

Mechanical Harvesting Systems Working in 2005/2006

Trunk-Shake-Catch (TSC)



A TSC set includes three machines--a shaker, a receiver, and a field truck (goat). Trunks are shaken between 5 and 10 seconds to remove fruit. Trees have to be "skirted" to allow shaker and receiving units to position underneath the tree canopy. Fruit is caught and conveyed to a cart holding up to 90 boxes of fruit.

Continuous Canopy Shake & Catch (CCSC)



One CCSC set includes a minimum of four machines--two harvesting units and two field trucks. Working in parallel, a CCSC system travels between 1 and 2 mph down each side of the tree row. Shaker heads penetrate the canopy to remove fruit. Caught fruit is conveyed to a trailing field truck. CCSC system is well suited for long rows and uniform sized trees. Trees have to be "skirted" to allow optimal fruit collection.

Tractor Drawn Canopy Shake (T-CS)



T-CS uses a harvesting mechanism similar to the CCSC. T-CS harvests fruit from one side of the tree canopy at a time, dropping fruit to the ground. A hand crew picks up ground fruit and gleanes remaining fruit in the tree. Suited for older, non-uniform trees. Skirting is recommended but not necessary.











MECHANICAL HARVESTING CAN SAVE YOU MONEY

MECHANICAL HARVESTING CRITERIA FOR SUCCESS:

1. Lower net harvesting cost
2. High labor productivity
3. Little, if any, negative impact on tree health
4. Higher on-tree returns



A citrus initiative, passed in 2005, is funding the following IFAS scientists to continue research and education efforts in mechanical harvest-

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CREC – Citrus Research and Education Center, Lake Alfred

GNV – Gainesville

SWFREC – Southwest Florida Research and Education Center, Immokalee

UF/IFAS Mechanical Harvesting Program Elements

	<p>Abscission</p> <ul style="list-style-type: none"> » Enabling late season Valencia mechanical harvesting » Develop management scenarios » Screen alternate agents » Support CMNP registration
	<p>Machine Enhancements/Robotics</p> <ul style="list-style-type: none"> » Catch-frame improvement » Robotic systems » Yield monitoring » Research of pick-up machines and food safety concerns » On-board canker decontamination
	<p>Grower Education</p> <ul style="list-style-type: none"> » Soliciting grower intentions » Addressing processors concerns » Developing new publications and extension products » Developing decision aiding tools
	<p>Tree Health</p> <ul style="list-style-type: none"> » Effects of mechanical harvesting on tree health or tree longevity » Effects of abscission on yield and tree longevity
	<p>Grove Design</p> <ul style="list-style-type: none"> » New nursery tree standards for mechanical harvesting systems » Strategies for refitting existing trees or groves
	<p>Economic Evaluation</p> <ul style="list-style-type: none"> » System performance » Analysis of load allocations » Efficiency gains » Incorporating costs and benefits of mechanical harvesting from the nursery tree to the processed juice.