

## Transitional and perceiving concepts on herbicide uses – a case study

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### ABSTRACT

The study was conducted in the year 2004. It reveals that farmers are cautiously tilting towards chemical control of weeds. The negative aspects have some effect on adoption of herbicides. Though the consumption pattern shows the positive trend. Mostly they are concerned with the weeds namely *Cynodon dactylon*, *Cyperus rotundus* etc., but the adopted doses are far below the recommended doses. More extension efforts are to be taken to accelerate the diffusion-adoption process.

**Key words:** Socio-economic, Technology gap, Adoption etc.

Weed is mostly concerned with the systematic cultivation of a specific crop. Weeds are undesirable plants that shares everything from that crop. That should be controlled for enhancing the productivity. It is astonishing to note that weed causes loss of agricultural produce to the tune of 45 per cent. But farmers are not so serious about chemical control of weeds. In fact, in the universe each plant has some beneficial effect. But in order to maintain the food security and to prevent loss, besides other methods, chemical control measure should be taken into consideration. It is well understood that if the crops are free from weeds, the occurrence of pests and disease will be less too. Good Agricultural practice (GAP) advocates that use of chemicals should be under permissible limit. Though the extent of adoption of herbicides among farmers is not very encouraging. Therefore, it is essential to have vision backed up with appropriate action in participatory technology development; dissemination coupled with raising the adoption level of chemical measures among marginal, small and big farmers to achieve success.

Keeping the preceding discussion in view an attempt was made to probe deeply into the matter with the following objectives :

- To study the farmers socio-economic characteristics and their weed control measures
- To estimate the extent of use of herbicides

- To measure the technology gap of herbicides doses.
- To understand the impact of herbicides used.

### Methodology :

The study was conducted in the North Chandamari Village of Nadia district. All the information collected through participatory technique as well as a semi-structured method of data collecting device were also administered. It has been understood while exercising participatory tools that almost twenty five per cent i.e. 160 farmers of the study area are using herbicides out of that 40 farmers i.e., twenty five per cent have been selected randomly as the respondent for the present investigation. Personal as well as group interview method was employed for data collection.

The technology gap was calculated with the following formula :

$$T_G = \frac{R - A}{R} \times 100$$

where ,  $T_G$  = Technology gap;  $R$  = Recommended dose; and  $A$  = Adopted dose

Descriptive statistics (frequency table, simple percentage and mean) were used to analyze the data.

**TABLE 1 SOCIO-ECONOMIC PROFILE OF THE RESPONDENTS**

(N = 40)

S. E. Characteristics	Frequency	Percentage
<b>Age (Years)</b>		
21 – 30	2	5.00
31 – 40	11	27.50
41 – 50	20	50.00
51 – 60	4	10.00
60 and above	3	7.50
Mean 45.4		
<b>Education</b>		
None	9	22.50
Primary	7	17.50
Junior high	13	32.50
Secondary	11	27.50
Mean 5.4		
<b>Holding size (bigha)</b>		
1 – 5	16	40.00
6 – 10	15	37.50
11 – 15	7	17.50
16 – 20	2	5.00
Mean 7.5		
<b>Family size (Nos.)</b>		
Less than 5	16	40.00
Above 5	24	60.00
Mean 4.85		

It is evident from the Table – 1 that majority (77%) of the respondents were between 31 and 50 years of age only 5 per cent were between 21 and 30 years, while older farmers constituted 10% of the sample. Farmers in the study location were therefore of middle age group (mean 45.4 years) with capability for energetic farm work with high firm production. Education level of the study area is not so good with an average of just over class 5 standards. This low level education may connote low level of adoption of innovation and inadequate use of modern farm inputs. Majority of the respondents (77.50%) were belongs to the category of marginal farmers. The average holding size in 7.5 bigha. It shows that this holding size may have some bearing on herbicides use. Among the holding size between 11 and 20 bigha of land there were 22.50% farmers, which is not so bad. Small holders cultivate the leased in land. It has been often claimed that family members constitute the major source of farm labour, as hired labour is not only costly but also not available in time. It is also learnt that most family members continue to search for better alternatives to form work, in their opinion farming has become non-remunerative.

Another important findings were also observed that a correlation test was done to find out the relationship between the independent variables (age, education, holding size and family size) and dependent variable (dose of herbicide), but no significant relationship was found.

**TABLE 2 WEEDS AND THEIR CONTROL MEASURES**

Sl No.	Local Name	scientific name	Herbicides	Mean Doses
1.	Durba grass	<i>Cynodon dactylon</i>	Machete	125 gm / Bigha
2.	Mutha grass	<i>Cyperus rotundus</i>		
3.	Shyama grass	<i>Echinochloa crusgalli</i>	Round up	145 gm/Bigha
4.	Beto	<i>Chenopodium album</i>		
5.	Thankuni	<i>Centella asiatica</i>	Gramxone	150 gm / Bigha

Table 2 indicates the major weeds which are generally encountered by the farmers in the field. Farmers used to control those weeds by the herbicides mentioned above. In boro paddy they mostly opt for Machete as pre emergence measure. Round up and Gramaxon mostly they use as broad spectrum. But there are wide

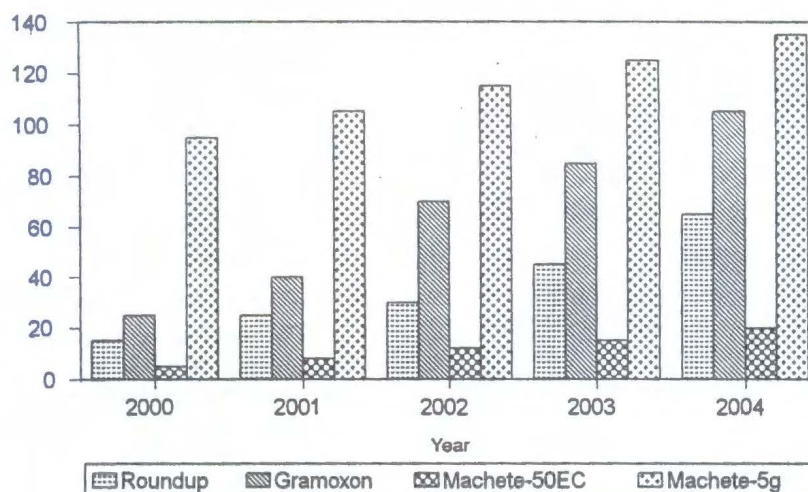
variations exist in their doses. The average doses they used in the fields to control weeds are 145 gm / bigha, 150 gms / bigha and 125 gm /bigha, for round up, gramoxon and macheti respectively. Surprisingly almost 50% respondent could not mention the name of the herbicides which was used by them.



**TABLE 3 CONSUMPTION PATTERN OF HERBICIDES**

Year	Name of the Herbicides			
	Round up	Gramxone	Machete	
2000	15 litre	25 litre	5 litre	95 kg
2001	25 litre	40 litre	8 litre	105 kg
2002	30 litre	70 litre	12 litre	115 kg
2003	45 litre	85 litre	15 litre	125 kg
2004	65 litre	105 litre	20 litre	135 kg
Total	180 litre	325 litre	60 litre	575 kg

[Estimation was made on the basis of responses of fertilizer dealers and farmers]



The trend of consumption pattern of herbicides is presented in Table 3. It proves the farmers reliance on the herbicides. They often expressed their ignorance about the efficacy of herbicides. Of late, they are going for it instead of hand weeding as dealers are pushing for taking the advantage of herbicides, which is in turn minimise the cost of production also. Respondents opined that within a few years more and more number of farmers will recognize the beneficial effect of herbicides.

**TABLE 4 TECHNOLOGY GAP IN HERBICIDES DOSE**

(MEAN VALUE %)

Herbicides	Gap in doses
Gramoxone	40%
Round up	63.75%
Machete	25.15%

In Table-4, technology gap is presented in different herbicides favoured mostly by the farmers. It is revealed that in all cases, there persists a wide gap between the recommended doses and the adopted doses. Maximum gap is being observed in round up (63.75%), followed by Gramoxon (40%). This herbicides used in broad spectrum to destroy all types of weeds. Machete is being used widely in boro field in low land condition within 5 days after sowing as pre emergence measure. Where as before cultivation of any crop mostly in upland situation farmers prefer to spray round up & gramoxon. Generally they do not or rather hesitate to apply herbicides on standing crops. However, to get a good result they should go for recommended doses. Probably they are worried about their soil health. Therefore, strong persuasion and extension activities are to be taken for motivation towards accurate doses of herbicides.

**TABLE 5 IMPACT OF HERBICIDES AS PERCEIVED BY FARMERS**

<u>Positive Impact</u>	<u>Negative impact</u>
1. Easy to eradicate weeds	1. Reduces employment opportunity
2. Cost of labour reduces	2. Pulverisation of soil not possible
3. Cost of cultivation reduces	3. Earth worm does not survive
4. Bring more profit	4. Leafy vegetables destroyed
5. Timely operation can be done	5. Medicinal plants destroyed
6. Reduces the cost of irrigation	6. Huge loss of fodder
7. Moss along the water channel destroyed	7. Heavy loss of green manure
8. Water availability increases	8. Initial crop growth stunted
	9. Organic manure requirement of soil enhanced
	10. Periwinkles do not survive
	11. Continuous use causes harm to soil
	12. Beneficial microbes of soil destroyed.

Impact perception of the farmers are depicted in Table 5. All the respondents were of the view that use of herbicides is a profitable practice so far as cultivation of crop is concerned but simultaneously they also feel that there is some bad or negatives effects. Environmental issues which is now considered to be one of the major issue in agriculture should be taken into account before advocating herbicides used. Proper training on weed control, selection of herbicides and their right doses, to be organized. As of now, maximum persuasion comes from fertilizer dealers. Specialist are still not paid due attention to the herbicides.

However, the negative impacts which were mentioned by the farmers were seldom supported by the scientific reasons and judgements. When discussion is made point by point they could not supplement the fact with data. Still their observations and experiences should not be disdained rather to be checked and verified. Obviously, there are some valid points which needs further research jointly by the agrobiologist, social scientists and farmers to remove the fear factor and enhancing the large scale adoption of herbicides.

### CONCLUSION

The findings of the study leads to conclusion that the farmers besides other methods of weed control are now looking for chemical methods. Slowly but steadily with skeptic mind they are moving towards chemical. They are skeptic in the sense, that they have felt the effect of indiscriminate use of pesticides, on

the environment, on the soil health, resultant effect on the crop growth, productivity decreasing. The inhibiting factor of diffusion of herbicides use is education. The fear psychosis centering around the herbicides, regarding its negative effects (more than positive effects), should be removed. As it has been introduced only 4 to 5 years before, albeit the trend of using herbicides is increasing, still its utility towards crop production to be understood by the farming community. In this regard social scientists can take a pivotal role by organizing training programmes, demonstration, on firm testing taking farmer as a partner, mass campaign through literature, fertilizers' dealers training etc., alongwith the multidisciplinary team of scientists, to speed up the process of adoption.

### REFERENCES

- Kalsariya B.N., Popal M.N., and Patel B.P. 1998. Technology Gap Among Hybrid-6 Cotton Growers. Maharashtra Journal of Extension Education Vol. XVII,
- Ghosh R.K., and Das P.C. 2004 Weeds and Their Control, Kalyani Publishers, Ludhiana.
- Subramaniam S., Mohamad Ali A., and Jaya Kumar R. 1991 All About Weed Control, Kalyani Publishers, Ludhiana.