

Fertilizer Band Placement Drill

Background

In Pakistan, phosphate fertilizer in wheat is conventionally applied by broadcast method before sowing crop. This is a wasteful method of fertilizer application as only 15-25% of the applied phosphate is utilized by wheat crop.

The seed-cum-fertilizer drills currently used in Pakistan place fertilizer either too far from the seed or in direct contact with it. In the former case, fertilizer use efficiency is hampered and in the latter situation, relatively high rate of ammoniated phosphate fertilizer (like DAP) affects the seed germination and crop yield.

A fertilizer band placement drill was conceived, designed and developed at agricultural and biological engineering institute (ABEI) in 2002. The drill was developed and tested for three consecutive years 2003-2006. This drill places fertilizer 5cm away and 5cm deeper than the seed.

Why Fertilizer Band placement

- In-efficient use of fertilizer (phosphorus)
- To save 50% phosphate fertilizer application
- To increase wheat yield by 10%
- Employment generation

Issues/Challenges

- The conventional seed-cum-fertilizer drills place fertilizer either too far from the seed or in direct contact with it.
- Hence, fertilizer use efficiency is hampered and in the later situation, relatively high rate of ammoniated phosphate fertilizer (DAP) affects the seed germination and crop yield.
- Improper placement of fertilizer
- High input costs

Implementation Strategy

- PARC has developed fertilizer band placement drill and has signed agreements with two local manufacturers for production and commercialization of this drill.
- More than 8000 units are in operation and using this technology country is benefitting Rs 6760 million per year.
- Up-scaling of machine in Khyber Pakhtunkhwa, Sindh and Baluchistan will be carried out by involvements of manufacturers and farmers.
- Training of drill operators and farmers in terms of operation and calibration will be carried out.
- Awareness campaign will be lunched to popularize resource saving innovation.
- A subsidy program will be proposed for farmers to pay 50% of the cost.



Benefits

- This drill saves 50% phosphate fertilizer compared with broadcast method.
- The crop roots utilize fertilizer very effectively and wheat crop utilized 60-70% applied phosphate applied on wheat crop.
- About 10% more grain yield by using this drill for wheat sowing.
- Comparatively fertilizer band placement technology saves Rs 4300 per acre as of the broadcast method of fertilizer application
- Current annual benefits could be increased from Rs 7000 million/annum to Rs. 14000 million/annum by up scaling this technology