Lowcost mechanized stripper for peanut pods

MANY PEANUT farmers in Southeast Asia still strip peanut pods by hand. This adds to the labor of peanut production. Small-scale farmers in less industrialized countries cannot afford a standard peanut pod stripper, because of the cost.

Nowadays, many farmers are using two-wheeled tractors. The tractor engines are very versatile and can be used for different purposes on the farm. One more function has been added to the two-wheeled tractor and its engine - a peanut pod stripper which is mobile and easy to operate (Fig. 1).

Advantages of the technology

The stripper is efficient (see Table 1) and can quickly strip the pods off peanut plants. Since it is light, it can if necessary be operated by only one man. It is easily moved, so that the stripped peanut plants can be spread all over the field as green manure. It can be made by farmers themselves, out of materials and parts that are widely available locally. It costs little to make, and is low-cost to maintain.

The two main disadvantages are that the stripper may cause injury if it is used without caution. Also, the machine is not able to clean the stripped pods.

How the stripper works

The peanut pod stripper (see Fig. 2) is composed of a revolving drum with four rubber bands stretched at intervals from one side of the drum to the other. The drum structure has a central shaft which is fixed onto a wooden frame. The frame is then attached to the front bar of a two-wheeled tractor. The tractor engine rotates the drum by means of a V-belt. Peanut farmers can make the pod stripper at the local blacksmiths, using common equipment such as a hacksaw and a welding torch.

The drum

The drum is made of iron rods connected to a circular wheel with a double rim at either end. The outer rim of the wheel has a radius of 18 cm, while the inner rim is smaller.

Two thick strips of rubber, each 8 cm wide and 40 cm long, are cut from a used (non-radial) truck tire. One edge of each rubber strip is cut into a rough zigzag pattern. Two 2.5 x 35 cm^2 iron strips are used to hold each rubber strip in place lengthwise, using bolts and nuts. A bolt, with the open end outward, is then welded lengthwise to each end of each iron strip.

Fig. 1. Peanut pod stripper in operation

Food and Fertilizer Technology Center (FFTC)
14 Wenchow St., Taipei, Taiwan ROC
Tel.: (886 2) 2362 6239 Fax: (886 2) 2362 0478
E-mail: fftc@agnet.org Website: www.fftc.agnet.org

FFTC: An international information center for small-scale farmers in Asia

Cooperating agency for this topic:

Kitti Wongpichet, Somkid Thani, Kreinkrai Choprakarn and Somchai Palasan
Faculty of Agriculture, Ubon Ratchathani University,
Ubon Ratchathani, 34190, Thailand
Tel.:(66 045) 288 374-5 ext.2324
Fax: (66 045) 288 374-5 ext. 2150 and 2250
E-mail: kitti@agri.ubu.ac.th

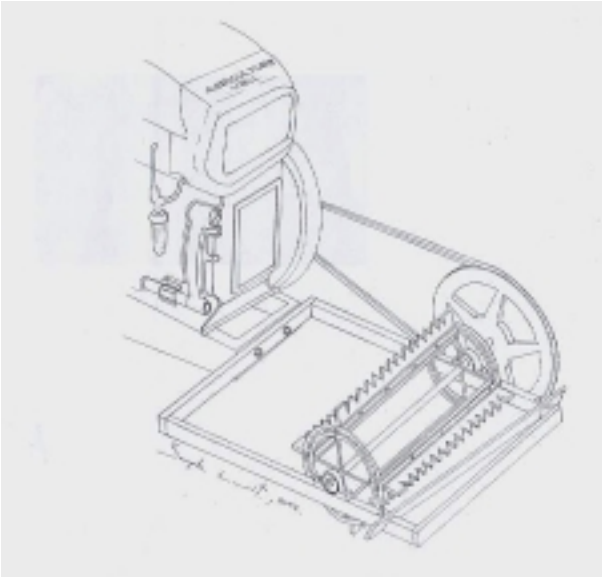

Fig. 2. Diagram of peanut pod stripper. Note the rubber strips with one edge cut in a zigzag rim

The drum is constructed by inserting the open ends of the bolts into the gaps between the outer and inner rims of the two wheels, with the zigzag edge outward, and the nut is only just tightened. All four rubber bands should be arranged equidistant around the drum, with the zigzag edge pointing slightly downwards, and then all nuts are tightened again.

A 60-centimeter shaft is inserted through the center of the circle and fixed. Each end of this central shaft is coupled to a bearing housing. At one end, the bearing housing is coupled slightly inward, leaving six centimeters clear at the end to allow space for a 10-inch pulley.

Wooden frame

A rectangular wooden frame, measuring 54 x 78 cm, is constructed to support the drum. One of the bearing housings is fixed to the wooden frame, and the pulley aligned to the pulley on the tractor engine. A V-belt is used as a transmission belt.

The back of the frame is attached to the front bar of the tractor, using nuts and bolts. To the front of the frame is fitted a slightly curved plank of wood, 64 cm long and 10 cm wide. This plank is attached close to, and almost parallel with, the drum, and can be moved.

How to use the stripper

After the pod stripper is attached to the tractor and the V-belt fitted, a plastic sheet is stread beneath the stripper, to collect the peanut pods. The edges of the plastic sheet should be slightly raised, to catch the peanut pods.

A crank is used to start the tractor engine, and the engine speed adjusted to the lowest possible speed. The drum structure with the rubber strips will then begin to rotate.

The operator should hold a bunch of peanut plants with the pods downward. He should shake them to loosen the dirt. This also helps to orient the pods downwards. He then pokes the plants in between the revolving rubber strip and the wooden plank. The peanut plants are first forced into the wide end of the gap, and then twisted left and right, and dragged into the narrow part of the gap (Fig. 1).

Precautions

The operator must be careful when feeding plants into the stripper, because there will be a strong pull from the drum. However, there is enough room for a hand to slip in without injury, and the rubber bands are flexible and relatively soft. Once the pods have been stripped, the bunch of peanut plants is pulled away.

The few remaining pods can be stripped off by hand, and the stripped plant thrown away. The operator then starts to strip a new bunch of peanuts.

This peanut pod stripper is still in the early stages of development, and some improvements may be needed to suit local conditions. For safety reasons, a guard may be needed on the V-belt. A bar set over the wooden plank, where the operator can rest one hand, may help to reduce his fatigue.

Table 1. Performance of mechanized peanut pod stripper, compared to manual stripping

Stripping method	Stripped pods (dry weight percentage)				Seed germination % after storage				
	Good		Discarded		No. days				
	Without pod stalf	With pod stalf	Broken	Immature	0	50	100	150	200
Hand	93	2	2	3	95	91	88	21	1
Stripper	80	13	3	4	93	87	82	13	1