

Technology Improvements in Small Millet Processing by DHAN

Foundation

P. Saravanan

Team Leader & Project Manager



Scaling up Small Millet Post-harvest and Nutritious Food Products Project

Context

- Millets has received considerable attention in the last one decade from all stakeholders
- Regional value chains are emerging
 - Private players have been entering the sector in good numbers in some states
 - Mainly micro and small enterprises and few medium enterprises
 - Considerable number of millet FPOs being promoted
- Considerable Government support in some states
- ***Favourable situation for transition from 'niche foods' to 'mass foods'***
- Decentralised processing is the key link which needs to be established/strengthened



Processing equipment development

- Most of the components of SM processing machineries are improvised version of paddy processing machineries
- Limited scientific research inputs have gone into the same through technology transfer
- The equipment are not standardised
- Way out
 - Improving the existing machinery
 - Filling the gaps by new equipment development



Improving existing equipment

- Structured assessment of existing processing machineries



- Strengths and areas for improvement were identified for grader, destoner and huller
- Areas for improvement as a processing line was also identified



Summary of the assessment-

Focus areas that need attention

1. Improving the grader –a) Improve sieving efficiency b) Meet pre- and post-hulling segregation requirements of different small millet crops
2. Optimising the hulling technology to different crops
3. Improving the separation mechanism in hullers
4. Improving the post hulling machinery to separate unhulled from the hulled grains and to separate finer stones and mud balls similar in size and weight from rice and grits
5. Optimising the ‘process line’ for various scales for improving product quality, minimizing the cost of processing, and reducing pest incidence



Summary of the assessment-

Focus areas that need attention...

6. Reduction of the cost of the machines by reducing the foot print, height, weight and energy requirements
7. Improving the ease of use, ease of maintenance and servicing, and safety, considering the power requirements, skill requirements, and gender concerns
8. Improving the scale of the huller to meet the processing requirements at the SME level
9. Research on multi-product process line



Improvements made in existing equipment

Grader with interchangeable sieves to improve flexibility of operations

- To serve for pre and post hulling activities
- To serve for different small millet crops



Otake huller- good features shared

- Otake rice huller tested for small millets
- Identified as a model impact huller for small millets for the following advantages:
 - **Portable, energy efficient, light weight, higher hulling efficiency, women friendly, ease of cleaning & maintenance, need of less power for higher capacity and safety features**
- Advantages shared to manufacturers- AVM, Victor, Perfura, Vishwa & KMS



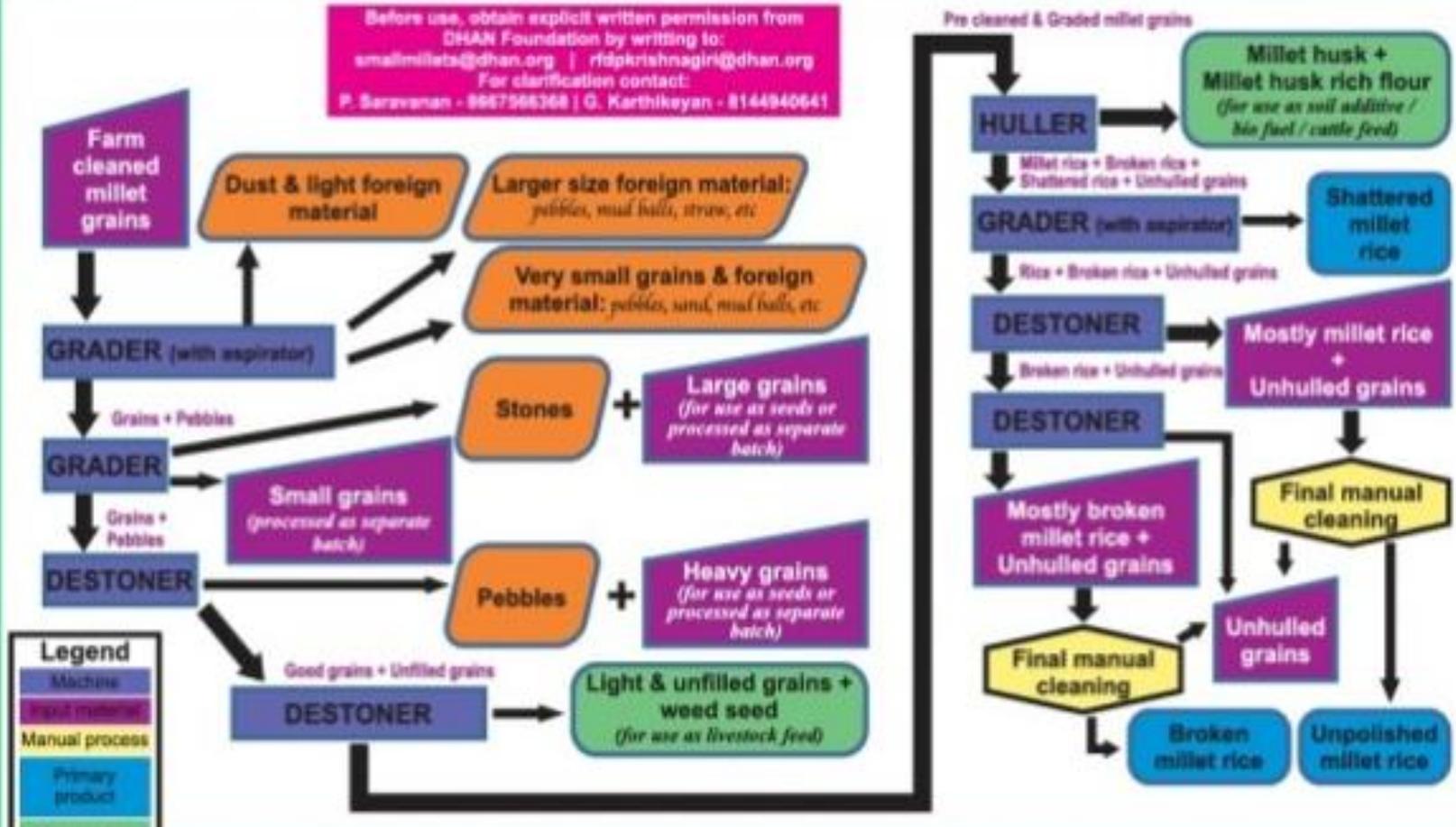
Otake huller- good features shared...

- Demonstrated at Salem, Krishnagiri, Virudhunagar, Bangalore & Madurai
- Inspired by its good features, AVM & Victor have already started modifications in their latest huller models
- Two processors have purchased



Community Scale Small Millet Processing Process Flow

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For clarification contact:
P. Saravanan - 8967566268 | G. Karthikeyan - 8144940641



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Additional equipment development- *Work in process*

Vibro Grader

- To improve performance of grading and to reduce the foot print, vibro-grader designed with the involvement of Dr.Samson Sotocinal of SAS Technologies, Canada
- A prototype has been developed and trials are underway



Pneumatic separator



Expected to improve pre-cleaning and separation in the post hulling stage



Other initiatives in process

- Test sieves

A set of 11 sieves with varying pore size was developed in order to find out the best size of sieve to be used in grader for efficiency in grading different small millets

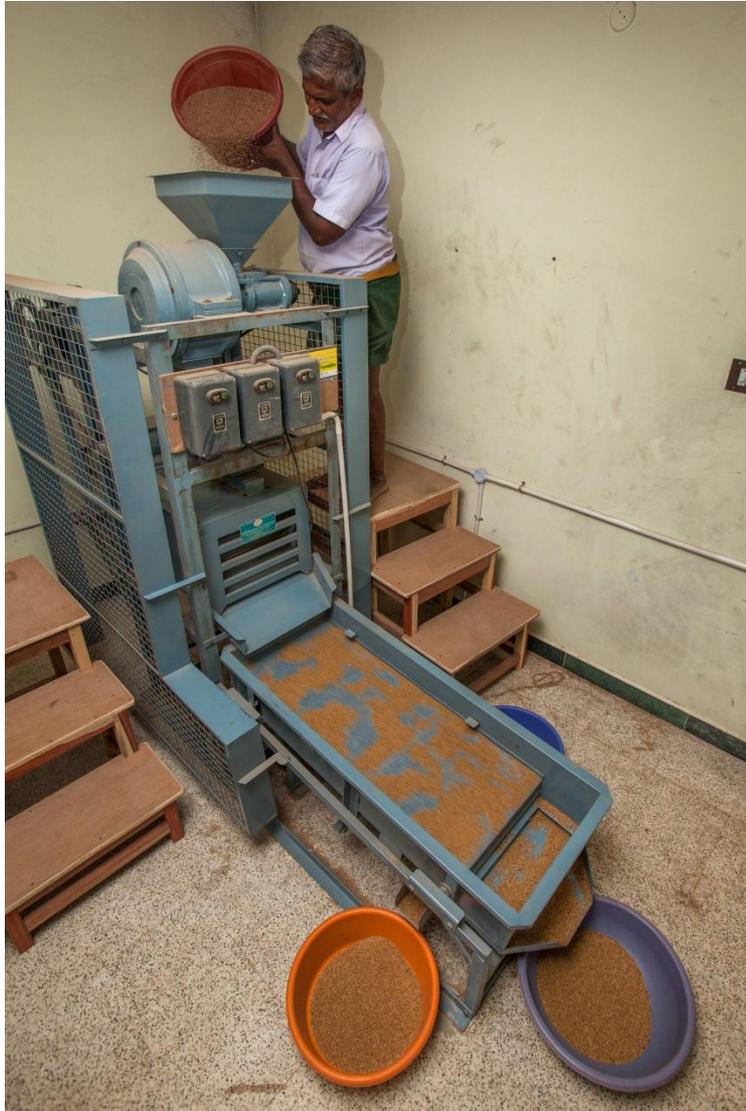


Portable Graders



Portable graders with wooden and metal frame were fabricated to help in farm gate separation of small millet grains from other impurities





Thank you!



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