



CHINESE RICE GRINDERS

IN SRI LANKA

Background

Rice is the staple diet in Sri Lanka. Rice can be milled to produce flour, which is used for a variety of popular food preparations. The most popular rice flour-based foods are hoppers, string hoppers, and pittu. Rice flour is also used to make traditional sweetmeats such as Kawun which are made for the New Year and other festive occasions.

Traditionally milling is done by women. Wet rice is placed in a *wangediya* (mortar) and is continuously pounded by a *molgaha* (pestle). This is a tedious and slow process (3-4 kg per hour) which can cause health problems (backaches and other spinal injuries).

There are also mills that produce ground rice flour and other ground grain products on a commercial scale (MDK, Ruhunu Grinding Mills, Harischnadra etc.).

In 1991, Practical Action (then called ITDG) conducted a survey on technology options that are in use in the market. Practical Action's observations showed that there are a number of grinding machines that are suitable for grinding dry materials. The FFC 15 model was found to be suitable for wet grinding and available. It is imported from China by Lanka General Trading Co. Ltd (successors to State Trading (General) Corporation). Udaya Industries (Kandy) has developed a similar machine with the same capacity. These models (the imported and locally fabricated models) are appropriate for small-scale enterprises.

The "FFC 15" grinder

This equipment (FFC 15) is a disk mill that is capable of grinding and sieving in one step. The machine has an electric motor and with 3 types of screens for different products. Inside the body of the machine, there is a rotator with steel teeth. The screens are placed around the rotator and the fineness of the product can be controlled by adjusting the screen placement. This grinder can be used for corn, soya bean, sorghum, potato chips, bean-cake etc. Practical Action field tested model FFC 15 for rice.

Three FFC models are available to meet different levels of production (See Table 1). They are simple, robust in construction, low maintenance and easy to operate.

The investors can hire the service to outsiders to earn extra cash. This type machine is ideal for a ground rice-based food producer. They would be able to get their rice milled at a low cost and good quality of the flour is also assured.

Advantages of the grinder

- This grinder is low cost and suitable for small-scale milling and easy to operate and maintain.
- Less work load and less time consumed as compared with traditional methods.
- The machine can be used for grinding grain in wet or dry conditions.

Technical details

Table 1: Capacities of FFC - 15 and other grinders available in Sri Lanka

	Udaya	FFC -15	FFC -23	FFC-37	FFC-45
RPM	1400	8000	5800	3600	3000
Outer diameter of rotor (mm)	150	150	230	370	450
Power required (kw)	1	1.1	3	7.5	10
Weight of machines	18	18	65	115	170
Production (kg/hr)	25	25*			
Cost (Rs.)	17,500	Not available	16,500		

* The capacity for wet rice is not given by the manufacturer. This is the average capacity of a user.

Operation

- The base of the machine can be fixed to a flat cement form or other solid supports.
- It is essential to check that all the nuts and bolts are securely tightened as vibration during operation will cause loosening of the nuts and bolts.
- Single-phase electricity with a 15-amp plug is required for the motor.
- It is also essential to use the correct type of screen depending on the required fineness of the product. Finest screen (.66mm) is used for rice, the medium screen (1.2mm) can be used for grains such as kurakkan (*Karakana elusina*) and green gram.
- It is essential to adjust the clearance between screen and the rotating teeth, which can be done easily with the valve provided.
- Materials should be sufficiently wet. The machine cannot be operated if moisture level is very high or low. (Soak in water for 10-12 hours and drain until grains do not stick to the palm when held downwards).
- It may require fixing an outlet chute with cloth to prevent dust collecting inside.
- A separate space/room maybe an ideal place to install the machine since particles are released to the air.

Maintenance

- Cleaning is required to prevent materials blocking the inner mechanisms of the grinder.
- Lubrication is important of movable parts. Oil and Grease levels should be checked periodically.

Suppliers

Note: This is a selective list of suppliers and does not imply endorsement by Practical Action.

Lanka General Trading Company Ltd.
No 100 Park Street
Colombo 2
Sri Lanka
(Imports Chinese grinders into Sri Lanka)

Udaya Industries,
Uda Aludeniya
Weligalla
Kandy
Sri Lanka
(Manufactures similar machines and
spare parts with 1 year guarantee)

Practical Action
The Schumacher Centre for Technology and Development
Bourton-on-Dunsmore
Rugby, Warwickshire, CV23 9QZ
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Tel: +44 (0)1926 634400
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technical brief