Agricultural Mechanization Division

- Animal drawn and tractor operated farmyard manure spreaders have been developed. The field capacity and the field efficiency of animal drawn spreader was 0.19 ha/h and 83% at operational speed of 2.4 km/h, whereas for tractor operated farmyard manure spreader, the field capacity was 0.6 ha/ h at the speed of 4 km/ h.

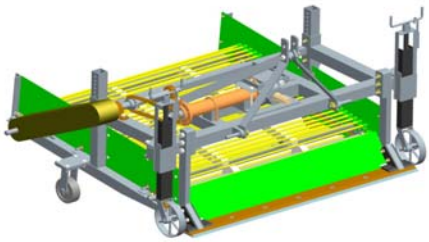

- Power tiller operated and self-propelled intra-canopy sprayers have been developed. The effective field capacity of power tiller operated canopy sprayer was 1.46 ha/h, at a travel speed of 1.31 km/h. The actual field capacity of the self propelled machine was 1.06 ha/h and 0.95 ha/h in the plots of cotton and pigeon pea crops with field efficiency of 64.2% and 59.4%, respectively.


- Tractor operated 4-row punch planter has been developed.

- A power operated continuous type pot filling machine, capable of mixing, pulverizing, sieving, and filling potting mixture in polybags at desired quantity for horticultural nursery has been developed and evaluated in collaboration with Indian Institute of Spices Research, Calicut. The machine has a working capacity of 200 bags/h (or 100 kg/h), achieving a savings in cost and time of 71.4 and 80.2%, respectively over the conventional method.

- A prototype of onion harvester has been developed in consultation with DOGR, Pune. The field capacity of the developed prototype was found to be 0.20 ha/h. The use of the harvester saved 50% of harvesting cost as compared to manual method.

- A tractor operated straw combine was designed and dev eloped in collaboration of M/s Rattan Agro Industries, Moga, Punjab. With the developed system, the output capacity of the machine was 730 kg/h against 600 kg/h in conventional system (saving of 130 kg/h).



- A prototype of proximity sensor based 5-row tractor operated seed drill has been developed and tested under field condition.

- A laser sensor based on/ off type single row herbicide applicator has been developed.

- A dynapod has been designed and developed for operation of any rotary type machine using human power in the most efficient way. The dynapod was evaluated for operation of a hand operated rotary maize sheller. The shelling capacity of maize sheller when used with dynapod increased by about 60% over hand cranking method while drudgery in its operation reduced by about 67%.

- A tractor operated turmeric harvester has been developed and evaluated. The mechanical harvester performed better with harvesting efficiency of 98.5 at soil moisture content of 15.50 per cent (db) with about 2 per cent damage

- Adoptive field evaluation trials were conducted on rice mechanization equipment, namely manual direct seeder for pre-germinated paddy in puddled soils, manual rice transplanter with mat type nursery, manual cono-weeder and self propelled vertical conveyor reaper in 40 farmers fields.

- Banana desukering tool (hand operated) has been developed.

- Full banana clump removal equipment attached to a light weight power tiller was developed in collaboration with the manufacturer, M/s Anusham Farm Machinery and Power Equipment limited, Gobichettipalayam, Tamil Nadu.

- Sugarcane bud chipping machine- Pedal operated and pneumatically operated has been developed for extraction of bud chips from Sugarcane in collaboration with Sugarcane Breeding Institute, Coimbatore.

- A tractor operated planter for sugarcane bud seedlings in polybags has been developed in collaboration with Sugarcane Breeding Institute, Coimbatore.

- A prototype of the rotary slit drill has been developed and evaluated for sowing of rice, soybean, maize, chickpea and sunflower under residue condition. The field capacity of developed unit was 0.41 ha/ h with 72% field efficiency.

- A prototype of tractor operated baler with the reaping attachment was developed with the help of indigenous baler manufacturer M/s Kartar Agro Engineers, Bhadson, District Patiala, Punjab. Field capacity of baler was 0.39 ha/h at operating speed of 2.99 km/h.

- A three row improved manual rice transplanter which simplifies the planting operation with reduced energy requirement of 24.8% over the six row IRRI manual transplanter has been developed.

- Plastic mulch laying machine was refined. The capacity of the machine is 0.37 ha/h and its estimated cost is Rs. 65000/-.

- Animal drawn tool carrier was modified for sowing and planting of wheat and pea on raised beds.

- A tractor has been modified to provide front PTO for convininent power availability to front mounted equipment. Portal housing along with narrow width tyres has been adopted to enhance its versatility to use in raised bed condition.

- Modification of manual cono weeder for paddy in terms of design of handle and plastic rotor was carried out to make it more effective in weeding operation and also to increase its life and for ease of manufacturing

- Modification in improved drum seeder for pre-germinated paddy and manual rice transplanter was taken up to suit SRI (System Rice Intensification) method of rice cultivation. Modified drum seeder (power operated) for dry sowing of paddy in uplands of Kerala was developed.

- The compiled data of 79 anthropometric and strength data has been published in the form of a book for the benefit of machinery designers.

- A survey has been completed to assess agricultural accidents occurring in Madhya Pradesh Considering the severity and causes of accidents safety packages were identified for tractor-trailer, thresher, sprayers, chaff cutter and electric motors.

- Safety gadgets such as chaff cutters, lighting system with turning indicators for tractor trailers, personal safety wears for sprayer operators were developed/ evaluated to minimize accidents in agricultural activities.

- Based on the efforts for sensitization of stakeholders, Government of Madhya Pradesh has announced a compensation schemes to provide compensation benefits to agricultural accident victims / their families.

- Anthropometric data on Indian agricultural workers have been taken and relationships developed for design of appropriate tools for reduced drudgery in man-machine system and gender specific situations.