

Farmers knowledge on input usage and its effect on environment

V Shubashree¹, S Senthil Vinayagam^{1*} and K Akhila¹

¹ICAR-National Academy of Agricultural Research Management, Hyderabad, Telangana 500 030

Agriculture sector plays key role in enhancement of economic growth and environmental sustainability. Paddy, maize, cotton, tobacco were major crops grown in India. Maize and Tobacco were the third most important commercial food crop and commercial crop in the world respectively. Paddy is the only source of income for majority of people in our country. India is one of the largest producers as well as exporters of cotton yarn. The efficient usage of inputs aids to facilitate optimum growth and maximum yield. Now-a-days the farmers should be aware regarding usage of inputs specifically water requirement, nutrient uptake, pesticide usage etc. The present study reveals the farmers knowledge on water requirement which includes cost of irrigation service, economic factors, education and technical factor, social factor, legal and institutional factor. It also revealed that tobacco farmers who contributed 52% of the total farmers surveyed have taken up soil test with the support of crop institutions, corporates and thereby following soil test-based fertilizer recommendation for tobacco and one third of the farmer's had knowledge about the pesticide usage was due to the marketing activities of the companies. Most of the farmers were having personal protective equipment's. The major challenges include runoff of fertilizers and adding up to water table, eutrophication, algal blooms, harm to human and animal health on use of pesticides.

Keywords: Crops, Environmental impact, Farmers, Inputs, Knowledge

AGRICULTURE inputs contributed significantly to increase agricultural growth in the country and helped the country become sufficient. However, in the process of meeting the immediate food requirements, the agri-input policies and the marketing activities encouraged the farmers to overuse or wrongly use the inputs leading to some negative consequences. The environmental impact of agriculture is the effect of different farming practices on the ecosystems around them, and how those effects can be traced back to those practices. The environmental impact of agriculture varies based on the wide variety of agricultural practices employed around the world. Ultimately, the environmental impact depends on the production practices of the system used by farmers. The recent intensification of agriculture

especially attributed by the use of various agricultural inputs like excessive use of water, fertilizers and pesticides that have detrimental effects on environment.

Farmers knowledge on input usage and its effect on environment in Mysore

A study was conducted regarding farmer's knowledge on usage of inputs and its effect on environment for the selected major crops grown (paddy, maize, cotton and tobacco) in the Mysore district. Stratified Multi stage designing method is used to draw the samples. Here the strata is taluks of the Mysore district, the villages are taken as the first stage, and farmers are considered as the second stage. The survey instrument used for the study is a structured schedule consists of the questions regarding the farmer's knowledge and usage of various inputs that has

an effect on the environment for the crops like cotton, maize, paddy and tobacco. A total of 100 farmers were surveyed, consisting of 30 farmers having mono-cropping system, 24 farmers are cultivating two crops, 30 farmers are cultivating three crops and 14 farmers are cultivating four crops and they were found to cultivate multiple crops during the complete cropping season. Twelve villages were covered that came under 5 major complexes of Mysore namely H. D. Kote, Ramanadhapura, Periyapatna, Hunsur and Kamplapura.

Farmers knowledge on water requirement

The seasonal water availability that directly depends on factors, rainfed or irrigated crop is the prime that influences the usage pattern. This is followed by environmental and physical conditions of crop

growth, these which are influenced by land pattern, climatic condition, precipitation, soil moisture, physical look at the field and the physiological perception of the farmer (Fig. 1).

- Cost of irrigation service like the purchase of motor, cost of diesel for motor during use, purchase of water tank in case of any rainfall failure during transplanting, charges for electricity if any were influenced next to previous factor.
- Economic factors which include increasing government loans to buy new irrigation systems (subsidy provided by the government agency), increase government investments, and Paying financial facilities were statures fourth in the order of factors.
- The Education and technical factor which had the criteria like encouragement to attend training classes, use of modern methods like pressurized irrigation system and one time irrigation was identified in the primary survey. Agriculture department based extension activities on demonstration of new technologies and knowledge creation was based on the planned budget which has led to localized knowledge. Corporates and crop institutions have adopted villages and planned activities for development of sustainable agricultural practices as a part of corporate social responsibility which comparatively had a better reach to villages in Mysore district. The use of pressurized

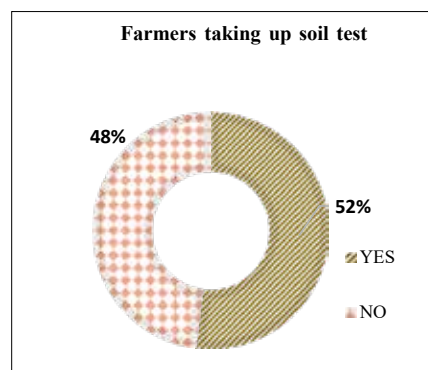
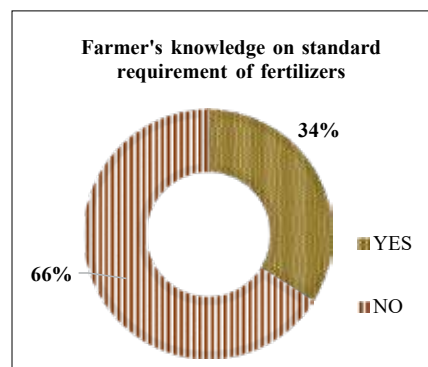
irrigation system was observed in the form of usage of sprinklers. The bore wells were installed in case of requirement of water on average of 600 ft in the villages surveyed.

- The criteria that influenced next on water usage pattern was social factor that includes integration of lands to avoid wasting of water and forming association of people or group for conserving water. It was observed that there was an involvement of farmers which was initiated as village activity and at times supported by corporates in few villages.
- The last criteria of influence was legal and institutional factor penalizing unauthorized canal users, installation of meters on water wells, improving the dredging aqueducts, shortening basic channels for transporting water, making the streams ferro concentrate and preventing water waste in canals. There was no observation of the factors mentioned above hence, the least priority that influenced usage pattern.

Farmers knowledge on nutrient usage

The farmers' knowledge on the standard requirement of fertilizers was identified and depicted on the Fig. 2. It shows that 34% of the farmers know about the standard nutrient recommendation and follow them whilst 66% don't know the right requirement. But still there are 18% of the farmers who follow the standard requirement because influence from the neighborhood.

All the tobacco farmers who contributed 52% of the total farmers surveyed have taken up soil test with the support of crop institutions, corporates and thereby following soil test based fertilizer recommendation for tobacco.



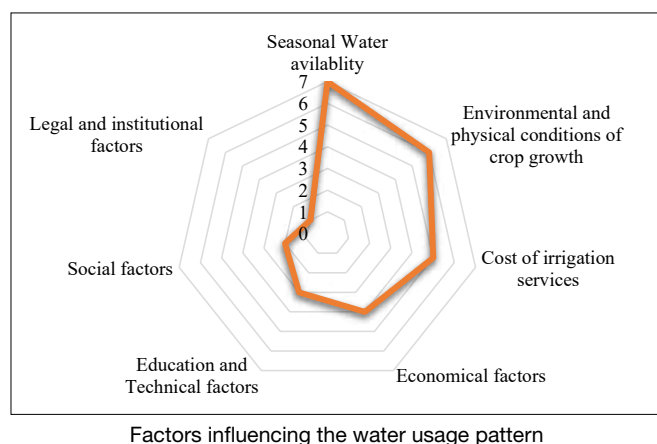
Farmers knowledge on standard requirement of fertilizers and farmers taking up soil test

Use of bio fertilizers, bio pesticides, micronutrients and FYM (Farm yard manure)

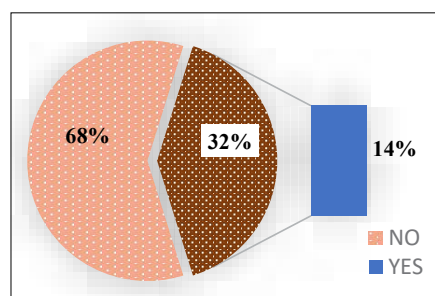
- Out of the total farmers surveyed, only 6% used micronutrients based on the soil recommendation.
- All the farmers used minimum a tractor load of FYM that attributed to 3-4 tonnes at the start of the season for effective soil conditioning.
- No use of bio fertilizers was observed during survey.
- There was no knowledge or awareness on the benefits or application of bio-fertilizers.
- The incidence of pests was controlled by cultural methods and Ginger farmers who used the highest pesticides were unaware of the applications and benefits of bio-pesticides.

Farmers knowledge on pesticide use

The farmer's knowledge on pesticides usage was identified using the survey analysis and it was concluded that 68% had very less knowledge on pesticides, whereas 32% had the knowledge about the pesticide. The awareness



was due to the marketing activities of the companies. An interesting result showed that only 14% of the surveyed knew the exact name of the agrochemical and its uses (Fig. 3).

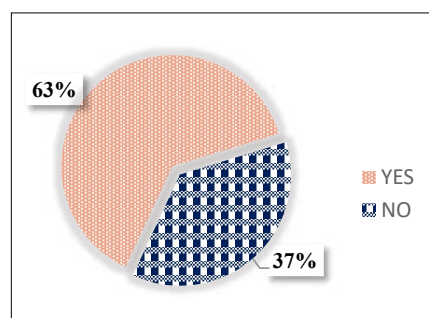


Farmers knowledge on pesticides and its uses

Use of personal protective equipments

The personal protective equipment, commonly referred as PPE is worn to minimize the exposure to various hazards. PPE in agriculture uses items such as gloves, boots and face masks to protect the farm labours during pesticide spray. The 63% of farmers possessing PPEs and 37% were not (Fig. 4).

It was also identified that all the tobacco farmers had PPE which was provided despite their usefulness to them as an initiative by the crop institutions. The knowledge about label reading and understanding was surveyed and results were such that only few farmers know about the harmful nature of pesticide and none of them to understand the label. They also had no idea about its effect on the environment.



Farmers possessing personal protective equipment

SUMMARY

Development of agricultural policies in many developing

countries emphasize external inputs as means of increasing crop production. The farmer's knowledge regarding the standard requirement of fertilizers, soil testing and the ability to follow them was assessed. It was observed that farmers were aware of the fertilizer recommendations and various practices for maintaining soil fertility. To increase agricultural production, pest control is necessary, mainly in the tropics due to pest diversity and high crop losses. The farmers are also aware regarding the pesticides, its uses and safety measures followed during application. From the study, it was also analyzed that the personal protective equipment, commonly referred as PPE which is worn to minimize the exposure to various hazards were used by all the farmers especially tobacco farmers, while spraying plant protection chemicals.

*Corresponding author email: ssvinay1@rediffmail.com

HANDBOOK OF FISHERIES AND AQUACULTURE



Fisheries is a sunrise sector with varied resources and potentials. The sector engages 14 million people at the primary level and is earning over ₹10,000 crore annually through exports. Fish consumption has shown a continuous increasing trend assuming greater importance in the context of 'Health Foods'. It is expected that the fish requirement by 2025 would be of the order of 16 million tonnes, of which at least 12 million tonnes would need to come from the inland sector and aquaculture is expected to provide over 10 million tonnes. The domestic market for fish and fishery products is also growing rapidly and necessary models and quality control protocols in this regard need to be developed.

In 2006, the Indian Council of Agricultural Research, brought out the First Edition of 'Handbook of Fisheries and Aquaculture'. The present revised edition comprises 42 updated and six new chapters, viz. Fish physiology; Aquaculture engineering, Fisheries development in India; Fisheries cooperatives; Demand and supply of fish; and Climate change - impact and mitigation. The Handbook would be of great value to students, researchers, planners,

farmers, young entrepreneurs and all stakeholders in fisheries and aquaculture.

TECHNICAL SPECIFICATIONS

Size : Royal Octavo (16 cm × 24 cm) • No. of pages : i-x + 1116 • Price : ₹ 1500 • Postage : ₹ 100
ISBN No. : 978-81-7164-106-2

For obtaining copies:

Business Unit

Directorate of Knowledge Management in Agriculture
Indian Council of Agricultural Research
Krishi Anusandhan Bhavan-I,
Pusa, New Delhi 110 012
Tel : 011-25843657, Fax 09-11-25841282;
E-mail : bmicar@icar.org.in

SCAN QR Code to Purchase Online

