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GOVERNMENT OF KERALA

**ATTRITION RATE OF AGRICULTURAL PERSONNEL
IN
KERALA
1977**

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P R E F A C E

The requirements of Technical Man Power in Agriculture have to be assessed for the formulation of Five Year Plans. In the context of estimating the stock and supply of Agricultural Personnel "Attrition Rate" is one of the important indicators to be taken into account.

In the present study an attempt has been made to estimate the attrition rate of agricultural personnel in Kerala. Separate rates of attrition have also been worked out for Agricultural Graduates and Post-Graduates. This report has been prepared by Shri V.P. Nair, Man Power Officer in the Directorate of Agriculture, Trivandrum.

It is hoped that the study will be useful for the purpose of planning in the field of Agricultural Technical Man Power.

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ATTRITION RATE OF AGRICULTURAL PERSONNEL IN KERALA

1. INTRODUCTION

The major source of employment for Agricultural graduates and post graduates in Kerala is the Department of Agriculture. They also find employment opportunities in the departments like soil conservation, Dairy development, Animal Husbandry etc. and in organisations such as Kerala Agricultural University, Rubber Board, Coffee Board, Cardamom Board, Banks, FACT and similar fertilizer concerns, and central government departments like Directorate of Spices Promotion, Tuber Research Institute etc. About 75% of the Agricultural manpower stock belongs to the age group of less than 38 years.

In the report of the working group on Agricultural Manpower set up by the Planning Commission, Government of India in connection with the formulation of the fifth five year plan, the following recommendation was made:

"Agricultural manpower stock is considered to be young. It is estimated that persons below 35 years would in 1974 constitute 88% of the total stock. While the Department of Agriculture has assumed an attrition rate of 1%, the Institute of Applied Manpower Research (I.A.M.R) considers that replacement could be only around 0.5% of the stock. This issue required detailed study by the Manpower cells at the state level."

In Kerala the rate of replacement of Agricultural personnel has not been worked out so far. Therefore an attempt has been made by the Manpower Unit of the Directorate of Agriculture to estimate the attrition rate. Data required have been collected from the records of the Directorate and also from the regional and district level offices of the Department. Details of Agricultural Manpower in other Departments and organisations have also been collected.

The Department of Agriculture, Government of India and the Institute of Applied Manpower Research, New Delhi have worked out the attrition rate assuming the age of retirement of Agricultural personnel as 58. But in Kerala the age of retirement of personnel in the Department of Agriculture and in other state government departments is 55 while the age of superannuation in central government departments ~~is 55 while in the~~ and other organisations is 58. About 60% of the total Agricultural personnel are employed in the Department of Agriculture. Therefore the attrition rates of Agricultural personnel in the Department of Agriculture and for

Agricultural personnel of the entire state have been estimated separately.

From the data collected, the attrition rates are worked out separately for graduates and post graduates in Agriculture apart from the attrition rate for Agricultural personnel as a whole.

2. Attrition rate of Agricultural personnel in the department of Agriculture, Kerala.

The factors responsible for attrition of stock of any category of technical manpower are:-

1. net out-migration
2. retirement
3. death before reaching the age of retirement.

In the case of agricultural personnel the incidence of net out-migration outside the state is rather negligible. Therefore the attrition on account of the remaining two factors has to be taken into consideration.

The following table gives the age composition of the active agricultural technical personnel in the department of Agriculture as on 1-1-1977.

Age group	Graduates in Agriculture.		post graduates in Agriculture.		Total.	
	Number	per-centage.	Number	Percentage	Number	Per-centage
23 or below	59	7.46	8	9.76	67	7.67
24 - 28	143	18.08	18	21.95	161	18.44
29 - 33	165	20.86	24	29.27	189	21.65
34 - 38	223	28.19	15	18.29	238	27.26
39 - 43	110	13.91	8	9.76	118	13.52
44 - 48	74	9.35	5	6.09	79	9.05
49 - 53	11	1.39	4	4.88	15	1.72
54 and above	6	0.76	6	0.69
Total	791	100.00	82	100.00	873	100.00

The replacement due to retirement in the next five years.

Out of the total number of 873 agricultural personnel (791 graduates and 82 post graduates) the number of persons in the age group of 50 - 54 is 16. Therefore 16 persons will be retiring within a period of 5 years. The percentage of persons retiring in the

age group of 50-54 is 16. Therefore 16 persons will be retiring within a period of 5 years. The percentage of persons retiring in the next five years to the stock at the beginning of the year when worked out comes to 1.83%. The five year average of this percentage will indicate the rate of attrition due to retirement per annum. This rate comes to 0.367%.

Stock of Agricultural personnel as on 1-1-1977.	Persons in the age group 50 - 54	Percentage of persons retiring in the next 5 years to the stock.	Rate of attrition due to retirement.
873	16	1.833	0.367%

Replacement due to pre-retirement death.

To estimate the replacement needs due to death before reaching the age of 55, the age specific mortality rates are applied to the stock of active agricultural personnel in the Department. For the age specific mortality rates, the "Tables of L.I.C. (1970-73) - Ultimate Mortality Functions" have been used. The rate of attrition due to pre-retirement death of Agricultural personnel thus estimated comes to 0.230%.

Age group	No. of persons lx	dx	lx dx
23 or below	67	.00129	.08643
24 - 28	161	.00128	.20608
29-33	189	.00141	.26649
34-38	238	.00196	.46648
39-43	118	.00313	.36934
44 - 48	79	.00520	.41080
49-53	15	.00860	.12900
54 and above	6	.01143	.06858
Total	873		2.00520

Rate of attrition due to pre-retirement death is $\frac{2.00320}{873}$

= 0.00230

= 0.230%

Attrition rate of Agricultural personnel.

The two rates derived as explained above when added together gives the overall attrition rate of Agricultural personnel in the Department.

Stock of Agricultural personnel.	Persons retiring within 5 years.	Rate of replacement due to retirement.	Rate of replacement due to pre-retirement death.	Attrition rate.
		%	%	%
873	16	0.367	0.230	0.597

Thus the attrition rate of Agricultural personnel in the Department of Agriculture is estimated as 0.597% say 0.6%.

3. Attrition Rate of Agricultural Graduates.

There are 791 graduates in Agriculture in the Department out of the total stock of 873 Agricultural personnel. The remaining 82 are post graduates. Among the graduates in Agriculture 12 persons are in the age group of 50 - 54. The percentage of graduates retiring in the next 5 years to the stock at the beginning of the year is 1.517. The rate of attrition due to retirement is the 5 year average of this percentage.

Stock of Agricultural graduates in the Department as on 1-1-1977.	Persons in the age group of 50 - 54.	Percentage of persons retiring within a period of 5 years to the stock.	Rate of attrition due to retirement.
			%
791	12	1.517	0.303

The rate of attrition due to retirement in the case of Agricultural graduates in the Department is 0.303%.

The rate of attrition of Agricultural Graduates in the Department due to pre-retirement death is estimated as follows:-

Age group	No. of persons lx.	dx.	lx. dx.
23 or below	59	.00129	.07611
24 - 28	143	.00125	.16304
29 - 33	165	.00141	.23265
34 - 38	223	.00196	.43708
39 - 43	110	.00313	.34430
44 - 48	74	.00520	.38480
49 - 53	11	.00850	.09460
54 and above	6	.01143	.06858
Total	791		1.82116

Rate of attrition due to pre-retirement death is $\frac{1.82116}{791} = 0.00230$
 = 0.230%

The above two rates when added together gives the attrition rate of Agricultural Graduates in the Department.

Stock of Agricultural Graduates.	Persons retiring within a period of 5 years.	Rate of attrition due to retirement. %	Rate of attrition due to pre-retirement death.	Attrition rate of Agricultural Graduates.
791	12	0.303	0.230	0.533

The attrition rate of agricultural graduates comes to 0.50%.

4. Attrition rate of Agricultural post graduates.

There are only 82 post graduates in Agriculture in the Department of Agriculture. Out of this 4 persons will be retiring within a period of 5 years. The percentage of persons retiring in the next 5 years to the stock is worked out as 4.878. The five year average of this which comes to 0.976% indicates the rate of attrition due to retirement.

Stock of Agricultural post graduates.	Persons in the age group 50-54.	Percentage of persons retiring within a period of 5 years.	Rate of attrition due to retirement.
82	4	4.878	0.976%

The rate of attrition due to pre-retirement death in the case of Agricultural post graduates is estimated as follows:-

Age group	No. of persons	dx	$lx \cdot dx$
23 or below	3	.00129	.01032
24 - 28	18	.00128	.02304
29-33	24	.00141	.03384
34 - 38	15	.00196	.02940
39 - 43	3	.00313	.00939
44 - 48	5	.00520	.02600
49 - 53	4	.00360	.01440
53 and above	..	.01143	..
Total	82	..	.18204

Rate of attrition due to pre-retirement death of Agricultural post graduates is $\frac{.18204}{82} = 0.00222 = 0.222\%$

The above two rates when added together gives the attrition rate of Agricultural post graduates in the Department.

Stock of Agricultural post graduates.	Persons retiring within a period of 5 years.	Rate of attrition due to retirement. %	Rate of attrition due to pre-retirement death. %	Attrition rate of Agricultural post graduates. %
82	4	0.976	0.222	1.198

The attrition rate of post graduates in Agriculture comes to 1.198% say 1.2%.

The rates of Attrition of Agricultural Graduates and post graduates and also the attrition rate of agricultural personnel as a whole in the Department of Agriculture estimated as explained earlier are furnished below:-

Category of Agricultural personnel.	Stock as on 1-1-77.	Persons retiring within a period of 5 years.	Rate of attrition due to retirement.	Rate of attrition due to pre-retirement death.	Attrition rate.
Agricultural graduates.	791	12	0.303%	0.230%	0.5%
Agricultural post graduates.	82	4	0.976%	0.222%	1.2%
Agricultural personnel	873	16	0.367%	0.230%	0.6%

From the above it is seen that the overall attrition rate of Agricultural personnel of the Department of Agriculture estimated as 0.6% is very close to the rate worked out by the Institute of Applied Manpower Research, New Delhi. In the case of Agricultural Graduates our rate is 0.5%, where as the rate for post Graduates comes to 1.2%.

5. ATTRITION RATE OF AGRIC. PERSONNEL IN KERALA

As mentioned earlier 60% of the stock of Agricultural personnel in Kerala is in the Department of Agriculture. The remaining 40% is distributed among various Departments and organisations. The percentage distribution of stock of Agricultural personnel in Kerala is as follows:-

Department/Organisation	Percentage distribution of Agricultural personnel.		
	Graduates	Post Graduates	Total
Department of Agriculture	69	25	60
Other State Government Department.	7	1	6
Kerala Agricultural University	1	50	12
Central Government Department	-	5	1
Banks	3	9	5
Other organisations	20	10	16
Total	100	100	100

The details of stock of Agricultural personnel are given in Table 1 appended. The attrition rate of Agricultural personnel in Kerala (including the Department of Agriculture and other departments and organisations where Agricultural Graduates and post graduates are employed) is estimated as follows:

Category of Agricultural personnel.	Rate of attrition due to retirement.	Rate of attrition due to pre-retirement death.	Attrition rate
Agricultural graduates.	0.400	0.228	0.628
Agricultural post graduates.	1.360	0.284	1.644
Agri. personnel (graduates and post graduates).	0.620	0.240	0.860

Details of the above estimates are furnished in the tables 2 to 7 appended.

From the above it is seen that the attrition rate of agricultural graduates is 0.6% and the rate for Agricultural post graduates is 1.6%. The overall rate for Agricultural personnel in Kerala is 0.9%. This rate is very close to the estimate of 1% worked out by the Department of Agriculture, Government of India. Our rate when corrected also comes to 1% which is the same rate estimated by Government of India. The All India attrition rate of 1% estimated by Government of India can therefore be adopted for Agricultural personnel in Kerala also for estimation of stock and future requirements.

TABLE 1

Stock of Agricultural Personnel in Kerala as on
1--1--77

Department/Organisation	Agricultural Gra- duates		Agrl. Post Graduates		Total Agrl. Personnel	
	No.	Percen- tage	No.	Percen- tage	No.	Percen- tage
Department of Agricul- ture.	791	69.08	82	25.38	873	59.47
Other State Government Departments.	80	6.99	4	1.23	84	5.72
Central Government De- partments.	1	0.08	17	5.26	18	1.22
Kerala Agrl. University	14	1.22	162	50.16	176	11.99
<u>Corporation/Boards.</u>						
Rubber Board	91	7.95	12	3.72	103	7.02
Coffee Board	1	0.09	3	0.93	4	0.27
Cardamom Board	12	1.05	-	-	12	0.82
Land Development Corpn.	5	0.44	1	0.31	6	0.41
<u>Other Organisations</u>						
Indo Swiss Project	12	1.05	3	0.93	15	1.02
FACT	79	6.90	7	2.17	86	5.86
Hindustan Insecticides Ltd	1	0.09	1	0.31	2	0.14
Banks (including co-ope- rative banks and Land Mortgage Banks)	39	3.40	28	8.67	67	4.56
Others	19	1.66	3	0.93	22	1.50
Total	1145	100.00	323	100.00	1468	100.00

TABLE - 2

Age wise distribution of agricultural personnel in Kerala as on 1.1.77

Age Group	Agricultural Graduates		Agricultural Post Graduates		Total	
	No.	%	No.	%	No.	%
23 or below	66	5.8	8	2.5	74	5.0
24 - 28	190	16.6	46	14.2	236	16.1
29 - 33	286	25.0	62	19.2	348	23.7
34 - 38	317	27.7	93	28.8	410	27.9
39 - 43	165	14.4	54	16.7	219	14.9
44 - 48	98	8.5	38	11.8	136	9.3
49 - 53	16	1.4	17	5.3	33	2.3
54 & above	7	0.6	5	1.5	12	0.8
Total	1145	100.0	323	100.0	1468	100.0

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Table - 3

Attrition due to retirement of Agricultural Personnel in Kerala

Category of Personnel	No. of Persons.	Percentage of persons retiring within a period of 5 years to total stock.	Rate of attrition due to retirement
Agricultural Graduates.	1145	2.0	0.40
Agricultural Post-Graduates	323	6.8	1.36
Total Agricultural Personnel	1468	3.1	0.62

Yh/

Table - 4

Rate of Attrition due to pre-retirement death of Agricultural personnel in Kerala

Age Group	No. of Persons lx	dx	lx dx
23 and below	74	.00129	.09546
24 - 28	236	.00128	.30208
29 - 33	348	.00141	.49068
34 - 38	410	.00196	.80360
39 - 43	219	.00313	.68547
44 - 48	136	.00520	.70720
49 - 53	33	.00860	.28380
54 and above	12	.01327	.15924
Total	1468	-	3.52753

Average = $\frac{3.5273}{1468} = 0.00240$

Rate of attrition due to pre-retirement death is = 0.240%

Table - 5

Rate of Attrition due to pre-retirement death of Agricultural Graduates in Kerala

Age Group	No. of persons Lx	Dx	lx. dx
23 and below	66	.00129	.08514
24 - 28	190	.00128	.24320
29 - 33	286	.00141	.40326
34 - 38	317	.00196	.62132
39 - 43	165	.00313	.51645
44 - 48	98	.00520	.50960
49 - 53	16	.00860	.13760
54 and above	7	.01327	.09289
Total	1145	-	2.60946

Average - $\frac{2.60946}{1145} = 0.00228$
 = 0.228%

yh/

Rate of attrition due to pre-retirement death of agricultural post graduates in Kerala

Age Group	No. of persons lx.	dx.	lx. dx.
23 and below	8	.00129	.01032
24 - 28	46	.00128	.05888
29 - 33	62	.00141	.08742
34 - 38	93	.00196	.18228
39 - 43	54	.00313	.16902
44 - 48	38	.00520	.19760
49 - 53	17	.00860	.14620
54 and above	5	.01327	.06635
Total	323		.91807

Average = $\frac{.91807}{323} = 0.00284$

Rate of attrition due to pre-retirement death is = 0.284%

Table - 7

Attrition rate of Agricultural Personnel in Kerala

Category of Personnel	Rate of attrition due to		Attrition rate
	Retirement	Pre-retirement death	
Agricultural Graduates	0.400	0.228	0.628 (0.6%)
Agricultural Post Graduates	1.360	0.284	1.644 (1.6%)
Total Agricultural Personnel	0.620	0.240	0.860 (0.9%)

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