

Working Efficiently in the Apple Orchard



**"The Benefits of Simple Rules and Machines
for Fruit Growing"**

Mario Miranda Sazo
CCE Lake Ontario Fruit Program



Typical South American fruit operation

- **Bigger** fruit acreage
- **Fewer** family controlled businesses
- Owner(s) **less involved** in the day to day operations
- **More** technical support
- **More** consultants involved
- Hand labor is more available and **cheaper**
- **Less** picking efficiency (3 bins per person per day)
- **Less** ready to be efficient (owner and employees)

Typical Northeastern fruit operation

- **Smaller** fruit acreage
- **More** family-controlled businesses
- Owner(s) **more or fully involved** in the day to day operations
- **Less** technical support
- **Less or none** consultants involved
- Hand labor is less available and **more expensive**
- **More** picking efficiency (5-6 bins per person per day)
- **More** ready to be efficient (owner and employees)



What about a typical South Tyrolean fruit grower?



The Challenge

- NY fruit growers must **balance two conflicting** but equally important demands for **success**:
- **Efficiency** (which comes from exploiting standard opportunities)
- **Flexibility** (which allows a NY fruit grower to seize unexpected opportunities)

NY fruit growing....

- It is something you **live** and **breathe** every day
- It is something you do (i.e. fruit growing) **intensively** with family
- It is something you do outdoors expecting to make a profit in one of the few US industries “**without a roof**”!



Ask Yourself Some Tough Questions

- Do you want to be the best Northeastern fruit grower producer?
- Do you want to grow, pack, and sell your own fruit?
- Do you want to be fully vertically integrated?
- Do you want to produce fruit cheaper than others?
- Do you want to increase per-box returns by producing high quality fruit?



Once You Define Your Strategy

- **Avoid wasting time** shuffling through piles of papers or tools
- Keep your desk, truck, shop, and ultimately, your **orchard well organized**
- **Prioritize** a list of the tasks to carry out through the day, the next week, the next month, the coming season, the next year
- **Envision** where you and your family want to be the next 5, 10 years
- **Prioritize** the national and international educational conferences and tours you attend
- Be **smart** and **strategic** when shopping for “variety clubs” , “new technologies”, the “next big idea”
- Try working in a **team**, allot tasks to co-workers, family members, and other helpers if possible
- Have **effective communication** “change the focus from a top-down distribution of information to a bottom-up exchange of ideas with your key employees”**Are you having Monday meetings?”**
- **Plan cautiously** to make sure a job is done properly the first time around



The Production System for Efficiency?

- The **more complicated** you make the tree in terms of making decisions, the **harder the system** becomes for you and your workers
- With a very **simple training system**, workers have to make **few decisions**
- A very simple training system also makes the fruitlets, branches, and fruit **very accessible** to workers for hand thinning, pruning, or harvest
- Do not hesitate to try new things and start getting the benefits of **Using Simple Rules**



Simple Rules for Fruit Growers versus Checklists for Pilots and Surgical Doctors

- **Checklists** like the ones that pilots use before takeoff or that surgical teams run through to prepare for an operation are extremely helpful when the challenge is to **perform a process repeatedly and efficiently**
- **Simple rules**, in contrast, are most useful when the challenge is to adapt quickly to a **new fruit production system**, or when you want to **maximize** the job performance of your orchard workers

?



How **Simple Rules** Make It Easier to Work and Be More Efficient in the Orchard

- Complex tree architectures create **many** possible courses of action for pruning, which can **confound** workers
- When workers are faced with a superabundance of pruning cut alternatives, workers are **afraid** of making the **wrong choice**
- As a result workers **delay** the pruning cut decision, **default** to the safest “obvious” cut, or **avoid** choosing altogether
- Your pruning crew ended up being **less** efficient
- They **Work Harder Not Smarter**
- You ended up **Growing Wood Not Fruit**



Simple Pruning Rules

You have
the right
tree
structure

You have
the right
people

You have
the right
technology

Benefit by
Using
**Simple
Rules**

- Because they are easy to put into practice, simple pruning rules can induce action without unnecessarily limiting options
- Use one simple pruning rule with a platform
- **Limit tree height each year to 11 ft by cutting to a side branch**



Simple Pruning Rules

- Because they are easy to put into practice, simple pruning rules can induce action without unnecessarily limiting options
- Use one simple pruning rule with a platform
- **Prune 2-3 of the largest limbs (>1 inches diameter) in the canopy this year by cutting them back to a 1-1.5 inches long stub**

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- Because they are easy to put into practice, simple pruning rules can induce action without unnecessarily limiting options
- Use one simple pruning rule with a two person crew
- **Prune 2-3 of the largest limbs (>1 inches diameter) in the canopy this year by cutting them back to a 1-1.5 inches long stub**



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- Because they are easy to put into practice, simple pruning rules can induce action without unnecessarily limiting options
- Use one simple pruning rule with a platform
- **Use a pole with a chainsaw and make one/two big cuts per tree in the lower section**



Simple Hand Thinning Rule

You have
the right
tree
structure

You have
the right
people

You have
the right
technology

Benefit by
Using
Simple
Rules

- Because they are easy to put into practice, simple hand thinning rules can induce action without unnecessarily limiting options
- Use one simple hand thinning rule with a platform
- **Hand thin peaches with a baseball bat**



Simple Support Rule

You have
the right
tree
structure

You have
the right
people

You have
the right
technology

Benefit by
Using
Simple
Rules

- Because they are easy to put into practice, simple rules for installing a wire can induce action without unnecessarily limiting options
- Use one simple support rule with a platform
- **Install a wire-stabilizer to the top wire right above each tree**



Simple Support Rule

- Because they are easy to put into practice, simple training rules can induce action without unnecessarily limiting options
- Use one simple training rule with a platform
- **Attach a steel stake to the top wire using a wire tie to each tree**

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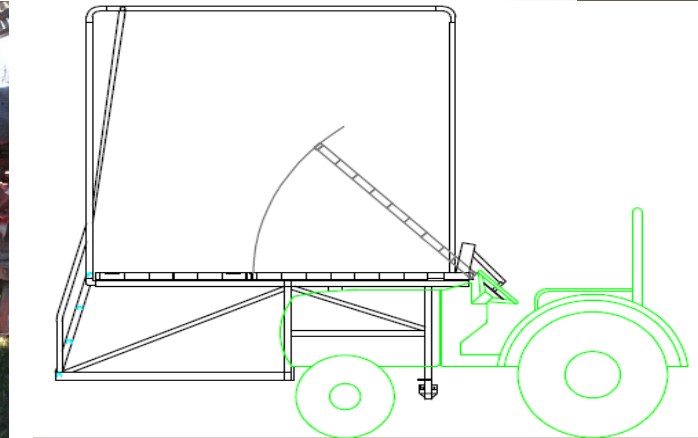
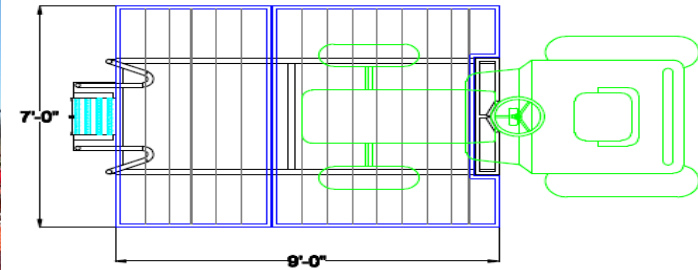
Benefit by
Using
**Simple
Rules**



The Use of Simple Machines

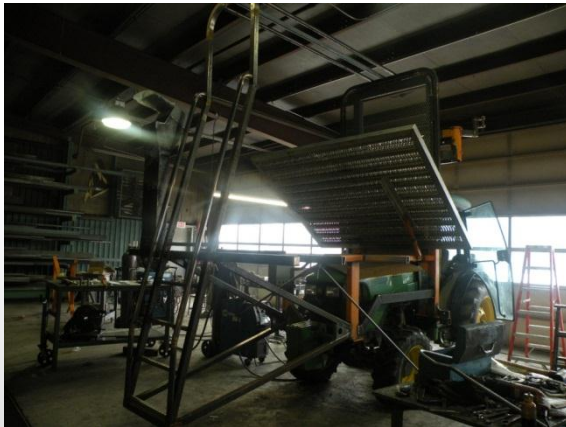
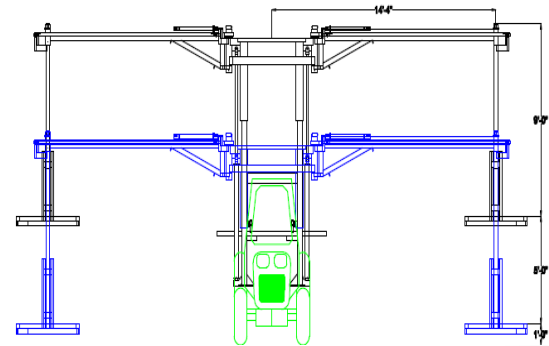
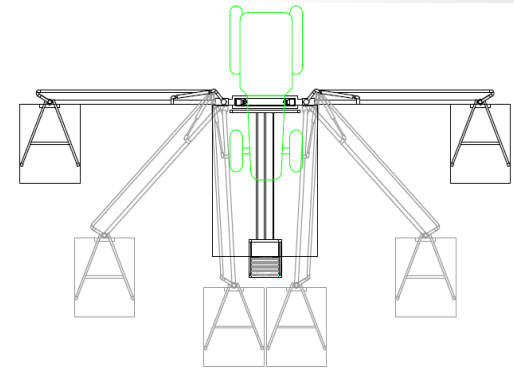
- Concept of using a platform (7 ft. x 9 ft.) **mounted** on a four wheel drive tractor

Mounted Trimming Platform



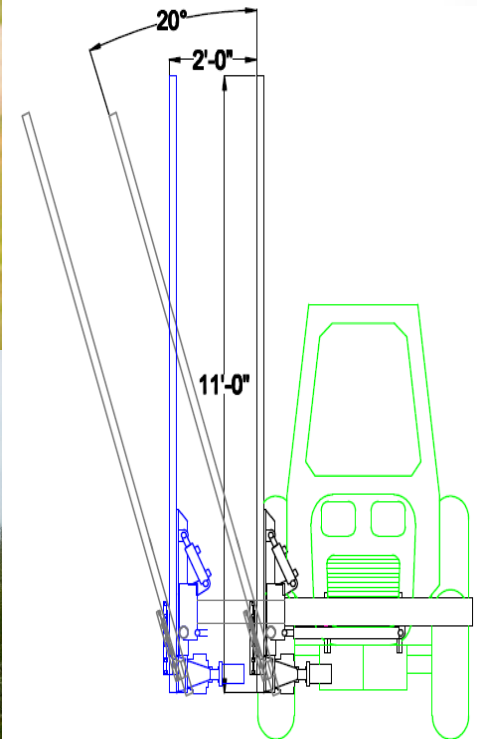
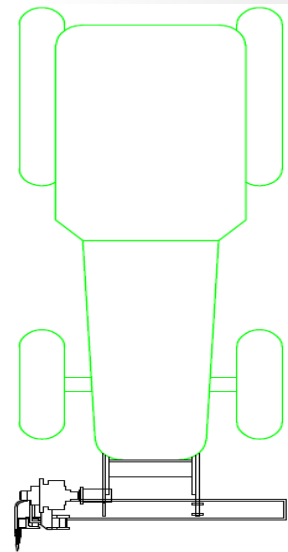
Over-the-Row Platform

- A 7 ft. x 9 ft. platform **mounted** over the hood of a tractor from which two workers can prune adjacent trellis walls
- It has two additional 4 ft. x 5 ft. outboard platforms suspended from booms which can be swung out, over the adjacent rows
- Each of the over-the-row platforms carries a single worker



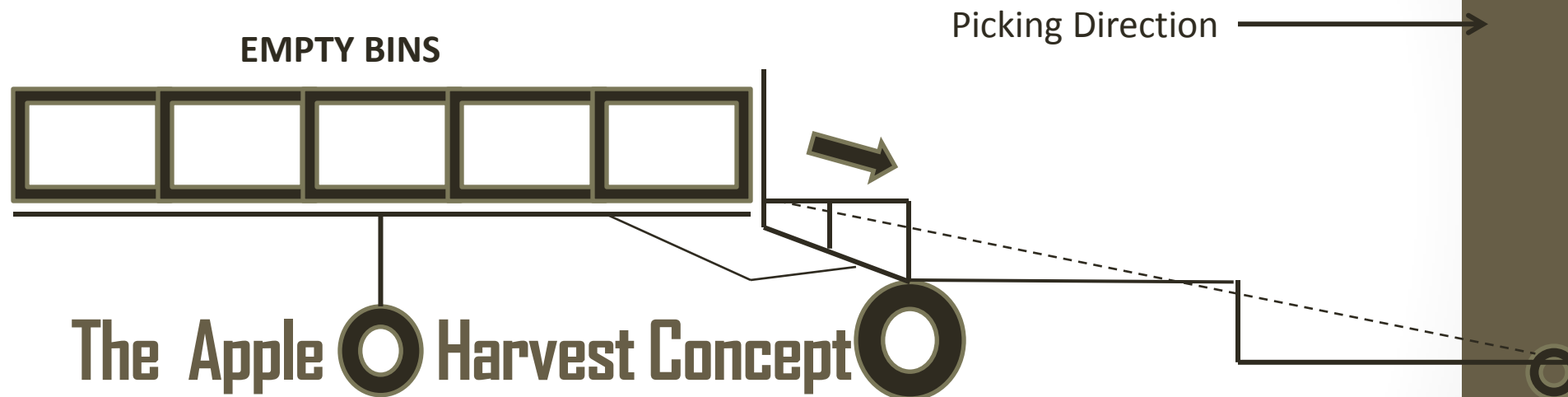
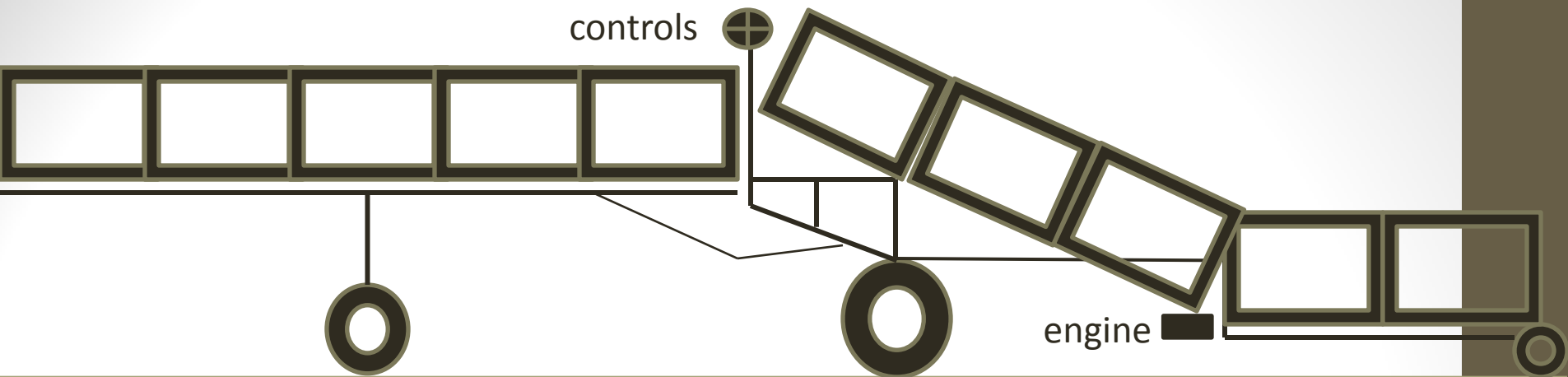
The Cornell Hedger

- A sidewall shearing machine was built in the winter of 2012
- 5 summer sidewall shearing pruning studies in NY were conducted at the following sites: (1) VanDeWalle Orchards (Alton, NY), (2) Lamont Fruit Farms (Albion, NY), (3) Crist Bros Orchard (Marlboro, NY), (4) Everett Orchards (Peru, NY) and (5) at the Agricultural Experiment Station in Geneva, NY

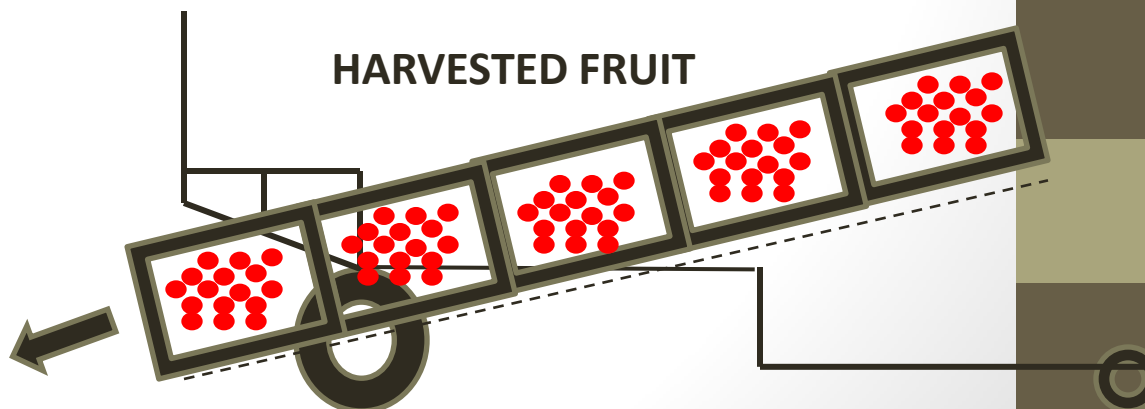


Imagine If There Was a Machine for Apple Harvest





The Apple Harvest Concept



Simple Harvest Steps



The Pyramid for Efficiency and Profitability

- Smart growers **engage** with employees
- They **foster** cultural norms that instill a conversational environment
- Better communication **allows** a large or growing fruit company to function like a small one
- Have **effective communication** “change the focus from a top-down distribution of information to a bottom-up **exchange of ideas** with your key employees
- **Are you having Monday meetings with your** →

PEOPLE

You have the right tech for improved labor efficiency

You have the right tree architecture

You have the right planting density

You have the right variety/rootstock



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Orchard Labor Force

A Human Resource
for efficient orchard work

