A P P E N D I X II : SECOND DEGREE CURVE

A case of Karveer tahsil to illustrate the calculation of the trend value of the second degree curve. The equation of the curve is : $Yc = A + BX + CX^2$. The parameters A, B, and C are calculated with the help of the given linear equation and the following table.

Years	X	Adoption Y	XY	X^2Y	X^2	X^4	Computaion of Trend values		
							A + BX	CX^2	Trend value
1957	-13	4	- 52	676	169	28561	-140.39	153.79	13.40
1958	-12	15	-180	2160	144	20736	-117.45	130.04	12.59
1959	-11	20	-220	2420	121	14641	- 94.51	110.11	15.60
1960	-10	32	-320	3200	100	10000	- 71.57	91.00	19.43
1961	- 9	40	-360	3240	81	6561	- 48.63	73.71	25.08
1962	- 8	41	-328	2624	64	4096	- 25.64	58.24	32.55
1963	- 7	43	-301	2107	49	2401	- 2.75	44.59	41.84
1964	- 6	45	-270	1620	36	1296	20.19	32.76	52.95
1965	- 5	54	-270	1350	25	625	43.13	22.75	65.88
1966	- 4	56	-224	896	16	256	66.27	14.56	80.83
1967	- 3	61	-183	549	9	81	89.01	8.19	97.20
1968	- 2	101	-202	404	4	16	111.95	3.64	115.59
1969	- 1	177	-177	177	1	1	134.89	0.91	135.80
1970	+ 1	206	206	206	1	1	180.77	0.91	181.68
1971	+ 2	224	448	896	4	16	203.71	3.64	207.35
1972	+ 3	245	735	2205	9	81	226.65	8.19	234.84
1973	+ 4	263	1052	4208	16	256	249.59	14.56	264.15
1974	+ 5	292	1460	7300	25	625	272.53	22.75	295.28
1975	+ 6	330	1980	11880	36	1296	295.47	32.76	328.23

For B the linear equation is : $\Sigma XY = B\Sigma X^2$ I

where X is time variable and Y is the adoption of tractors.

By putting the value of ΣX^2 from the table we get :

$$37,584 = B\ 1638$$

$$B = +\ 22.94$$

Similarly the value of A anc C can be calculated from the following two equations.

$$\Sigma Y = NA + C\Sigma X^2 \quad \text{..... II (N=Total years taken)}$$

$$\Sigma X^2 Y = A\Sigma X^2 + C\Sigma X^4 \quad \text{.....} \quad \text{III}$$

By substituting the required values from the table we can get.

$$5605 = 26A + C\ 1638 \quad \text{..... I x 109}$$

$$422180 = A\ 1638 + C\ 178542 \quad \text{..... II}$$

$$610945 = 2834\ A + C\ 178542$$

$$-\ 422180 = 1638\ A + C\ 178542$$

$$188765 = 1196\ A$$

$$A = 157.83$$

$$5605 = 26\ A + C\ 1638$$

$$5605 = 4103.58 + C\ 1638$$

$$1501.42 = C\ 1638$$

$$C = 0.91$$

Finally by putting the values of constants A,B and C and the variable X in the second degree curve equation ($YC = A+BX+CX^2$). We shall get the trend values for different years. Similarly the trend values for other tahsils may also be calculated.