

Case Study : Amla De-seeding

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Empathy Study

Amla Deseeding using hand:

- Less productivity
- Injurious to health
- Time-consuming



Ideation

- To increase the productivity
- To reduce injury chances
- Affordable & lesser maintenance requirements

Steps

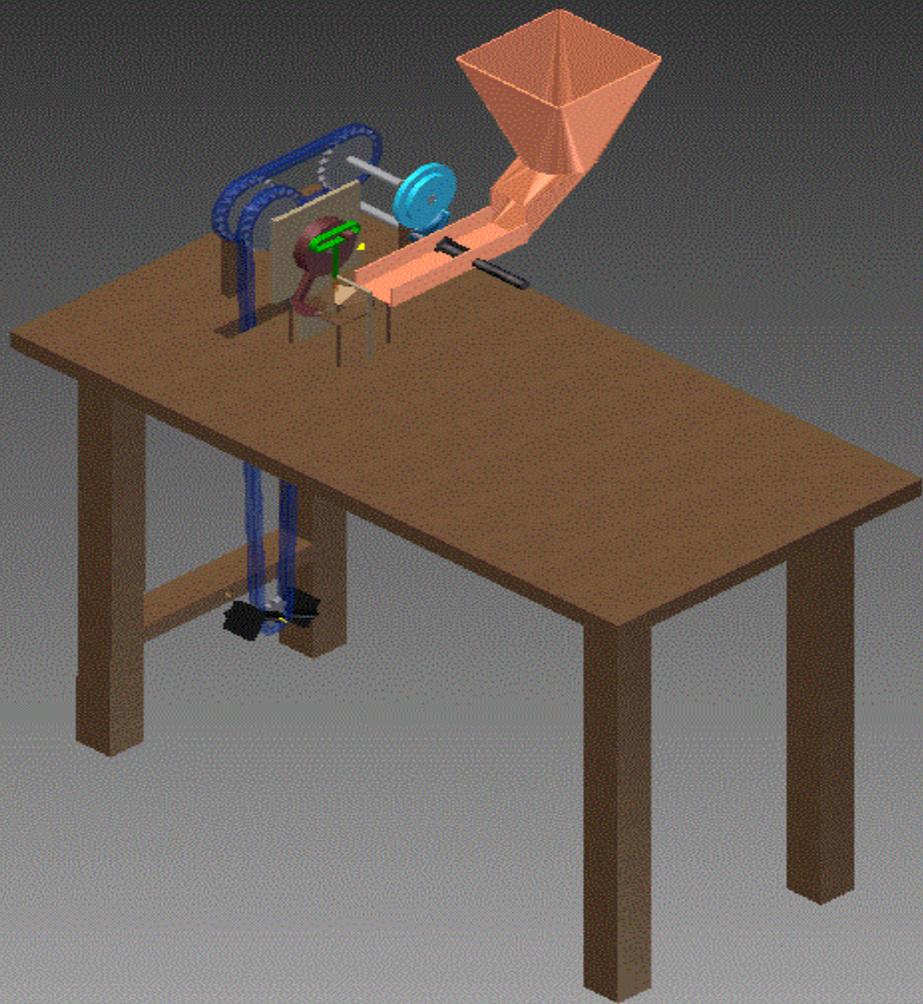
Stages of Amla deseeding:

- Removal of seed from the Amla
- Breaking of Amla into individual pieces

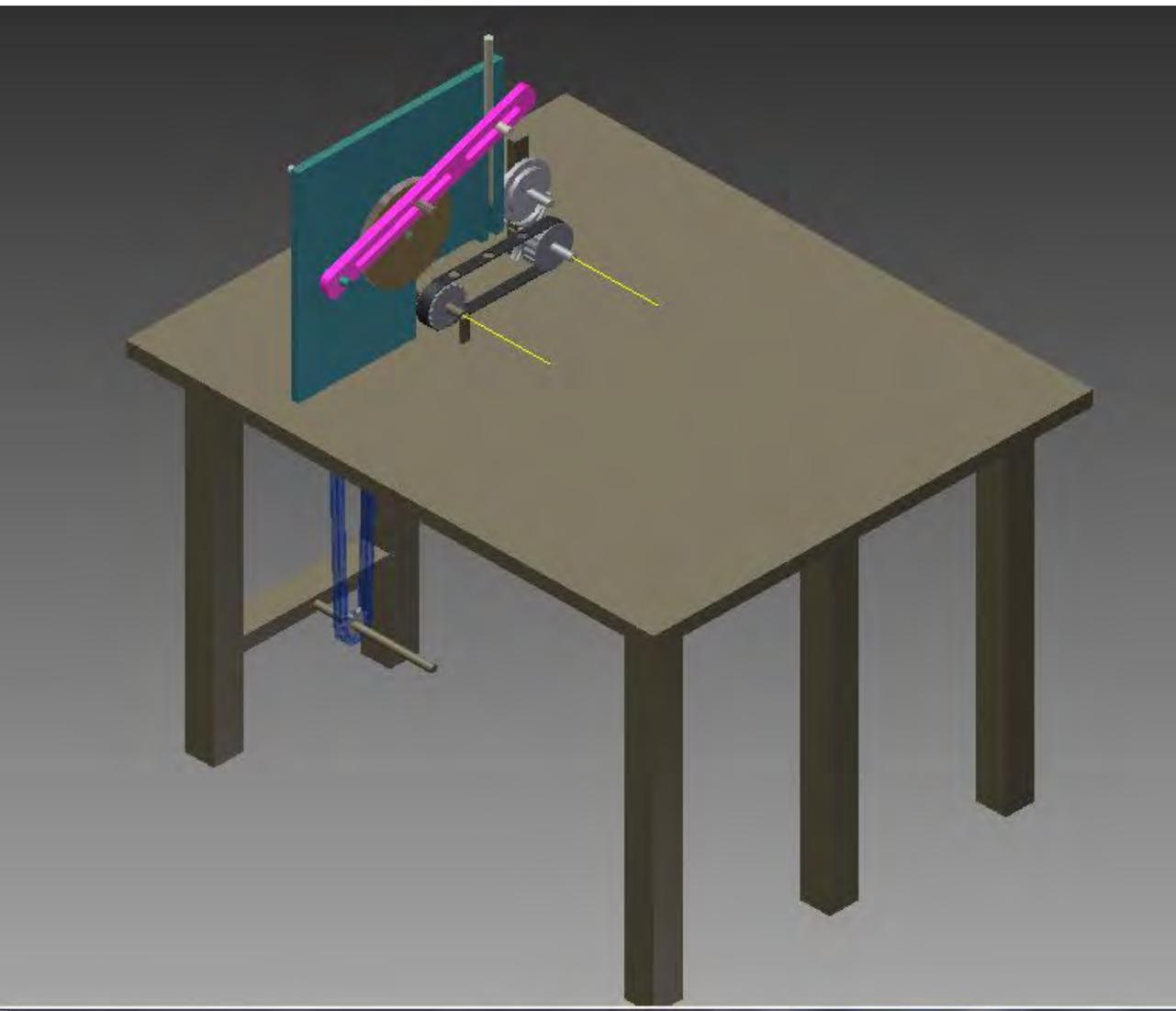
Removal of seed from the Amla to be done in mainly three steps:

- Feeding
- Deseeding
- Collection

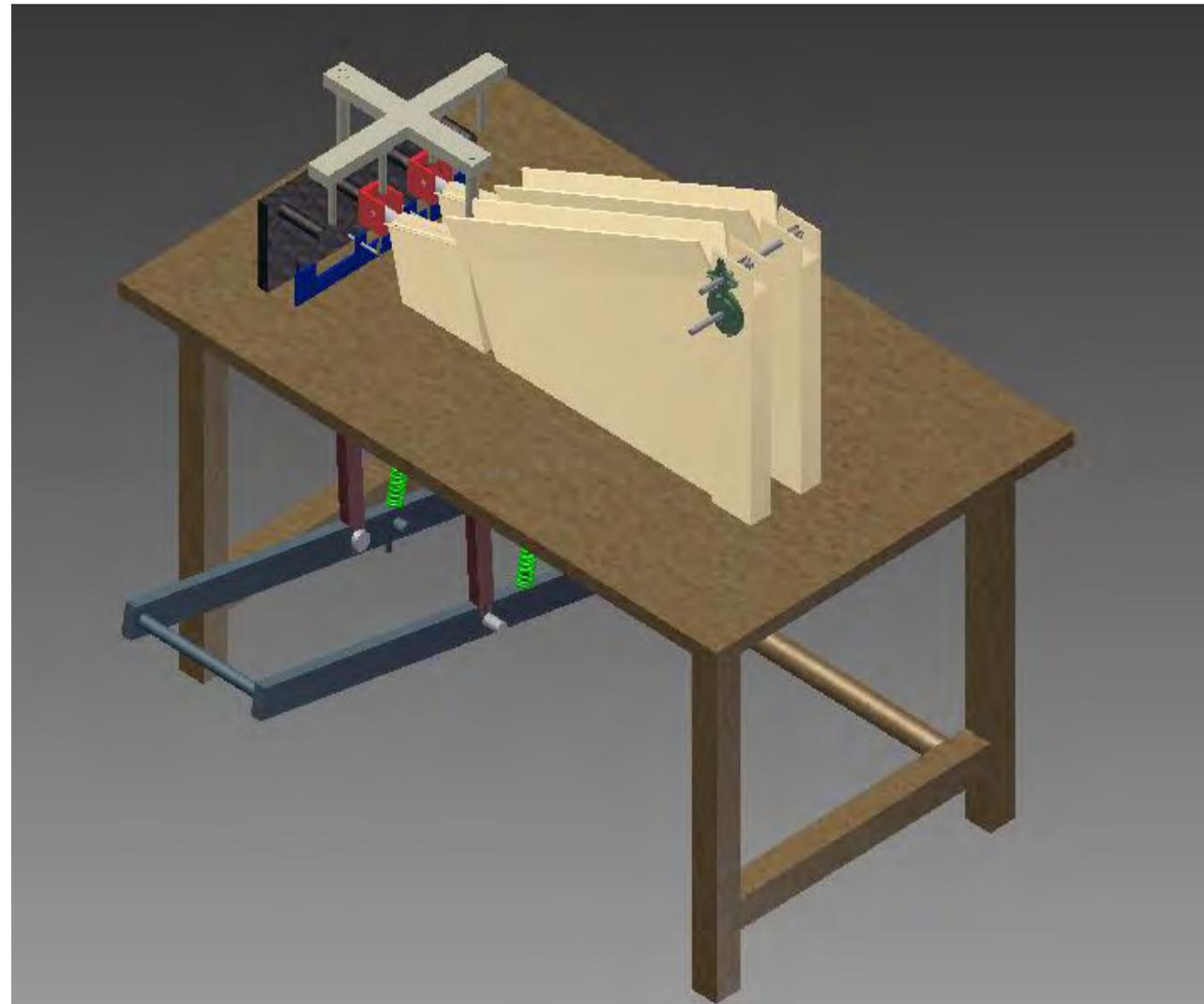
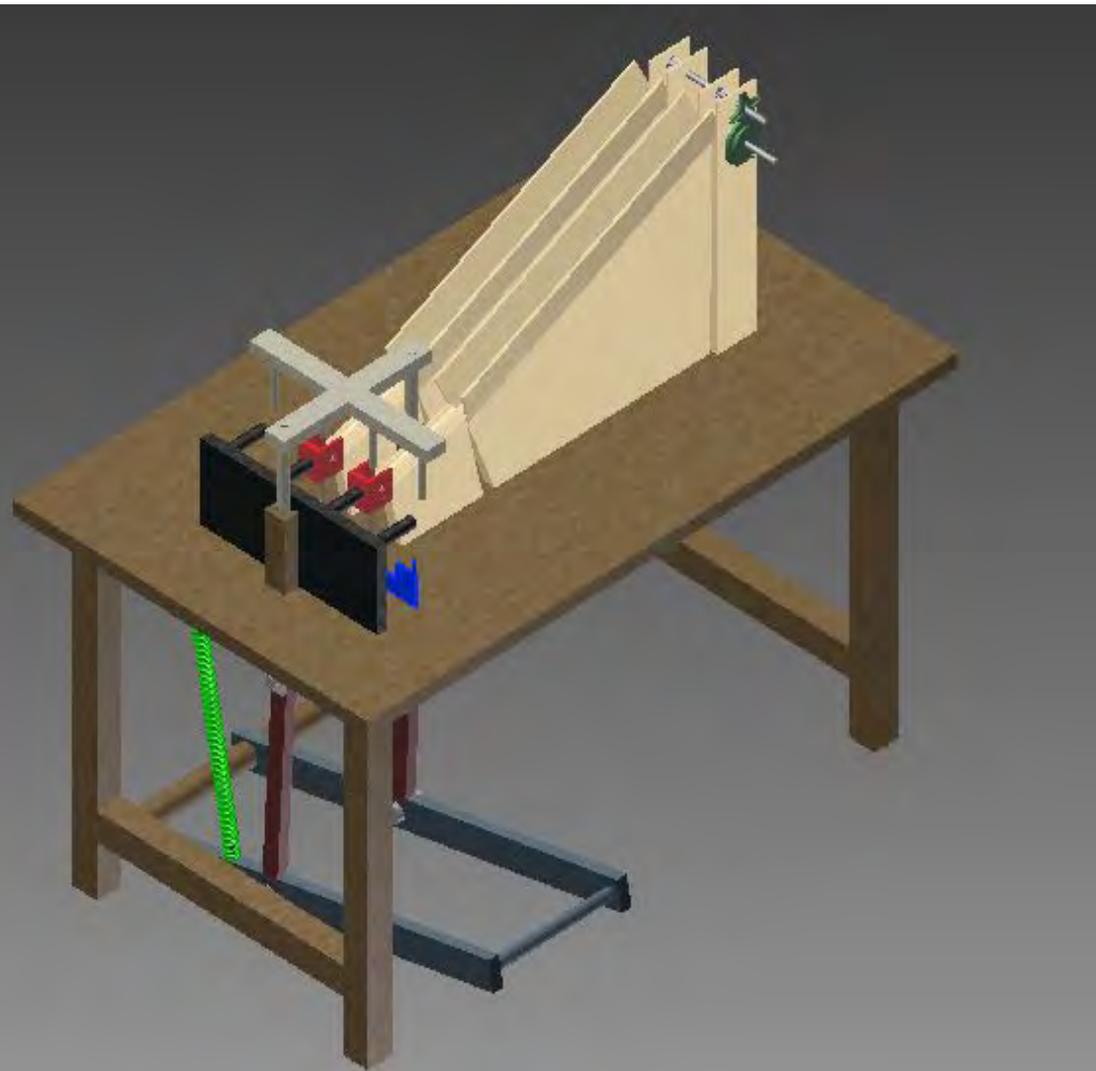
Initial Design



Earlier Proposed Design



Final Design



Major Parts

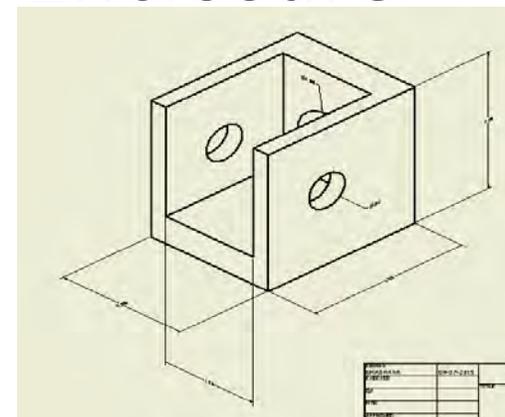
Foot Press



Punch



Enclosure



Capacity

Let us talk about the capacity of developed at IIT Kanpur. The main features of Amla Deseeding machine's capacity are :

- 4 Amla are deseeded at a time
- Relaxation time and feeding time- 2 second
- Time for settlement of Amla- 3 second (max)
- Handling time- 2 seconds
- Time for punching- 1-1.5 second
- Therefore, 4 Amla are punched in 8 seconds, hence 30 Amla per minute
- Increment in productivity is 6 to 7 times.

Technical Specification

Power & Force requirements:

- Force required for deseeding(4 Amla)- 120 N
- Force generated by foot press ~ 400 N *
- Losses in drive train – 10 to 12 %**
- Spring constant- 4434 N/m

(* when an normal adult human press the foot press gently)

(** Palestine Technical University Research Journal, 2014, 2(2), 19-24)

Product Characteristics

Benefits

- 4 Amla are deseeded at a time
- No need of pedaling all the time, just press whenever you needed
- Needs less maintenance (only oiling and cleaning time to time)
- Along with deseeding hard part is also removed
- Easily to assemble and dismantle for transportation

Limitations

- Do not divide Amla perfectly,
- Use of hand required at the end of each cycle

Prototype Costing

Cost Component	Cost (in INR
Table (5*3 feet wooden material)	5000/-
MS steel parts	1200/-
Stainless Steel parts	600/-
Springs (one pair 4000 N/m, one pair 100 N/m)	330/- (260+70)
Wood (For channels and other)	800/-
Other assembling parts	1050/-
Manufacturing cost	3000/-
Total	11980/-

Thank You