CHAPTER - 7

The Area Response of Oilseed Crops in Andhra Pradesh
7.1. INTRODUCTION:

To Study the area response of oil seed crops, particularly Groundnut, Castor, Sesamum, Coconut and Linseed in Andhra Pradesh state, Nelove’s Partial adjustment lag model was adopted. The final model was given in methodology (equation 8 & 11). The collected data related to selected crops was fed with the area response equations and the parameters were estimated by adopting OLS method, as method of estimation. Both linear and log-linear models were estimated for the collected data of groundnut, Castor, Sesamum, Coconut and Linseed in the study area.

The equation 8 and 11 were fed with the data of five selected oilseed crops in Andhra Pradesh state and the parameters of the variables were estimated along with multiple correlation, short-run and long-run price elasticities. These estimated regression co-efficients and multiple correlation co-efficients were tested for its significance by adopting t-test and F-test statistics.

7.2. The Area Response of Oil Seed Crops

The results related to equation 8 given in the table 7.1.
Table 7.1
ESTIMATED REGRESSION CO-EFFICIENTS OF EQUATION -8
ANDHRA PRADESH STATE

<table>
<thead>
<tr>
<th>Crop</th>
<th>Models</th>
<th>Constant</th>
<th>Pt-1</th>
<th>At-1</th>
<th>R²</th>
<th>F</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundnut</td>
<td>Linear</td>
<td>219737.5000</td>
<td>-14.3459 (0.1949)</td>
<td>0.8939 * (10.2581)</td>
<td>0.8216 *</td>
<td>62.1904</td>
<td>1.7583</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>2.12100</td>
<td>0.0231 (0.6456)</td>
<td>0.8427 * (8.1761)</td>
<td>0.8184 *</td>
<td>60.8559</td>
<td>1.5893</td>
</tr>
<tr>
<td>Castor</td>
<td>Linear</td>
<td>204274.2500</td>
<td>-10.0876 (0.5663)</td>
<td>0.2917 (1.6359)</td>
<td>0.1019</td>
<td>1.5327</td>
<td>1.7997</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>8.8460</td>
<td>-0.0205 (0.4358)</td>
<td>0.3038 (1.7087)</td>
<td>0.1015</td>
<td>1.5244</td>
<td>1.8187</td>
</tr>
<tr>
<td>Sesamum</td>
<td>Linear</td>
<td>148732.6720</td>
<td>-0.4127 (0.0593)</td>
<td>0.0947 (0.4651)</td>
<td>0.0080</td>
<td>0.1083</td>
<td>1.8132</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>10.5970</td>
<td>0.0021 (0.0446)</td>
<td>0.1154 (0.5596)</td>
<td>0.0122</td>
<td>0.1669</td>
<td>1.7519</td>
</tr>
<tr>
<td>Coconut</td>
<td>Linear</td>
<td>1860.1094</td>
<td>1.5724 (1.3009)</td>
<td>0.9495 * (19.9131)</td>
<td>0.9911 *</td>
<td>1505.869</td>
<td>0.7534</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>0.3120</td>
<td>0.0543 (1.3743)</td>
<td>0.9370 * (19.6924)</td>
<td>0.9912 *</td>
<td>1521.969</td>
<td>0.8529</td>
</tr>
<tr>
<td>Linseed</td>
<td>Linear</td>
<td>7377.3203</td>
<td>-2.2607 (2.2178)</td>
<td>0.3951 * (2.1132)</td>
<td>0.5144 *</td>
<td>14.3017</td>
<td>2.1052</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>5.2210</td>
<td>-0.1731 * (2.1195)</td>
<td>0.5456 * (3.0677)</td>
<td>0.5717 *</td>
<td>18.0197</td>
<td>2.2399</td>
</tr>
</tbody>
</table>

* Significant at 5 percent probability level
Figures in the Parenthesis are t-values

Ground Nut:

The estimated regression co-efficient of lagged price (Pt-1) of groundnut crop is positive and not significant in linear model. It reveals that an increase in one unit of lagged price will increase the area by 0.0231 units. But in case of linear model the estimated regression co-efficient is negative and not significant.

The estimated regression co-efficient of lagged area (At-1) of groundnut crop of the Andhra Pradesh is positive and significant at 5 percent probability level in both linear and log-linear models. It reveals that an increase in one unit of lagged area (At-1) will increase the current (At) by 0.8939 units and 0.8427 units of both linear and log-linear models respectively.

The co-efficient of correlation (R²) shows the total effect of two variables Pt-1 and At-1 on area (At) under the crop. The values of R² are 0.8216 and 0.8184 .These two
variables are shown 82.16 percent and 81.84 percent of variation in groundnut area in linear and log-linear models respectively. From F-test statistic it is observed that this variation is significant at 5 percent probability level.

The study of groundnut crop reveals that there is a significant positive lagged area response on current area. It shows that groundnut crop is area responsive. It is concluded that area allocation is purely depending on lagged area (At-1) and some other factors, other than the price factors. The effect on groundnut area allocation is not countable.

**Castor:**

The results of Castor crop of Andhra Pradesh state also shown in table 7.1. The estimated regression coefficient of lagged price (Pt-1) of Castor crop is negative and not significant.

The calculated regression coefficient of lagged area (At-1) is positive and not significant in both linear and log-linear models. The value of constant is positive in both the linear and log-linear models. Therefore a negative and positive relationship was recorded by Pt-1 and At-1 and At in case of castor crop respectively.

The total effect of the two variables on castor area is expressed by the value of $R^2$. The value of $R^2$ is 0.1019 and 0.1015 in two models. These two variables are shown 10.19 percent and 10.15 percent of variation in castor area in Andhra Pradesh. F-test was carried out for the significance of $R^2$. From F-test statistic it is observed that this variation is not significant.

From the above discussion, it is observed that the price response on castor cropped area is negative. But this response is not significant. It implies that price movements are not influencing the Castor growers at significant level either positively or negatively. The lagged area response under the Castor crop is positive. But this response is not significant.
It implies that the current area under the crop is not effecting by lagged area under the crop. It may be concluded that the castor cultivation in A.P is negligible.

**Sesamum:**

The results related to Sesamum crop of Andhra Pradesh area shown in table 7.1. The estimated regression co-efficient of lagged area (At-1) is positive and not significant. A positive relationship was recorded between sesamum current area and its lagged area in the state. But it is not a significant relation.

The estimated regression co-efficient of lagged price (Pt-1) of Sesamum crop in Andhra Pradesh is negative and not significant in linear model. But in log-linear, it is positive and not significant. The value of intercept constant is positive in both the linear and log-linear models.

The aggregate effect of two variables (Pt-1) and (At-1) on current area (At) was indicated by the value of $R^2$. The value of $R^2$ is 0.008 and 0.0122 in two models. These two variables show 0.80 percent and 1.22 percent of variation current sesamum area in the state in both the models respectively. From F-test statistic, it is observed that this variation is not significant.

The estimated results of Sesamum crop in Andhra Pradesh state show that the sesamum crop area (At) is neither price responsive nor area responsive. It reveals the fact that the lagged price or lagged area is not encouraging the farmers of sesamum crop in Andhra Pradesh state. To encourage and protect Sesamum crop farmers in Andhra Pradesh state, the government must provide some price incentives or by providing better marketing facilities. From the above discussion it is inferred that the sesamum crop is going to decline in Andhra Pradesh State.
Coconut:

From the table 7.1, the estimated regression co-efficient of lagged Price (Pt-1) is positive and not significant in both the linear and log-linear models. It reveals that an increase in one unit of lagged price will increase the area by 1.57 units and 0.05 units in both the models respectively.

The estimated regression co-efficient of lagged area (At-1) of coconut crop in Andhra Pradesh is positive and significant at 5 percent probability level. It reveals that an increase of one unit in lagged area will increase by 0.95 units in linear model. In log-linear model, an increase of one unit in lagged area will increase area by 0.937 units. The value of intercept (constant) is positive.

The multiple correlation co-efficient \(R^2\) shows the total effect of two variables \(P_{t-1}\) and \(A_{t-1}\) on area under the crop. These two variables show 99.11 percent and 99.12 percent of variation coconut area in linear and log-linear models respectively. From F-test statistic, it is observed that this variation is significant at 5 percent probability level.

The estimated results reveal that the coconut crop is area responsive. The lagged area is influencing the farmers in area allocation to the coconut crop. The co-efficient of lagged price is positive but not significant. Kaul and Sidhu in their study, it is found that lagged area (At-1) is positive and significant. They also observed that the co-efficient of variation in price risk is also significant.

Linseed:

The results of linseed crop are also shown in Table 7.1. The estimated regression co-efficient of lagged area of the Linseed crop is positive and significant in both linear and log-linear models also. The regression co-efficient reveals that an increase in one unit lagged area will increase the area by 0.3951 units and 0.5456 units in both models.
The calculated regression co-efficient of lagged price is negative and significant at 5 percent probability level. The regression co-efficient indicates that an increase of one unit in lagged price will decrease the area by 2.261 units and 0.173 units. The value of constant is positive in both the models.

The multiple correlation co-efficient ($R^2$) indicates that the total effect of two variables $P_t-1$ and $A_t-1$, on area ($A_t$) under the crop. The value of $R^2$ is 0.514 and 0.5717. These two values show 51.44 percent and 57.17 percent of variation in area ($A_t$) in both the models. From F-test statistic, it is observed that this variation is significant at 5 percent probability level.

The study of Linseed crop reveals that there is negative price response and positive lagged area ($A_t-1$) response on area. It shows that Linseed area allocation is not influenced by marketing prices of Linseed. The marketing prices are not encouraging the Linseed crop growers in Andhra Pradesh state. It is concluded that the area allocation purely depending on lagged area ($A_t-1$) and some other factors than the price factors. A significant negative price effect reveals that there is possibility to raise the linseed area up to some extent by increasing the prices.

The equation eleven is fed with the oilseeds data of Andhra Pradesh. The estimated regression co-efficient of five oil seed crops namely Groundnut, Castor, Sesamum, Coconut and Linseed are shown in table 7.2. Both linear and log-linear models are estimated and the results are given in table.
## Table 7.2

### ESTIMATED REGRESSION CO-EFFICIENTS OF EQUATION  - 11

**ANDHRA PRADESH STATE**

<table>
<thead>
<tr>
<th>Crops</th>
<th>Constant</th>
<th>Pt-1</th>
<th>Yt-1</th>
<th>Rt</th>
<th>It</th>
<th>$\frac{\delta t}{\delta p_t}$</th>
<th>$\frac{\delta t}{\delta y_t}$</th>
<th>Tt</th>
<th>At-1</th>
<th>$R^2$</th>
<th>F</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundnut</td>
<td>Linear</td>
<td>30348.609</td>
<td>-150.446</td>
<td>-36.626</td>
<td>218.778*</td>
<td>2.351*</td>
<td>127.835*</td>
<td>-782.537*</td>
<td>9671.758</td>
<td>0.286*</td>
<td>0.97025*</td>
<td>85.6015</td>
</tr>
<tr>
<td></td>
<td>Log-linear</td>
<td>4.361</td>
<td>-0.062</td>
<td>0.194</td>
<td>0.250</td>
<td>-0.090</td>
<td>-0.032</td>
<td>0.088</td>
<td>0.023</td>
<td>0.340*</td>
<td>0.9667*</td>
<td>76.1093</td>
</tr>
<tr>
<td>Caster</td>
<td>Linear</td>
<td>7825.824</td>
<td>-94.499</td>
<td>76.416</td>
<td>165.300*</td>
<td>39.337*</td>
<td>-110.853*</td>
<td>160.429</td>
<td>2003.414</td>
<td>0.307</td>
<td>0.5487*</td>
<td>3.1299</td>
</tr>
<tr>
<td></td>
<td>Log-linear</td>
<td>7.594</td>
<td>-0.063</td>
<td>-0.194</td>
<td>0.250</td>
<td>0.060</td>
<td>1.144</td>
<td>0.088</td>
<td>0.488</td>
<td>0.233</td>
<td>0.3403</td>
<td>1.3539</td>
</tr>
<tr>
<td>Sesamum</td>
<td>Linear</td>
<td>10892.545</td>
<td>1235</td>
<td>189.119*</td>
<td>16.062</td>
<td>0.337</td>
<td>16.213</td>
<td>200.116</td>
<td>-347.121</td>
<td>-0.005</td>
<td>0.12767</td>
<td>0.3842</td>
</tr>
<tr>
<td></td>
<td>Log-linear</td>
<td>9.593</td>
<td>-0.283</td>
<td>0.348*</td>
<td>0.220</td>
<td>0.375*</td>
<td>-0.029</td>
<td>0.060</td>
<td>0.388*</td>
<td>-0.024</td>
<td>0.3360</td>
<td>1.3284</td>
</tr>
<tr>
<td>Coconut</td>
<td>Linear</td>
<td>2038.798</td>
<td>-1.981</td>
<td>0.264*</td>
<td>1.019</td>
<td>0.538*</td>
<td>2.829</td>
<td>567.190*</td>
<td>0.424</td>
<td>0.9978</td>
<td>1186.4935</td>
<td>2.1798</td>
</tr>
<tr>
<td></td>
<td>Log-linear</td>
<td>2.230</td>
<td>0.004</td>
<td>0.038*</td>
<td>-0.017</td>
<td>0.079*</td>
<td>-0.015*</td>
<td>0.001</td>
<td>0.015</td>
<td>0.668*</td>
<td>0.9983</td>
<td>1548.8508</td>
</tr>
<tr>
<td>Linseed</td>
<td>Linear</td>
<td>650.313</td>
<td>1.825</td>
<td>-0.098</td>
<td>1.264</td>
<td>1.0927</td>
<td>15.602</td>
<td>-294.411</td>
<td>0.396</td>
<td>0.55705</td>
<td>3.9525</td>
<td>2.159</td>
</tr>
<tr>
<td></td>
<td>Log-linear</td>
<td>3.238</td>
<td>-0.199</td>
<td>-0.019</td>
<td>0.173</td>
<td>-0.011</td>
<td>0.023</td>
<td>0.019</td>
<td>0.532</td>
<td>0.5794*</td>
<td>4.3291</td>
<td>2.1860</td>
</tr>
</tbody>
</table>

* Significant at 5 percent probability level

Figures in the Parenthesis are t-values
Andhra Pradesh:
Groundnut Crop:

The estimated regression coefficient of lagged area (At-1), irrigated area (It) and Rainfall (Rt) are positive and significant at 5 percent probability level. It denotes that the increase of one unit in lagged area will increase the area of 0.286 units and 0.340 units in both models. Incase of Irrigated area, the same trend is observed. The regression coefficient value reveals that an increase of one unit in irrigated area (It) will increase the groundnut area by 2.351 units and 0.325 units. The estimated regression coefficient of Rainfall (Rt) value revels that an increase of one unit in rainfall will increase the groundnut area by 218.78 units and 0.133 units in both the linear and log-linear models.

The estimated regression co-efficient of yield risk ($Y_t$) is negative and significant in both the models. The yield risk coefficient value explains that an increase of one unit in yield risk will decrease the area of 782.537 units and 0.037 units in both the linear and log-linear models. It shows negative effect on area.

The calculated regression coefficient of lagged price (Pt-1) and lagged yield (Yt-1) of groundnut is negative and not significant. The estimated regression coefficient of price risk (Pt) is negative and not significant in linear model but in log-linear model, it is positive and not significant. The co-efficient of trend value (Tt) is positive and not significant in both linear and log-linear models.

The multiple correlation coefficient (R2) indicates the total effect of all independent variables on area (At) under the crop. These independent variables deposits 97.03 percent and 96.67 percent of variation in total area in linear and log-linear models respectively. The value of intercept (constant) is positive in both models. From F-test statistic, it is observed that this variation is significant at 5 percent probability level.
From the estimated results of groundnut crop in Andhra Pradesh state, the area under the groundnut crop is responsive to lagged area. The price response is negative but not significant. The farmers in Andhra Pradesh state are not response to prices of groundnut crop. The irrigation factor shows significant effect in allocating area under the crop. It reveals that the groundnut crop is responsive to irrigation facilities. The rainfall co-efficient showed a positive and significant effect on the allocation of the current area. It may be inferred that the groundnut crop is mainly a rainfall crop. The effect of yield risk factor is negative and significant. It reveals that as a risk in yield is increased area under the groundnut crop is decreased significantly. It is inferred that they are reducing the yield risk; it is possible to increase the groundnut area in A.P. State. The current area under the crop is positive and significantly affected by lagged area under the crop. It may be concluded that the groundnut crop in Andhra Pradesh state is responded by mainly the two water sources - irrigation and rainfall. By observing the trend value, the groundnut area is increasing.

**Castor Crop:**

The estimated regression co-efficient of Irrigated area (It) is positive and significant at 5 percent probability level in linear model. It indicates that an increase of one unit in irrigated area will increase the area by 39.337 units in linear model. But in log-linear model the co-efficient of Irrigated area (It) is positive and not significant. The estimated regression co-efficient of Rainfall (Rt) is positive and significant in linear model, the co-efficient value of Rainfall (Rt) reveals that an increase of one unit in Rainfall will increase the area by 165.3 units in linear model. But in log-linear model the co-efficient of Rainfall (Rt) is positive but not significant.

The co-efficient of lagged area (At-1) of Castor crop in Andhra Pradesh is positive and not significant. The co-efficient of Trend value (Tt) also observed the same trend in
both the linear and log-linear models. The co-efficient of lagged price (Pt-1) and Price risk (P) is negative and not significant. The estimated regression co-efficient of lagged yield (Yt-1) and yield risk (Yt) are positive and not significant in linear model but in log-linear model these co-efficients are negative and not significant. The value of intercept term is positive in both the models.

The multiple correlation co-efficient of (R^2) denotes the total effect of all independent variables on area (At) under the Castor crop of Andhra Pradesh state. All these independent variables shows 54.87 percent and 34.03 percent of variation in castor cropped area in both the models respectively. From F-test statistic, it is observed that the variation is significant at 5 percent probability in linear model but in log-linear model the co-efficient of multiple correlation is not significant.

The analysis of Castor crop of Andhra Pradesh explains that this crop is neither price responsive nor area responsive. Irrigation and Rainfall show significant effect on Castor crop current area. It means the Castor crop of Andhra Pradesh mainly Irrigated area responsive crop. This is also proved by study of Balaji and Sathyanarayana.

**Sesamum Crop:**

The estimated regression co-efficient of lagged yield (Yt-1) of Sesamum crop in Andhra Pradesh is positive and significant at 5 percent level of probability in log-linear model. The co-efficient of lagged yield (Yt-1) reveals that an increase of one unit in lagged yield (Yt-1) will increase the current area (At) by 0.348 units in log-linear model. But in linear model the co-efficient of lagged yield (Yt-1) is positive but not significant. The calculated regression co-efficient of Trend value (Tt) of Sesamum crop of Andhra Pradesh is positive and significant at 5 percent level of probability in log-linear model but in linear model it is negative and not significant.
The estimated regression co-efficients of lagged area (At-1) and price risk (Pt) are negative and not significant in both linear and log-linear models. In case of lagged price (Pt-1), the regression co-efficient value is positive and not significant in linear model. But in log-linear model the regression co-efficient of lagged price (Pt-1) of Sesamum crop in Andhra Pradesh is negative and not significant. The regression co-efficient of Rainfall (Rt) is positive and not significant in both linear and log-linear models.

The multiple co-efficient of correlation (R^2) shows the total effect of all independent variables under the crop. All these all independent variables shows 12.77 percent and 33.60 percent of variation area in linear and log-linear models respectively. From F-test statistic, it is observed that this variation is not significant. The value of intercept is positive.

In Andhra Pradesh the Sesamum crop is neither area responsive nor price responsive. It is yield responsive and irrigative responsive also. So there is some scope to raise area under the crop by providing irrigation facilities and providing High yield varieties to the farmers of Sesamum crop. The market prices and lagged area are not encouraging the farmers to allocate more area under the Sesamum crop.

**Coconut:**

The results of the coconut crop in Andhra Pradesh are shown in table 7.2. The estimated regression co-efficient of lagged area of coconut crop of Andhra Pradesh (At-1) is positive and significant at 5 percent level of probability level. The co-efficient value reveals that an increase of one unit in lagged area (At-1) will increase in area by 0.424 units and 0.668 units. The calculated regression co-efficient of lagged yield (Yt-1) is positive and significant in both the linear and log-linear models. It means, the co-efficient value of lagged yield reveals that an increase of one unit in lagged yield will increase the current area (At) by 0.264 units and 0.038 units. The estimated regression co-efficient of
Irrigated area (It) is positive and significant in both linear and log-linear models. The coefficient value reveals that an increase of one unit in irrigated area (It) will increase the current area (At) by 0.538 units and 0.079 units both models.

The estimated regression co-efficient of lagged price (Pt-1) is negative and significant in linear model. It indicates that an increase of one unit in lagged price (Pt-1) will decrease the area by 1.981 units in linear model. But in log-linear model it is positive and not significant. The co-efficient of price risk (Pt) in log-linear model is negative and significant at 5 percent level of probability. It indicates that an increase in one unit of price risk (Pt) will decrease the current area by 0.015 units. But in linear model, the co-efficient of price risk (Pt) is positive.

The co-efficient of yield risk in coconut crop of Andhra Pradesh is positive and significant in linear model. It denotes that an increase of one unit in yield risk will increase the current area by 0.598 units in linear model, but in log-linear model it is positive and not significant. The calculated regression co-efficient of Rainfall is positive and not significant in linear model. But in log-linear model it is negative and not significant. The estimated regression co-efficient of Trend value is positive and significant at 5 percent level of probability. But in log-linear it is positive and not significant. The value of constant is positive in both the linear and log-linear modes.

The multiple co-efficient of correlation ($R^2$) shows the combined effect of all independent variables on current area (At) under the coconut crop. These all independent variables show 99.78 percent and 99.83 percent variation coconut area in linear and log-linear models respectively.

From F-test statistic it is observed that this variation is significant at 5 percent probability in log-linear model.
The study of coconut crop reveals that there is negative price response and positive lagged area response (At-1) on area. It shows that coconut area allocation is not influenced by market prices of coconut. The market prices are not encouraging the coconut crop growers in Andhra Pradesh. The irrigation factor also shows significant effect in allocating area under the coconut crop. It reveals that the coconut crop is responsive to irrigation facilities. The lagged yield (Yt-1) factor also shows positive effect on area. It reveals that an increase in lagged yield will increase the current area significantly. The price risk factor shows negative effect. As the price risk increases, the area under the coconut crop may be increased. The risk factor of yield also shows some significant effect on area allocation.

**Linseed:**

In the case of Linseed crop, the estimated regression co-efficient of lagged area (At-1) is positive and significant in both the linear and log-linear models, it reveals that an increase of one unit in lagged area will increase the current area by 0.396 units and 0.532 units. The calculated regression co-efficient of Rainfall (Rt), yield risk (Yt) are positive but not significant. The calculated regression co-efficient of lagged yield (Yt-1) is negative and not significant in both models. The co-efficient of lagged price (Pt-1) is positive in case of linear model and it is negative in case of log-linear model but it is not significant.

The multiple correlation co-efficient ($R^2$) shows the total effect of all independent variables on area (At) under the crop. These independent variables show 55.71 percent and 57.94 percent of variation linseed area in both models. From F-test statistic, it is observed that this variation is significant at 5 percent level of probability. The value of intercept term is positive.
The Analysis of Linseed crop explains that the lagged price is (Pt-1) not show any significant effect on area allocation. The lagged yield variable is influencing negatively. It is found that current area under the Linseed crop is affected significantly by lagged area. The Linseed crop in Andhra Pradesh state is not price responsive. It is responsive to lagged area (At-1)

7.3. Short-run and Long-run Elasticities:

The supply curve for the shortest period is a vertical line and for the longest period is an approaching line of horizontal. In between these two periods, there will be a span of short-run supply curves. The slope of each curve representing various conditions of supply when adjustment periods of intermediate lengths are allowed. For the length of time is to be noted carefully in studies of supply elasticities. Using the equation 9, Short-run and Long-run elasticities of supply are computed and they are given in table 7.3.

Table 7.3
SHORT-RUN AND LONG-RUN ELASTICITIES ANDHRA PRADESH

<table>
<thead>
<tr>
<th>Crop</th>
<th>Models</th>
<th>Elasticity of Supply</th>
<th>Co-efficient of Adjustment (B)</th>
<th>Years Require for 95% effect price (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SRE</td>
<td>LRE</td>
<td></td>
</tr>
<tr>
<td>Groundnut</td>
<td>Linear</td>
<td>-14.2015</td>
<td>-133.8379</td>
<td>0.1061</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>0.0231</td>
<td>0.1467</td>
<td>0.1573</td>
</tr>
<tr>
<td>Castor</td>
<td>Linear</td>
<td>-10.0451</td>
<td>-14.1830</td>
<td>0.7082</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>-0.8354</td>
<td>-1.1999</td>
<td>0.6962</td>
</tr>
<tr>
<td>Sesamum</td>
<td>Linear</td>
<td>-0.4144</td>
<td>0.0456</td>
<td>0.9053</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>0.0021</td>
<td>0.0024</td>
<td>0.8847</td>
</tr>
<tr>
<td>Coconut</td>
<td>Linear</td>
<td>1.5246</td>
<td>30.1960</td>
<td>0.0505</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>0.0541</td>
<td>0.8594</td>
<td>0.0630</td>
</tr>
<tr>
<td>Linseed</td>
<td>Linear</td>
<td>-2.3264</td>
<td>-3.8460</td>
<td>0.6049</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>-0.1737</td>
<td>-0.3824</td>
<td>0.4544</td>
</tr>
</tbody>
</table>

❖ Number of Years required for 95% effect of the price changes to materialistics derived with the help of the following formula $(1-B)^n = 0.05$ Where $B = \text{Co-efficient of adjustment} ; \; n = \text{Number of years}$
Groundnut crop:

The short-run and log-run price elasticities of groundnut crop are negative in linear model. It means there is no price response on area allocation to the groundnut crop in Andhra Pradesh state. The negative elasticities of supply price reveal that the farmers are not responsive to price change in case of groundnut crop under the study.

In log-linear model, the short-run and long-run price elasticities of groundnut crop are 0.0231 and 0.1467 respectively. The values of short-run and long-run price elasticities are positive. It means, there is price response in area allocation for the groundnut crop in Andhra Pradesh state. The positive elasticity of supply prices reveals that the farmers are very less responsive to price change in the case of groundnut crop in the study area. Co-efficient of adjustments value is 0.157. The groundnut farmers take 17.5 years to adjust area under the groundnut crop.

Castor Crop:

It was observed that the short-run and long-run price elasticities of Castor crop are negative. It means there is no price response on area allocation for the Castor crop in Andhra Pradesh state. The negative elasticities of supply price reveals that the farmers are not more responsive to price changes in case of Castor crop under the study. The co-efficient of adjustment value is 0.7083 and 0.6962 in both linear and log-linear model respectively. The Castor growers in Andhra Pradesh state have taken 2.4 years or 2.5 years to adjust area under the Castor crop.

Sesamum Crop:

Table 7.3 indicates that the short-run elasticity of sesamum crop is negative but in long-run the price elasticities of sesamum crop is positive in linear model. In log-linear models the short-run and long-run elasticities of sesamum crop in Andhra Pradesh is positive. It reveals that, there is price response in area allocation for the sesamum crop in
Andhra Pradesh. The positive elasticity of supply prices reveals that the farmers are more responsive to price changes in the case of Sesamum crop. The co-efficient of adjustment is 0.905 and 0.885. In both the models, the sesame crop farmers in Andhra Pradesh have taken more than one or two years to adjust the area to price fluctuations.

**Coconut Crop:**

The short-run and long-run price elasticities of coconut crop are positive in Andhra Pradesh State. It means, the price response was observed in area allocation for the coconut crop. The positive elasticity of supply price reveals that the farmers are more responsive to price changes in the case of coconut crop in study area. The co-efficient of adjustment is 0.0505 and 0.063 in both linear and log-linear models. The coconut growers in Andhra Pradesh take around 50 years to adjust area under the coconut crop. When compare to other oilseed crops in Andhra Pradesh this period is very high to adjust area under the coconut crop.

**Linseed Crop:**

From table 7.3, it is noticed that the short-run and long-run price elasticities of Linseed crop are negative in Andhra Pradesh. It means there is no price response on area allocation for the Linseed crop in state. The negative elasticities of supply price reveal that the farmers are not more responsive to price changes in case of Linseed crop under the study. The co-efficient of adjustment is 0.6049 and 0.4544. The Linseed farmers in Andhra Pradesh state take 3 to 5 years to adjust with the changes in the prices of Linseed in area allocation.

From the analysis of Groundnut, Castor, Sesamum, Coconut and Linseed crops of Andhra Pradesh, the short-run and long-run price elasticities of Castor, Linseed crops are negative. These crops are not price responsive in area allocation. It indicates that the farmers are not more responsive to price changes under the study.
The short-run and long-run price elasticities of coconut crop are positive. It means there is price response in area allocation for the coconut crop. The coconut farmers have taken a long time to adjust with the changes in the prices of coconut in area allocation because coconut is a perennial crop. The short-run and long-run price elasticities of groundnut crop and sesame crop are negative in linear model. These crops are not price responsive.

Nerlovian Partial adjustment model is used in the present study. It is not only help in analyzing the influences of various factors on supply response but also enables us in computing the short-run and long-run price elasticities and co-efficient of adjustment. The adjustment co-efficient should be in between zero and one. If the value of co-efficient of adjustment exceeds one, it can be said that there is a over adjustment. It is implying that the study response of crop is more than anticipated. If the co-efficient of adjustment is less than zero it can be said that the response is negative.

The estimated results on co-efficient of adjustment are in between zero and one except in the case of Castor crop and coconut crop in Rayalaseema, the Sesamum crop in Costal Andhra, Groundnut and Linseed in Telangana. It reveals that the farmers are over adjusted in allocating area due to price fluctuations. The small value of adjustment co-efficient leads the crop growers to take long time to adjust area with the price fluctuations.