

Development of Proso Millet Dehusker

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Introduction

The Proso millet (*Panicum miliaceum* L.) commonly known as *chino* in Nepali is an important minor millet crop grown in the hills and the mountain regions of Nepal. The de-husking of proso millet, therefore has been considered as a tedious and time-consuming work for people particularly for women. Traditionally in the rural areas of Nepal proso millet is dehusked (removal of outer coat of seed) in mortar and pestle (*Okhal*) by using muscular power. The power levels that can be produced by an average healthy athlete is 75W maximum (Modak and Bapat, 1987). The traditional method of processing takes 1 hour to dehusk 2kg – 3kg of Proso millet for two women. They can dehusked only 20-30 kg in a day by two women and cause lots of physical exertion to them.

Methodology

Considering the critical problems of processing of minor millet especially proso millet as traditional methods of processing is labor intensive and involves high women drudgery, project designed programs for designing and developing appropriate machine for processing, field testing and feedback collections (Figure 1). To simplify the processing of proso millet some bio-physical properties are studied at Agricultural Engineering Division of NARC, Khumaltar, Lalitpur. After conceptualization of dehusking principle by Agricultural Engineer a suitable prototype was fabricated at J.B workshop. Several tests were carried out and field performance evaluation and demonstration were carried out in Kharpunath Rural Municipality – 4 at Chhipra-Nalla, Humla. Demonstration sites were selected purposively in the project area of Humla with focus on processing of proso millet as it is an important crop to ensure food security and reduce drudgery of marginalized communities in Humla district.

Results and Discussion

Milling efficiency of the newly designed machine was found highest 75% at moisture content 10.4%.

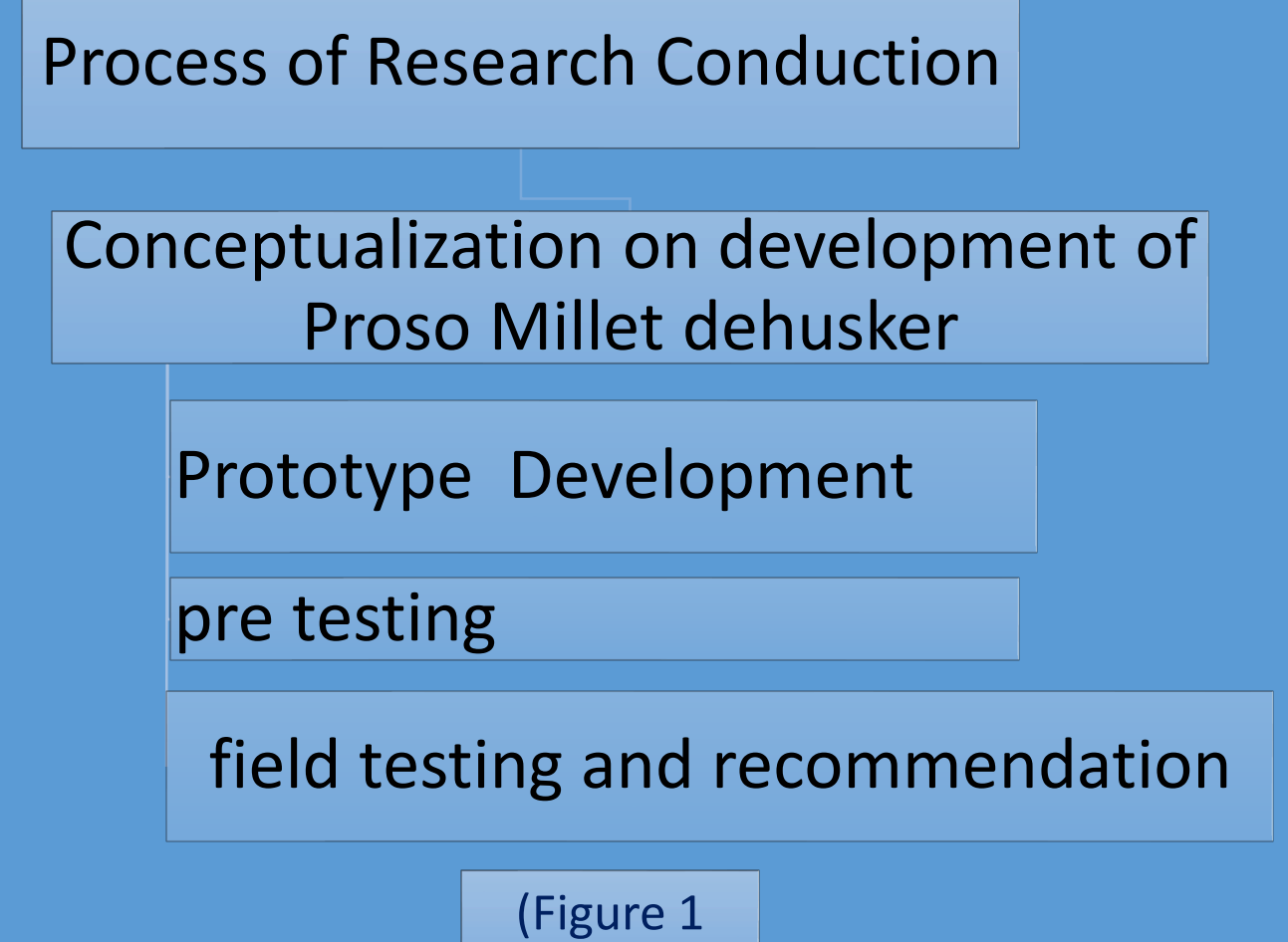
Dehusking capacity of Dehusker had low dehusking capacity at low moisture content. On an average more than 40 kg per hour was found during testing.

Dehusking efficiency of dehusker machine is higher for *dhudhe chino* compared to mixed type *chino*. Dehusking efficiency is higher for lime water treated proso millet. On an average dehusking efficiency is 90%

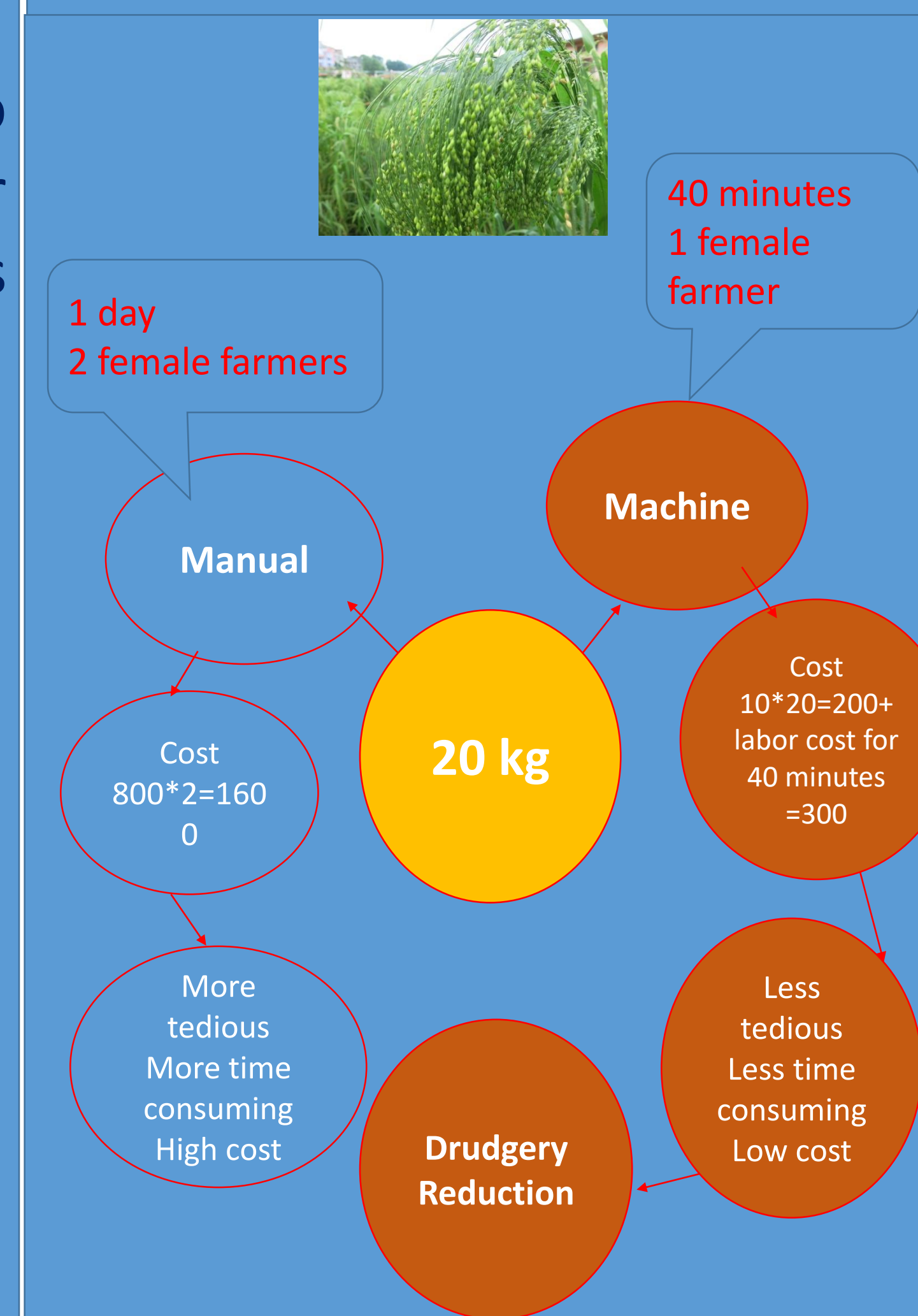
- Machine can be operated in the places where only single phase electricity supply is available.
- Not so heavy, simple, women friendly and can reduce the work load and drudgery.
- It can process/dehusk up to 200 kg per day.
- Same machine could be used to pearl the foxtail and finger millet also.
- Machine is strong enough, cheap and made in Nepal.
- Useful to process the chino which is locally grown in mountain areas.
- Beneficial to small as well as food processing entrepreneurs.

Conclusions and Recommendation

The design and piloting of proso millet thresher showed good results for simplification of processing of Dudhe chino variety of proso millet which is predominant in Chhipra area of Kharpunath rural municipality. The machine has provided a potential opportunity to save time, reduce drudgery of women and cost of processing and thereby promoting conservation, production and improving the value chain of proso millet. Currently, only one prototype is fabricated and tested in the field which is best suited for *Dudhe chino* and not for other hardy local varieties. Therefore, new prototype has been further designed and improved that is more efficient for all varieties of proso millet including also suitable for foxtail millet. The improvement includes enhancement of capacity and speed variation facility with modular design to transport in remote area. This has shown encouraging results in terms of efficiency and effectiveness which will be promoted in the mountain regions of Nepal where minor millets are important food crops.



(Figure 1)



Received fine grains of chino after the use of machine