

**Address**

Vill: Shendurni  
Tal: Jamner, Jalgaon  
Maharashtra

**Scouted by**

North Maharashtra University



## Tricycle mounted sprayer<sup>73</sup>

### CONSOLATION

**Subhash Vasantrao Jagtap** (55), hails from Shendurni in Jalgaon, Maharashtra. His formal education ended with the seventh standard. He is a local fabricator and has a workshop named Sachin Welding Works in Shendurni. He has been engaged in this work for the last 25 years. He is married and has two sons and a daughter. He has a monthly income of Rs.3000.

**Genesis** Carrying heavy cylinders of pesticide on the back and spraying continuously by hand on the fields is a tedious and back breaking practice. Once during the spraying season, Subhash was discussing the problems faced by a farmer while spraying. The major problems are the weight of the structure the farmer has to carry on his back and secondly, the irritation and skin diseases caused due to direct contact with the pesticides. Then the idea struck him of developing a mobile spray pump that would solve both these problems.

He used an old throw-away bicycle and household utensils to develop a prototype of the mobile spray pump. He purchased two 16 inch wheels. He indigenously fabricated the chassis out of household utensils and the pump out of brass utensils because the components he required were not readily available in the market. He also bought some spare parts from the local market and fixed them on the cycle. He went through various steps in developing this innovation. Sometimes he failed but after about nine months he succeeded in making the final prototype.

Subhash also mentions that he took inspiration from the 'Kisan King' hand driven sprayer developed by Gopalbhai

Surtia, consolation award winner of the Third National Grassroots Technological Innovations and Traditional Knowledge Competition conducted by NIF. Subhash saw a model of this in an exhibition, held in Pune in 2002. He thought about the shortcomings in that model and improved upon it by indigenously fabricating the components of the sprayer and introducing the spray drive engagement and disengagement feature as well as the ability to spray horizontally as well as vertically. He recollects that his family was initially hesitant about his idea because the innovation was affecting his regular work and income but once he succeeded they felt very happy and proud that he has created something new, different from his routine work. There were also a number of comments when he was working on the idea that this was a very simple device, but he did not let any of this affect him as he has complete belief in his creativity.

**The Innovation**

The unit needs to be pushed by the user. The wheels are attached to the chain and sprocket arrangement through the axle of the wheels. A chain-sprocket drive transmits the motion from the axle of the wheel to drive the pump which can be engaged or disengaged by a shifter

mechanism. When it is engaged with the sprocket, the pump starts reciprocating with the help of the four bar mechanism attached to the axle. This reciprocating motion generates the pressure inside the pump and imparts momentum to the fluid and this is sprayed with the help of nozzles. This neutral gear acts as a switch to get the liquid supply whenever desired. When it is disengaged from the sprocket, the pump is free and the structure can be moved without spraying any pesticides and hence the farmer can take the mobile spray pump anywhere without the fear of wastage of the pesticides.

#### **Advantages**

The entire unit is simple in its structure and easy to repair and maintain. The tank attached to the unit has a capacity of 25 litres. The advantage of the device lies in its easy manoeuvrability and ease of operation. The cost of this unit is about Rs. 5000. Another advantage is that the spray boom can spray both horizontally and vertically and in addition to the boom there is a flexible pipe which can be used to spray trees and tall crops. The product can be effectively used in fields with hard soil, low crop length and a distance of three to four feet between the rows for e.g. cotton, peas etc.

#### **Current Status**

He has fabricated a prototype of the innovation and leases the unit to the farmers for spraying pesticides on their fields. He has taken the innovation to North Maharashtra University and it has been tested at the Godavari College of Engineering, Jalgaon. It got a good response wherever it was shown. He was also felicitated by his community at various functions and meetings and he claims with pride that now people know that in his workshop something new is always being made. This innovation has been covered in the newspapers but he has not sought any publicity. Local experts also have heard about the innovation and think that it will be useful. They feel that it is different from existing

devices as it has a good water tank capacity and three nozzles. He wishes to transfer the technology to an entrepreneur who is ready to purchase the technology.

#### **An innovative family**

Subhash Jagtap possesses good analytical skills and has indigenously developed many fabricating machines. He has also developed a forging machine, drilling machine and a plywood-cutting machine in his own workshop to suit his requirements. Subhash is currently working on a device that will be operated with the help of bullocks and which would use the weight of man and bullocks to operate a pump and lift/fetch water. His dream is to keep on making devices which are useful for the common man.

Subhash takes after his father in his innovative spirit. His father was a turner in Indian Railways during the time of the British. At the age of 16 years, his father succeeded in making one important part for the railways and from that day he was selected by the railways. Since he was under age he was asked to wait for a couple of years before entering in service. During his service, his father was rewarded many times for his outstanding work.

#### **Mentoring**

Jagtap has also helped his farmer friend, Gopal Bhise, recipient of consolation award in the Second National Grassroots Technological Innovations and Traditional Knowledge Competition conducted by NIF. Bhise had developed a multi-purpose farm implement fashioned out of inexpensive bicycle components. Various attachments connected to this device enable it to be used as a bicycle weeder, tiller and harrow. This device is very easy to operate and is ideally suited to the needs of marginal farmers who cannot afford to maintain bullocks. Subhash Jagtap had helped Bhise in manufacturing this device and also in motorizing it.