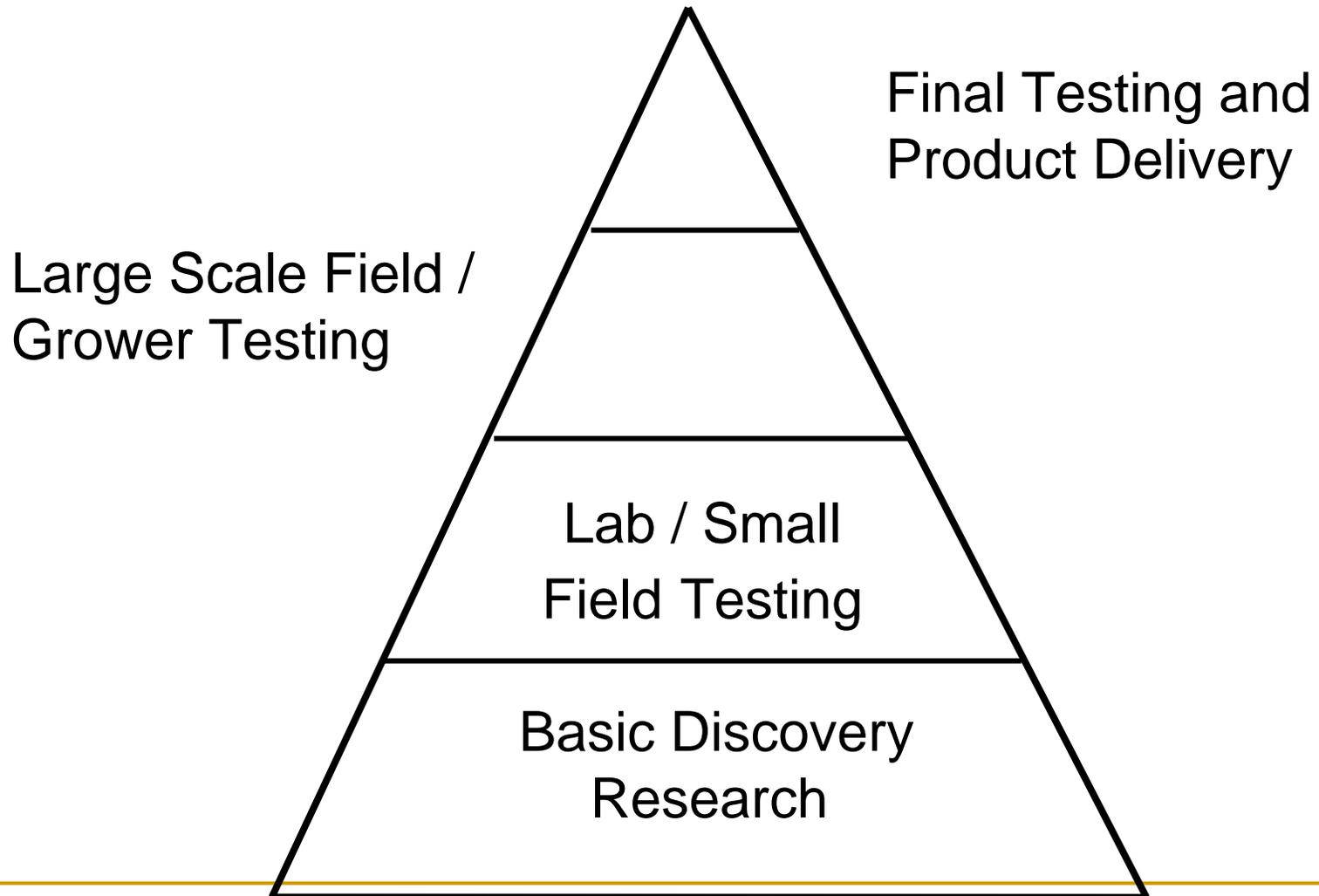


Despite Technology, Citrus Mechanization is Not Yet a Reality



- Packing house innovation demonstrates that machines can handle fresh fruit
- Quality, Quality, Quality
- Affordability is critical

Research Paradigm



The Challenge

- Research projects must be analyzed for their deliverable output.
 - What will be the actual product?
 - How will it be deployed
 - Will it be cost effective
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