



Sketch Model Review

Small scale agriculture

Tree Trolley



Tree Trolley

Customer Information

Customer Needs	Design Attributes
Prevent dragging damage to root bulbs (3' diameter bulb, 300lb tree)	Lifting mechanism to raise bulb off ground for transport
Easy to use/maneuver, small scale and affordable	Basic hand truck design. Easy, one-man transport job
Drop bulb into appropriate hole, able to cut burlap off bulb	Easy lowering and releasing mechanism, bulb exposed before released to allow for removal of burlap
Minimize destruction to ground surrounding intended tree hole	Small hand-operated cart, rubber wheels to move easily throw lawn/planting ground.



Tree Trolley Market Data

- Similar Products

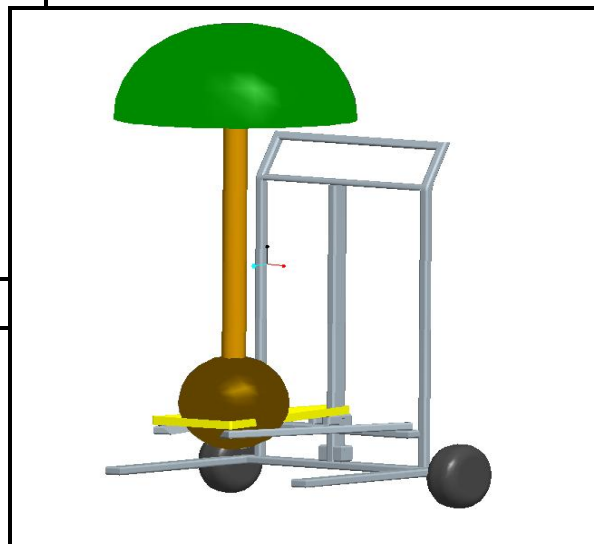
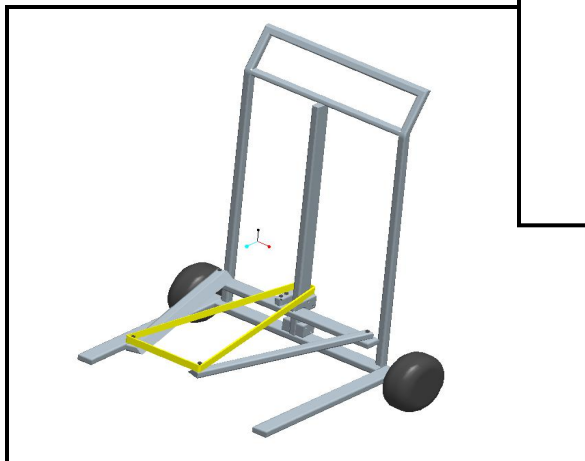
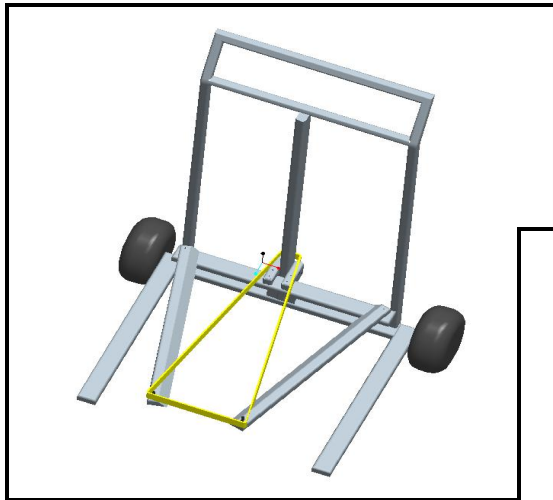


- Product would sell for **\$300 - \$500**

Our customers	Market size	Sales potential
Landscaping Rental	over 20,000 in U.S.	\$8 million
Professional Landscaping Companies:	over 50,000 US contractors	\$20 million industry
0.1% of US homeowners	150,000 households	\$50 million industry



Tree Trolley Gripping Mechanism



How to Use:

1. Gripping Mechanism sits in lowest position
2. Tree is loaded into gripping arms
3. Gripping arms are closed around root ball which is also belted in for stability
4. Gripping arms (holding tree) then raised about 1' off the ground.
5. Tree is wheeled around to desired planting location
6. Mechanism is lowered, root ball is unbelted and released into hole



Tree Trolley Gripping Mechanism



- Holds up to 36" diameter bulb (up to 350 lbs)
- Approximate cart weight of about 50 lbs.
- Human power required to operate cart ~ 0.2 hp
- Proposed boom hoisting mechanism: use a single vertical support and hoist instead of a linear bearing, to prevent overloading

To simulate the process of planting a tree, we will wheel the trolley over a stage with an appropriately sized hole, and lower a tree bulb (or equivalent model).



Tree Trolley Analysis

- Linear bearing is not practical, due to torque; use a boom and winch mechanism instead
- Portability and a broad market are key to a successful landscaping product

