

### **A multipurpose cage wheel with floating lugs for Four Wheel Tractors.**

The performance of a Tractor depends on a number of parameters but the soil surface on which the tractor operates is the main factor affecting efficient or inefficient operation. It is already well understood that a tractor with ordinary high lugged rubber tyres performs poorly in wetland operations due to slip and sinkage. Therefore, four wheel tractors that are operated in the saturated or flooded conditions often require special devices called 'Cage Wheels' attached to the rear wheels.

A Multipurpose Cage Wheels with Floating lugs for four wheel tractor were designed and developed to provide easy road transportation and to improve performance in wetland operations. A pair of cage wheels were constructed after testing first wheel and implementing necessary modifications. The developed wheel consists of a main mounting ring and 12 Floating lugs .

Two experiments were conducted in two locations (dry and wet soil conditions) to compare the performance of the developed wheels with conventional cage wheels. Effective field capacity, time per hectare, travelling speed , travel reduction , the pull developed at 100% slip and wheel cost were considered in evaluation .

From the results, it was observed that the performance of designed cage wheels were significantly higher in both locations. Increase in pull and power of the developed cage wheel over conventional was about 1.5 and 1.3 in both soil conditions, respectively.