CHAPTER 4

The Supply Response of Oilseed Crops in Costal Andhra
4.1. Introduction:

To study the supply response of oilseed crops particular Groundnut, Castor, Sesamum, Coconut and Linseed in Costal Andhra region, Nerlove’s partial adjustment lag model was adopted. The final model was given in methodology. The analysis of data related to supply response of selected crops was 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 crops in the study area.

The equation 8 and 11 were fed with the collected data of five selected oil crops in three regions i.e Costal Andhra, Rayalaseema and Telangana respectively and the parameters were estimated along with standard errors, t- values, multiple correlation, short-run and long-run price estaticities. These estimated regression co-efficients and multiple correlation co-efficients were tested for its significant by adopting t- and F- test statistics.

The results related to equation 2.8 were given in the following tables 4.1

4.2. The Supply Response of Oil Seeds Crops

Costal Andhra – Groundnut:-

The results of groundnut crop in Costal Andhra region are shows in table 4.1. The estimated regression co-efficient of lagged price of groundnut crop is negative liner model but positive and not significant on area under groundnut crop in log-linear model. Since the lagged price (P_{t-1}) effect is not significant, therefore the groundnut growers weren’t influenced by lagged price(P_{t-1}) in the allocation of groundnut area. To raise the groundnut area, the government have to provide attractive marketing price or price incentives to its growers. The estimated regression co-efficient of lagged area is positive and significant at 5 percent probability level. Therefore the groundnut growers are positively and significantly influenced by lagged area under the crop. The multiple co-
efficient correlation ($R^2$) shows that the total effect of two variable $P_{t-1}$ and $A_{t-1}$ on area ($A_t$) under the crop. These two variables show 88.56 percent and 87.42 percent of variation in groundnut area in both linear and log-linear models respectively. From F-test statistic, it is observed that this variation is significant in both the models.

The results expressing that the lagged area ($A_{t-1}$) shows some significant effect on area allocation to the groundnut crop. The price response in allocation of area is observed. Sud and Kahon found negative price effect in Punjab.

Table 4.1
ESTIMATED REGRESSION CO-EFFICIENTS OF EQUATION -8
(COSTAL ANDHRA REGION)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Models</th>
<th>Constant</th>
<th>$P_{t-1}$</th>
<th>$A_{t-1}$</th>
<th>$R^2$</th>
<th>F</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundnut</td>
<td>Linear</td>
<td>26338.9281</td>
<td>-15.8893 (1.6044)</td>
<td>0.93214 (13.0953)</td>
<td>0.88559 *</td>
<td>104.5011</td>
<td>1.40770</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>3.2947</td>
<td>0.0562 (0.9241)</td>
<td>0.9146 (6.3421)</td>
<td>0.8742 *</td>
<td>101.5421</td>
<td>1.2406</td>
</tr>
<tr>
<td>Castor</td>
<td>Linear</td>
<td>9860.3818</td>
<td>-1.86722 (0.8651)</td>
<td>0.64359 (4.3374)</td>
<td>0.49518 *</td>
<td>13.2420</td>
<td>1.79538</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>3.9480</td>
<td>-0.0701 (0.9437)</td>
<td>0.6500 (4.4633)</td>
<td>0.5088 *</td>
<td>13.9850</td>
<td>1.7480</td>
</tr>
<tr>
<td>Sesamum</td>
<td>Linear</td>
<td>87709.6800</td>
<td>-1.59246 (1.7285)</td>
<td>0.06138 (0.2721)</td>
<td>0.11488</td>
<td>1.7521</td>
<td>1.94181</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>12.2860</td>
<td>-0.0603 (1.3318)</td>
<td>-0.0415 (0.1968)</td>
<td>0.0805</td>
<td>1.0238</td>
<td>1.9369</td>
</tr>
<tr>
<td>Coconut</td>
<td>Linear</td>
<td>2195.3477</td>
<td>2.43720 (2.2697)</td>
<td>0.91033 (19.5840)</td>
<td>0.99146 *</td>
<td>1566.5841</td>
<td>0.94075</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>0.5710</td>
<td>0.0881 (2.6226)</td>
<td>0.8899 (19.7337)</td>
<td>0.9915 *</td>
<td>1581.0005</td>
<td>1.0877</td>
</tr>
<tr>
<td>Linseed</td>
<td>Linear</td>
<td>84.6211</td>
<td>-0.04184 (2.1038)</td>
<td>-0.05085 (0.2652)</td>
<td>0.05970</td>
<td>0.8572</td>
<td>2.01445</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>34.5230</td>
<td>-5.4644 (2.6902)</td>
<td>0.3215 (1.7542)</td>
<td>0.5365 *</td>
<td>15.6261</td>
<td>0.3026</td>
</tr>
</tbody>
</table>

* Significant at 5 percent probability level

Figures in the Parenthesis are t-values

Costal Andhra – Castor:

The results of castor crop of Costal Andhra region are also shown in the table 4.1.

The estimated regression co-efficient of lagged price of castor crop is negative and not significant in both linear and log-linear models. It reveals that an increase in one unit of lagged price will decrease the area by 1.867 units and 0.070 units in both linear and log-
linear models respectively. This decrease in area is not significant. In case of Castor crop, it is noticed that the lagged price ($P_{t-1}$) is negatively influencing the growers. Therefore the prevailing castor price is not motivating the formers in raising the area under the castor crop. Hence the price response on castor area is not observed. The estimated regression co-efficient of lagged area of castor crop is positive and significant. Hence, a positive relation was noticed between current and lagged years area. For every one hector increased in lagged area will increase the current area by 0.64 and 0.65 units respectively from both the models.

The multiple co-efficient of correlation ($R^2$) shows the total effect of two variables $P_{t-1}$ and $A_{t-1}$ on area ($A_t$) under the crop. These two variables are shown 49.52 percent and 50.88 percent of variation in current 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 castor crop reveals that there is negative price response and positive lagged area response ($A_{t-1}$) on area. It shows that Castor area allocation is not influenced by marketing prices of castor. The marketing prices are not encouraging the castor crop growers in Costal Andhra region. It is concluded that area allocation is purely depending on lagged area ($A_{t-1}$) and some other factors other than the price factors.

Costal Andhra – Sesamum:

The results of sesamum crop are also shown in Table 4.1. The results indicate that the estimated regression co-efficient of lagged price is negative and not significant in both linear and log-linear models. While the estimated regression co-efficient of lagged area of sesamum is positive and not significant in linear model, it is negative and not significant in log-linear model. The multiple co-efficient of correlation ($R^2$) shows the total effect of two variables $P_{t-1}$, $A_{t-1}$ on area ($A_t$) under the crop. These two variables show 11.49
percent and 8.05 percent of variation in linear and log-linear models respectively. From F-test statistic, it is observed that this variation is not significant in both linear and log-linear models. The estimated results of Sesamum crop in Costal Andhra region shows negative relationship with the area under the Sesamum crop. The lagged price (Pt-1) coefficient is negative and not significant. It reveals that the fact that the prices are not encouraging the farmers. Finally it is inferred that the two selected variables are failed to raise the area under the oil seed crop Sesamum in Costal Andhra region. It may be expressed that the demand for Sesamum is negligible and also the Sesamum price may discourage the growers in the region. The similar result was observed by the factor lagged area. It is concluded that these two selected variables effect is insignificant.

**Coconut Crop:**

The table 4.1 indicates the results of coconut crop in Costal Andhra region. The estimated regressions coefficients, i.e. lagged price and lagged area of coconut are positive and significant at 5 percent probability level on area under the coconut crop. The coefficient revealed that the increase in one unit of lagged price will increase the area by 2.44 units. Similarly, an increase in one unit of lagged area will increase the area by 0.91 units. The same trend is observed in log-linear model.

The multiple coefficient of correlation ($R^2$) shows the total effect of two variables, $P_{t-1}$ and $A_{t-1}$ on area ($A_t$) under the coconut crop. These two variables indicate 99.15 percent of variation in coconut area. From F-test statistic, it is observed that this variation is significant at 5 percent probability level.

The estimated results reveal that the coconut cropped area is responded by both the price and the area. Both these factors are influencing the farmers in area allocation to the coconut crop. It is also observed that the prevailing market conditions are encouraging the farmers to allocate more area to the coconut crop. Kaul and Sidhu in their study, it is
found that lagged area ($A_{t-1}$) is positive and significant. They also observed that the coefficient of variation in price risk is also significant.

**Linseed:**

The results of Linseed are also shown in table 4.1. The results indicate that the estimated regression co-efficient of lagged price is negative and insignificant in linear model. But in log-linear model, it is negative and significant at 5 percent level of probability. While the estimated regression coefficient of lagged area of Linseed is negative and insignificant in linear model, it is positive and not significant in log-linear model. The multiple co-efficient of correlation ($R^2$) shows the total effect of two variables $P_{t-1}$, $A_{t-1}$ on area ($A_t$) under the crop. These two variables show only 6 percent and 53.65 percent of variation in linear and log-linear models respectively. From F-test statistic, it is observed that this variation is not significant in linear model. But it is significant at 5 percent probability level in log-linear model.

The estimated co-efficients of independent variables results of Linseed crop in Costal Andhra region show negative relationship with the area under the Linseed crop. The logged price ($P_{t-1}$) co-efficient is negative and significant in log-linear model. It reveals the fact that the price is not encouraging the farmers. But there is some scope to raise the area under the linseed crop by giving some price incentives or by providing better marketing facilities.

The two risk factors, i.e. price risk and yield risk will show some effect on current area under the crop To minimizing the risk, it is proposed to incorporate, the additional variables $Pt$ and $Yt$ in the existing model. (Equation 11 in Methodology)

The equation eleven is fed with the data of Costal Andhra region. The estimated regression co-efficients in both the models for five oil seed crops namely groundnut, castor, sesamum, coconut and linseed in Costal Andhra region are shown in table 4.2 and the results are analysed accordingly.
Table 4.2
ESTIMATED REGRESSION CO-EFFICIENTS OF EQUATION :11
(COSTAL ANDHRA REGION)

<table>
<thead>
<tr>
<th>Crops</th>
<th>Constant</th>
<th>Pt-1</th>
<th>Yt-1</th>
<th>Rt</th>
<th>It</th>
<th>σ− Pt−</th>
<th>σ− Yt−</th>
<th>Tt</th>
<th>At-1</th>
<th>R²</th>
<th>F</th>
<th>D</th>
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<tbody>
<tr>
<td>Groundnut</td>
<td></td>
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<tr>
<td>Linear</td>
<td>7139.676</td>
<td>-35.729 (1.144)</td>
<td>14.129 (0.476)</td>
<td>-2.073 (0.109)</td>
<td>1.935* (8.819)</td>
<td>38.008 (0.642)</td>
<td>33.272 (0.660)</td>
<td>-189.114 (0.111)</td>
<td>0.205* (2.113)</td>
<td>0.9766* 109.6030 2.325</td>
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<tr>
<td>Log-linear</td>
<td>3.484</td>
<td>-0.047 (0.461)</td>
<td>0.009 (0.055)</td>
<td>-0.079 (1.017)</td>
<td>0.598* (8.358)</td>
<td>0.005 (0.195)</td>
<td>0.023 (0.954)</td>
<td>-0.099 (0.985)</td>
<td>0.257* (3.064)</td>
<td>0.9794* 124.9950 2.3492</td>
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<tr>
<td>Castor</td>
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<tr>
<td>Linear</td>
<td>535.014</td>
<td>-3.041 (0.502)</td>
<td>-1.691 (0.076)</td>
<td>5.701 (0.781)</td>
<td>4.982* (2.569)</td>
<td>8.963 (0.330)</td>
<td>7.572 (0.153)</td>
<td>-190.679 (0.449)</td>
<td>0.634* (2.949)</td>
<td>0.5668* 3.4345 1.828</td>
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<tr>
<td>Log-linear</td>
<td>3.239</td>
<td>-0.152 (0.822)</td>
<td>0.174 (0.994)</td>
<td>0.323 (1.334)</td>
<td>0.038* (2.971)</td>
<td>0.092 (0.295)</td>
<td>0.029 (0.94)</td>
<td>-0.017 (3.055)</td>
<td>0.503* (3.55)</td>
<td>0.6758* 5.4729 1.7948</td>
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<tr>
<td>Sesamum</td>
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<tr>
<td>Linear</td>
<td>3516.211</td>
<td>14.558 (1.173)</td>
<td>134.837* (2.089)</td>
<td>9.614 (0.532)</td>
<td>0.560 (0.491)</td>
<td>102.528* (3.400)</td>
<td>25.031 (0.407)</td>
<td>716.577 (0.413)</td>
<td>-0.024 (0.131)</td>
<td>0.5078* 2.7089 1.773</td>
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<tr>
<td>Log-linear</td>
<td>8.710</td>
<td>0.048 (0.244)</td>
<td>0.234 (1.278)</td>
<td>0.120 (0.548)</td>
<td>0.020 (0.223)</td>
<td>-0.140 (1.935)</td>
<td>0.045 (0.0702)</td>
<td>0.089 (0.524)</td>
<td>-0.106 (0.502)</td>
<td>0.3220 1.2466 1.9837</td>
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<tr>
<td>Coconut</td>
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</tr>
<tr>
<td>Linear</td>
<td>1080.363</td>
<td>0.505* (2.827)</td>
<td>5.404 (0.676)</td>
<td>-1.192* (2.663)</td>
<td>0.258 (0.288)</td>
<td>0.909 (1.949)</td>
<td>0.725 (0.765)</td>
<td>157.091 (0.765)</td>
<td>0.690* (4.292)</td>
<td>0.9968* 820.7255 2.111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log-linear</td>
<td>1.964</td>
<td>0.044 (1.252)</td>
<td>0.049* (2.122)</td>
<td>-0.019 (0.836)</td>
<td>0.044* (2.734)</td>
<td>-0.016 (1.819)</td>
<td>0.001 (0.631)</td>
<td>0.026 (1.191)</td>
<td>0.694* (12.906)</td>
<td>0.9971* 910.390 2.2843</td>
<td></td>
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</tr>
<tr>
<td>Linseed</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Linear</td>
<td>3.426</td>
<td>-0.253 (1.142)</td>
<td>-0.032 (0.132)</td>
<td>0.030 (0.267)</td>
<td>0.425 (1.050)</td>
<td>-0.281 (0.855)</td>
<td>13.272 (1.163)</td>
<td>-0.142 (0.685)</td>
<td>0.1715 0.6505 2.087</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log-linear</td>
<td>52.925</td>
<td>-12.594* (2.833)</td>
<td>-0.881 (1.283)</td>
<td>-1.677 (0.396)</td>
<td>3.493* (2.558)</td>
<td>-0.16 (0.856)</td>
<td>6.149 (1.561)</td>
<td>1.339 (1.785)</td>
<td>0.6793* 6.6566 2.4027</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 5 percent probability level. Figures in the Parenthesis are t-values.
Costal Andhra-Groundnut: - The estimated regression co-efficients of the lagged price \((P_{t-1})\), the rain fall \((R_t)\) and Trend value \((T_t)\) are negative and not significant. These negative co-efficients values under the groundnut crop in Costal Andhra region shows negative relationship with the current area \((A_t)\). One unit increase in each of these two variables will decrease the current area under the groundnut crop by 0.05, 0.08 and 0.10 units respectively.

The co-efficients of lagged area \((A_{t-1})\) and irrigated area \((I_t)\) are positive and significant at 5 percent probability level in both linear and log-linear models respectively. The co-efficient of lagged area \((A_{t-1})\) shows that an increase in one unit lagged area \((A_{t-1})\) will increase the current area \((A_t)\) by 0.205 units and 0.257 units in linear and non-linear models respectively.

In case of irrigated area \((I_t)\) an increase in one unit of irrigated area \((I_t)\) will increase the current Area \((A_t)\) under the groundnut crop by 1.935 units and 0.598 units both in linear and log-linear models. The estimated co-efficients of lagged yield, price risk and yield risk are positive but not significant in both linear and log-linear models.

The aggregate effect of all exogenous variables on endogenous variables, area under the crop is represented by the value of multiple co-relations, co-efficient \((R^2)\). The Value of \(R^2\) is 0.9766 and 0.9794 in both linear and log-linear models respectively. From the value of \(R^2\), it is observed that the collective effect of all independent variables under the consideration shown 97.66 percent and 97.94 percent of variation on total area under goundnut crop in Costal Andhra region. To test the significance of \(R^2\) value, F-test statistic is carried out. By observing f-value, \(R^2\) is significant at 5 percent probability level both linear and log-linear models.

The lagged price \((P_{t-1})\) of groundnut is not shown any significant effect in allocation of area. Irrigated area \((I_t)\) and lagged area \((A_{t-1})\) shows significant effect. It means the
groundnut area is not price responsive. Mainly it is irrigated area responsive. This is also proved by the study of Balaji and Sathyanarayana. The two risk factors are not shown any significant effect on groundnut area. Finally, it is inferred that the current groundnut area is positively influenced by the irrigated area and lagged area. Therefore the groundnut crop is an area responsive. But not price responsive in Costal Andhra region.

**Castor Crop:**

Observing the estimated regression co-efficients in both the models of castor crop, a similar trend was noticed with the groundnut crop except the two variables i.e. lagged yield (Yt-1) and Rain fall (Rt). It is observed that an opposite trend was recorded by above two variables in both the crops i.e. groundnut and castor.

The estimated regression co-efficients of lagged area (At-1) and irrigated Area (It) are positive and significant at 5 percent in both linear and log-linear models. It denotes that one unit increase in lagged area will increase 0.63 units and 0.50 units of current area (At) in both the linear and log-linear models of Castor Crop in Costal Andhra. Similarly, an increase of one unit in irrigated area (It) will increase 4.98 units and 0.038 units of current area (At) under the Castor crop.

The estimated regression co-efficient of lagged price (Pt-1), lagged yield (Yt-1) and Trend value (Tt) are negative and not significant in the both models and not significant in both linear and log-linear models. The calculated regression co-efficient of Rainfall (Rt), Price risk (Pt), Yield risk (Yt) are positive and not significant in both linear and log-linear models. The multiple correlation co-efficient (R^2) indicates the total effect of all independent variables on Area (At) under the crop. These independent variables deposits 67.58 percent and 56.68 percent of variation in total castor area.
From F-test statistic, it is observed that this variation is significant 5 percent probability level in both linear and log-linear models. The value of intercept is positive and it expresses the positive effect of the variables which are not included in the model.

The Castor Crop is not positive price response. But it is responsive to lagged area. The negative effect of lagged price reveals that the prevailing castor prices are not motivating the castor crop growing farmers. It is also observed that the area under the Castor crop may be increased by providing better prices and some incentives like subsidies, high yielding varieties at cheaper rates etc...

**Sesamum:**

The estimated regression co-efficients of lagged price ($P_{t-1}$) Rainfall($R_t$) irrigated area ($I_t$) yield risk($\sigma$), Trend value ($T_t$) are positive and not significant. But these co-efficients are not shown any significant effect on the Area ($A_t$) under the Sesamum crop. The regression coefficient of price risk ($P_t$) is negative and significant. The estimated regression co-efficient of lagged area ($A_{t-1}$) is negative and not significant. It shows negative effect on current Area ($A_t$) of sesamum crop in Costal Andhra. The negative and significant coefficient of price risk expresses that there is some scope to raise the Sesamum crop area by reducing the price risk. Hence, the instability in Sesamum price causes to reduce the sesamum crop area. Similarly it is also noticed that the lagged area established a negative relationship with the current cropped area.

The intercept is positive. It expresses the positive effect of other variables. The multiple correlation co-efficient ($R^2$) 50.78 percent, 32.20 percent observation in cropped area was noticed in linear and log-linear models respectively. From F-test statistic, it is observed that this variation is significant at 5 percent probability level in linear model.

The price response of area under the sesamum crop is positive. But this response is not significant. It implies that the price movement is not influencing the sesamum growers at
significant level. The response of irrigated area is negligible. Even the rainfall area also does not show much influence on current area under the sesamum crop in Costal Andhra region.

**Coconut Crop:**

The table 4.2 shows the estimated results of coconut crop in Costal Andhra region. The estimated regression co-efficients of lagged yield ($Y_{t-1}$), irrigated area ($I_t$), and lagged area ($A_{t-1}$) of the coconut crop is positive and significant at 5 percent probability level. It reveals that the increase in one unit of lagged yield ($Y_{t-1}$) will increase 5.404 units and 0.049 units of current area ($A_t$) in both linear and log-linear models of coconut crop of Costal Andhra regions. The co-efficient of irrigated area ($I_t$) indicates that the increase in one unit of irrigated area will increase 0.258 units and 0.044 units of current area ($A_t$) in both linear and log-linear models of coconut crop in Costal Andhra respectively. The same trend was observed in lagged area ($A_{t-1}$) also.

The estimated regression co-efficient of lagged price ($P_{t-1}$), yield risk ($Y_t$), and trend value ($T_t$) are positive and not significant. The estimated co-efficients of rainfall area ($R_t$) the price risk ($P$) are negative and not significant.

The aggregate effect of selected explanatory variables on explained variables is denoted by the value of $R^2$. It is 0.9968 and 0.9971. All independent variables explained 99.68 percent and 99.71 percent of variation on explained variables in both the models. From F-test statistic this aggregative effect, i.e. variation coconut area is significant at 5 percent probability level. The value of intercept is positive and it expresses the positive effect on the variables which are included in the model.

The lagged price ($P_{t-1}$) of coconut is not shown any significant effect in allocation of area. Lagged yield ($Y_{t-1}$), Irrigated area ($I_t$) and lagged area ($A_{t-1}$) show significant effect. It
means the coconut is not price responsive. Mainly it is responded by irrigated area and lagged area.

**Linseed Crop:**

The table 4.2 indicates the estimated regression co-efficients of Linseed crop in Costal Andhra region. The estimated regression co-efficients of the lagged price is negative and not significant in linear model. But in log-linear, it is negative and significant at 5 percent probability level. It reveals that the increase in one unit of lagged price \((P_{t-1})\) will decrease 12.594 units of current area \((A_t)\) under Linseed crop in Costal Andhra region.

The co-efficient of price risk is positive and not significant in linear model. But in log linear model it is positive and significant at 5 percent probability level. It indicates that the increase in one unit of price risk \((P_t)\) will increase 3.493 units of current area \((A_t)\) under Linseed crop in Costal Andhra region.

The estimated regression co-efficient of lagged yield \((Y_{t-1})\) is negative and not significant. The same trend was observed incase of yield risk \((Y_t)\). The estimated regression co-efficient of Rainfall \((R_t)\) is positive and not significant in linear model. But in log linear model it is negative and not significant.The co-efficient of lagged area \((A_{t-1})\) of linseed crop in Costal Andhra region is negative and not significant in linear model. But in log-linear model it is positive and not significant.

The multiple correlations co-efficient \((R^2)\) is 17.15 percent and 67.93 percent in both models. From F-test statistic, it is observed that this variation is not significant in linear model. But in log-linear model it is significant at 5 percent probability level. The value of intercept is positive and it expresses the positive effect of the variables which are not included in the model.

The negative and significant effect of lagged price \((P_{t-1})\) reveals the fact that there exists some scope to raise the Linseed area by providing incentive prices to Linseed growers.
The co-efficient of price risk expresses that as the area of Linseed crop increases the risk may be increased. Hence the Linseed cultivation is gradually decreasing.

4.3. Short-Run and Long-Run Price Elasticities

Table 4.3
SHORT-RUN AND LONG-RUN ELASTICITIES OF OILSEED CROPS IN COSTAL ANDHRA

<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>-16.1412</td>
<td>-15.0295</td>
<td>0.0676</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>-0.1020</td>
<td>-0.6388</td>
<td>0.1597</td>
</tr>
<tr>
<td>Castor</td>
<td>Linear</td>
<td>-18.6602</td>
<td>-5.2366</td>
<td>0.3564</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>-0.0701</td>
<td>-0.2002</td>
<td>0.3500</td>
</tr>
<tr>
<td>Sesamum</td>
<td>Linear</td>
<td>-1.6078</td>
<td>1.7128</td>
<td>0.3862</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>-0.0604</td>
<td>-0.0629</td>
<td>1.0415</td>
</tr>
<tr>
<td>Coconut</td>
<td>Linear</td>
<td>2.3645</td>
<td>27.2724</td>
<td>0.0897</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>0.0878</td>
<td>0.7980</td>
<td>0.1101</td>
</tr>
<tr>
<td>Linseed</td>
<td>Linear</td>
<td>-0.0447</td>
<td>-0.0474</td>
<td>-0.9500</td>
</tr>
<tr>
<td></td>
<td>Log-Linear</td>
<td>-4.1515</td>
<td>-6.1189</td>
<td>0.6785</td>
</tr>
</tbody>
</table>

Number of Years required for 95% effect of the price changes to materialistic derived with the help of the following formula $(1-B)^n = 0.05$

Where $B =$ Co-efficient of adjustment; $n =$ Number of years

Short-run and Long-run Elasticities: Costal Andhra Region:

The supply curve for the shortest period is a vertical line and horizontal for the longest period. 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 4.3.
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.

**Groundnut Crop:**

The table 4.3 indicates that the short-run and long-run price elasticities of groundnut crop are negative in both linear and log-linear models of Costal Andhra region. It means there is no price response in area allocation for the groundnut crop in Costal Andhra region. The negative elasticities of supply price reveal that the farmers are not responsive to price changes in case of groundnut crop under the study. The co-efficient of adjustment value (b) is 0.0676 and 0.1579 in both linear and log-linear models respectively. The groundnut crop growers in Costal Andhra region have taken 43 years and 17 years to adjust in allocating area with the price fluctuations.

**Castor Crop:**

It is observed that the short-run and long-run price elasticities of Castor crop are negative. It means there is no price response in area allocation for the Castor crop in Costal Andhra region. The negative elasticities of supply price reveal that the farmers are not responsive to price changes in case of Castor crop under the study. The co-efficient of adjustment value i.e. the “B” value is 0.35641 and 0.3500 in both linear and log-linear models respectively. The Castor crop farmers in Costal Andhra region have taken nearly 7 years to adjust in allocating area with the price changes.

**Sesamum Crop:**

The table 4.3 also indicates that the short-run price elasticity of Sesamum crop in Costal Andhra is negative. The elasticity value reveals that there is no price response in area allocation for the Sesamum crop in Costal Andhra region. It indicates that in short period, the farmers didn’t respond to price changes in case of Sesamum crop under study period. But in
long-run the price elasticity is positive. It means there is price responsive to area changes in
the case of Sesamum crop in study area. In case of log-linear model, the short-run and long-
run price elasticities of Sesamum crop of Costal Andhra are negative. It denotes there is no
price response on area allocation for the Sesamum crop under the study area. The adjustment
co-efficient value, i.e., “B” value is 0.3862 and 1.0415 in both linear and log-linear models
respectively. The co-efficient value of Sesamum crop in Costal Andhra is more than one. It
reveals that the farmers are over adjusted in allocating area due to price fluctuations.

Coconut Crop:

Table 4.3 indicates that the short-run and long-run price elasticities of coconut crop
are positive in Costal Andhra region in both linear and log-linear models. It means there is
price response in area allocation for the coconut crop in Costal Andhra region. The positive
elasticity of supply prices reveals that the farmers are more responsive to price changes in the
case of coconut crop in study area. The co-efficient value or “B” value is 0.0897 and 0.1101
in both linear and log-linear models. The coconut growers in Costal Andhra have taken
around 30 years to adjust in allocating area with the price fluctuations. From the above
analysis the coconut crop in Costal Andhra region is price responsive.

Linseed Crop:

The results of short-run and long-run price elasticities of Linseed crop in Costal
Andhra region are shown in table 4.3. It is observed that the short-run and long-run price
elasticities of Linseed crop in Costal Andhra region are negative. It indicates that the Linseed
crop in Costal Andhra region is not price responsive in area allocation. The negative
elasticities of supply price reveals that the farmers are not responsive to price changes in case
of coconut crop under the study area. The co-efficient of adjustment value is -0.9500 and
0.6785 in linear and log-linear models respectively. In linear model the co-efficient of
adjustment value is -0.9500. It means the value is less than zero. If the co-efficient of
adjustment is less than zero, it can be said that the response is negative. The Linseed farmers in Costal Andhra region have taken less than three years to adjust in allocating area with the price changes.

From analysis of oil seed crops, in Costal Andhra regional study, which is shown in table 4.3, it was observed that the short-run and long-run price elasticities of groundnut, Castor, Sesamum and Linseed crops are negative in both the models. These elasticities indicate that there is no price response on area allocation for particular oil seed crops. So the farmers in Costal Andhra region are not more responsive to price changes in case of Groundnut, Castor, Sesamum and Linseed crops under the study area.

The short-run and long-run price elasticities of coconut crop in Costal Andhra are positive. So, the coconut crop in particular region is price responsive crop. But the farmers in Costal Andhra region of coconut crop are taking more time to adjust area with the price fluctuations. The value of co-efficient adjustment for Sesamum crop in log-linear model is more than one. If the value of co-efficient of adjustment exceeds one, it can be said that there is a over adjustment. The co-efficient adjustment value of Linseed crop in linear model is negative. It means the value is less than zero. If the co-efficient of adjustment is less than zero, it can be said that the price response is negative.