

colour at the end point. WFBBL does not function satisfactorily in this titration.

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SOIL MOISTURE MOVEMENT AND GROUND-WATER RECHARGE BY TRITIUM TAGGING TECHNIQUE—DISCUSSION

THE computed recharge values in the paper by Bahadur *et al.*¹ cannot be considered as indicative of the net groundwater recharge for the area studied.

the average of a couple of years is taken. The rates of tracer movement computed from the data given in Figs. 2, 3 and 4 (Ref. 1) are as follows (Table I):

It is seen that rate of upward movement varies widely depending on the season and the location. Therefore, the use of an average value of 1.2 mm/day is not justified. This apart, we do not believe that incomplete profiles (Ref. 1) such as given in Fig. 4 can be used to calculate the position of the centre of gravity (c.g.) and hence, tracer displacement to even a limited accuracy.

Further, let us use the value of 1.2 mm/day for the rate of upward movement during dry season and calculate the position of the c.g. of the tracer profile to a date one year after the date of initial injection. It is noticed that in most cases computed position of c.g. is either above or just below the injection depth. This would then indicate practically no net recharge. We, however, do not wish to convey the impression that in the area studied, net groundwater recharge is negligible. The argument made above is only to illustrate inappropriateness of the analytical procedures adopted by the authors of the paper. We submit that the data given in the paper (Ref. 1) are too inadequate to compute the net annual vertical recharge of

TABLE I

Fig. No.	Plot No.	Downward Movement			Upward Movement		
		From	To	mm/day	From	To	mm/day
2	2	6-6-1973	11-10-1973	9.21	11-10-1973	24-11-1973	7.19
2	3	6-6-1973	20-10-1973	7.21	20-10-1973	24-11-1973	8.17
3	Todapur under natural vegetation			Nil	20-5-1974	13-12-1974	0.55
4	MB-8C (Plot-R ₁)	19-7-1975	29-8-1975	8.5			
		29-8-1975	19-11-1975	2.6			Nil
4	MB-8C (Plot-R ₂)	18-7-1975	29-8-1975	11.63	29-8-1975	19-11-1975	1.0

The authors have considered the downward movement of tracer during the monsoon period alone for estimating groundwater recharge. It is seen from Fig. 2 (Ref. 1) that there is a significant upward movement of the tracer even at the beginning of the dry season (in October–November 1973). The upward movement of tracer is undoubtedly in response to evapotranspiration. The net recharge on an annual basis can, therefore, be obtained from the net displacement of tracer over a period of about a year, or better still if

groundwater in the area under investigation. The recharge, certainly, is much less than the estimates given in the paper.

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