

Research Reports

Low-Cost Implements to Improve Groundnut Production

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Improved cultural practices for groundnut have been developed at ICRISAT, based on the broadbed-and-furrow (BBF) system. A suite of low-cost bullock-drawn implements¹ is now available to enable farmers to form the BBF system easily and to carry out subsequent cultural operations. The design is simple enough for the implements to be fabricated in small workshops with locally available material. The central component common to all of these implements is a "T-Bar" made from either iron or wood. The iron T-bar consists of a square toolbar, formed by joining two angle-iron pieces (40 x 40 x 6 mm, 1.7 m long), and a drawpole made of iron pipe (50 mm diam). The wooden T-bar consists of a wooden plank (70 x 100 mm, 1.7 m long) and two beams. Standard C-clamps are used to attach implements to the iron T-bar, whereas specially designed clamps are used for attaching tools to the wooden T-bar. This allows farmers to carry out a range of operations using the implements described below.

Broadbed former. Two ridgers are attached to the T-bar at a spacing of 1.5 m. The ridgers make two 30-cm-wide parallel furrows on each side of a 1.2-m-wide broadbed. A chain can be attached behind the ridgers to smooth the top of the broadbed (Fig. 1).



Figure 1. Broadbed former on iron T-bar.

Broadbed former with fertilizer application attachment. Four furrow openers and a wooden

divider bowl, for manual metering of fertilizer, are attached to the T-bar of the broadbed former. This enables broadbeds to be formed, rows made, and fertilizer applied simultaneously in one operation. If fertilizer is already mixed into the soil, and seeds are to be dibbled manually, this implement can be used for making broadbeds and marking the rows.

Interrow weeding attachment. Three duckfoot sweeps are attached to the T-bar of the broadbed former and used for interrow weeding. The duckfoot sweeps cultivate the interrow zone in the crop, while the ridgers remove weeds from the furrows and deepen them (Fig. 2).



Figure 2. Interrow weeding attachment on broadbed former.

Groundnut planter. A four-row planter developed for groundnut is mounted on the T-bar, along with a pair of small wheels and four furrow openers. The planter consists of a seed box containing four seed-metering plates, a ground wheel drive, and a frame to support this whole unit on the T-bar. The drive wheel can be held in the lifted position during transport. A chain is attached to the shanks of the wheels to cover the planted rows.

Evaluation. An experiment was conducted to evaluate the performance of these implements. The average (actual) field capacity of each of the implements was about 0.2 ha h⁻¹.

Other useful implements for groundnut production are: a twin spinning-disc knapsack sprayer (IAN 2:14) and a groundnut digger for dry and hard soil conditions (IAN 3:17).

1. Use of the implements on the T-bar is not limited to groundnut; the implements can be used for other dryland crops as well.