CHAPTER – V

SUMMARY AND CONCLUSIONS
The fact that the acreages of individual crops in India vary systematically in response to inter crop price movements, is widely accepted the basis of numerous acreages response studies. The writers mostly assumed a close and direct relationship between area under cultivation and output. An increase in acreage was regarded as a proxy for an increase in output of agricultural crop. Such assumption had gradually validity, it was with pointing out that in a subsistence agriculture where crop yield could fall, an inverse in acreage did not guarantee a rise in output. Hence, a more direct test of the relationship between output, acreage, price and non-price variables seemed to be an important to form a better judgment about output response in under developed agriculture.

The time-series data for the period 1970-1971 to 2000-2001 had been used to test the proposed equations specified in mythology. Both the linear and log-linear model were estimated. The log-linear model yields better results and analyses accordingly. This log-linear model has been added to indicate the constant elasticities of output. the intercept term indicating the effect of technological progress. The ‘$\lambda$’ was the coefficient of expectation of agricultural prices. The hypothesis was known as the adaptive expectation, progressive expectation or ever learning hypothesis. The expectation coefficient indicates the psychological behaviour of a producer. It is $\lambda > 1$, over expectations takes place in future prices. If $\lambda = 1$, the expectations one realized immediately and fully. If $\lambda = 0$, the expectations of future prices one static’s.
Groundnut

The linear growth rate of area in Rayalaseema is maximum (2.63) followed by Telengana and coastal regions. The growth rate of area in Andhra Pradesh is recorded as 1.77. In case of production of Groundnut crop in Rayalaseema was recorded maximum (2.66 percent) followed by (1.37 and 1.23) in Telengana and Coastal Regions respectively. In case of Andhra Pradesh as a whole it was recorded by Andhra Pradesh proximately 2.1 percent. Comparing the area and production of Groundnut crop, the real trend has been observed in regions of Andhra Pradesh. Regarding the productivity of Groundnut crop, a negative growth rate was recorded in Rayalaseema Region followed by Telengana and Coastal Andhra region respectively in increasing order. The highest growth rate in Groundnut yield was recorded in coastal Andhra Region. In state of Andhra Pradesh the growth rate in the yield of Groundnut is 0.33 percent.

Sugarcane

The growth rate in Sugarcane area is maximum in Coastal Andhra region (1.83) followed by Rayalaseema (1.82), and Telangana (1.07) regions. In the state of Andhra Pradesh 1.6 percent growth rate was noticed in area under the Sugarcane crop. In case of production of Sugarcane crop, the highest growth was recorded in Rayalaseema region (2.02) followed by Coastal Andhra (1.12). A negative growth rate was noticed in case of production in Telengana (-0.08) region. Nearly 1.03 percent of linier growth rate production was observed in the state of Andhra Pradesh as whole. With respect to yield of Sugarcane a negative
growth rates was recorded in Coastal Andhra (-0.71), Telengana (-0.88) and Andhra Pradesh state (-0.58). In case of Rayalaseema Region a negligible positive growth rate (0.20) was observed.

**Cotton**

A maximum growth in area under the cotton crop was recorded in Telengana region (7.33) followed by coastal Andhra region (4.19%). In case of Rayalaseema negative growth rate (-1.09) in cotton area was recorded. Approximately (4.64%) growth rate in cotton area was noticed in entire in Andhra Pradesh state during the study period. Observing the growth rates of cotton production the highest growth rate was recorded (10.72) in Telengana region followed by Rayalaseema region (4.94%) and coastal Andhra Region (4.29%). In case of Andhra Pradesh, 6.71% of growth rate was noticed in cotton production. Observing the growth rate of area and production of cotton, it is concluded that the production growth rate is increasing though growth rate of area is decreasing. It leads a rise in growth rate in cotton yield. Observing that a highest growth rate in cotton yield was recorded in Telengana region (5.12) followed by Rayalaseema region (3.15) and Coastal Andhra (1.09) respectively. In Andhra Pradesh state the growth rate of cotton yield was recorded 2.96 percent during the study period.

**Tobacco**

The linear growth rate of area under the tobacco crop was recorded in Telengana region 2.25 per cent. A negative growth rate was noticed in Rayalaseema (-0.86) and coastal Andhra (-1.22) in the area of tobacco crop. In
case of Andhra Pradesh state, the negative growth (-1.17) rate of Tobacco area was recorded during the study period. The highest growth rate was observed in Tobacco production, (1.02) in Telangana region. There was a negative growth rate of tobacco production in Rayalaseema region (-0.14) and Coastal Andhra region (-0.02). In the case of Andhra Pradesh state the growth rate of tobacco production is 0.34 per cent. Similar trend in linear growth rate of area and production of Tobacco was observed in three regions of Andhra Pradesh. The linear growth rate of tobacco yield in all regions are observed as positive growth rates. The highest growth rate in yield was notice in Telangana region (0.73) followed by coastal Andhra (0.96) and Rayalaseema (0.95). Almost 1.5 per cent growth rate of tobacco yield was recorded in Andhra Pradesh state.

CO-EFFICIENT VARIATION

Groundnut

The co-efficient of variation in area under groundnut crop is 23.9 percent. A highest variation is recorded in Groundnut area in Rayalaseema. Where as the lowest variation in Groundnut area is noticed in Coastal Andhra region (2.43) followed by Telengana region (5.62). Over 60 percent of variation in Groundnut area was noticed in Andhra Pradesh state. Similar trend was observed in case of Groundnut production also. Almost 24 percent of variation in production was recorded in Rayalaseema region followed by Telengana and Coastal Andhra regions 12.5 and 11.2. In case of Andhra Pradesh state as a whole, 19.1 percent variation in production was recorded.
Sugarcane

The co variation in sugarcane area was recorded by 16.64 percent in Rayalaseema region followed by Coastal and Telengana regions 16.64 and 9.71. In the case of Andhra Pradesh state it was recorded as 14.58 percent. Similar trend was observed in case of Sugarcane production also. The maximum variation in Sugarcane production was recorded in Rayalaseema region (18.38) followed by Coastal Andhra and Telengana regions 10.22 and 0.76. In the case of Andhra Pradesh state the variation in cane production was recorded by 9.39. The instability in yield is maximum in Telengana (7.97) and Coastal Andhra regions (6.41). The lowest variation was recorded in Rayalaseema region 1.79. In the case of Andhra Pradesh state, the co-efficient of variation was recorded by 5.23 percent.

Cotton

The highest instability in Cotton area is recorded in Telengana region (66.68) followed by Coastal Andhra and Rayalaseema region (38.08 and 9.94). In the case of Andhra Pradesh state as whole, the variation in area is 42.14 percent. Similar trend was observed in case of cotton production also. Almost 97.42 percent of variation of in Telengana and followed by Rayalaseema and Coastal Andhra (44.93 and 39.02). The instability of production in Andhra Pradesh state was recorded by 61 percent. The co-efficient of variation in cotton yield was recorded by 46.43 in Telengana followed by Rayalaseema and Coastal regions (28.6 and 9.91). In the case of Andhra Pradesh state, the variation was recorded by 26.93 percent.
Tobacco

The highest variation in Tobacco area was recorded in Telengana region (20.44), followed by coastal Andhra and Rayalaseema is 11.14 and 7.8. In the case of Andhra Pradesh state 10.65 percent of variation was recorded in Tobacco Area. It observed that highest co-efficient of variation in tobacco production was recorded in Telengana region (9.29 percent) followed by (1.27 percent) Rayalaseema and Coastal Andhra regions (0.15 per cent). Over 3 percent of variation in Tobacco production was noticed in Andhra Pradesh state. Similar, trend was observed in case of tobacco yield also. Almost 24 percent of variation in Tobacco yield was recorded in Telengana region followed by Rayalaseema and Coastal Andhra Regions 8.7 and 8.8. In the case of Andhra Pradesh state as a whole the variation in tobacco yield was recorded by 24.85 percent.

To analyse the production responses of commercial crops under the study two models, viz., Traditional and adaptive expectation models were used. In the traditional model output is function of area, lagged farm harvest price and rain fall. In the adaptive expectation model, it is assumed that the production is responded by current area, lagged area, current price, rainfall, lagged rainfall and lagged output. The data was fed to the equations and analysed in chapter four. From the analysis, the following conclusions are drawn region wise.

Rayalaseema Region:

The groundnut output was significantly responded by area and rainfall. About 73 per cent of variation in groundnut output was observed and it is significant. A negative price effect was noticed. It means the farm harvesting
price are not encouraging the groundnut growers. In case of sugarcane crop, cane output was significantly responded by its area only. Almost 57 per cent of variation was noticed in cane production. This variation is also significant. A positive price effect was observed but it is not significant in the case of cotton production. It is also responded positively and significantly by area and lagged price. Rainfall effect on output is negative. Around 72 per cent of variation in cotton production was recorded. Hence, price response was noticed on cotton production. Finally, it may be concluded that the production was significantly responded by area. Negative price effect was noticed in the case of groundnut. The prices are encouraging to the production in the case sugarcane and cotton production. Whereas the prices are not encouraging groundnut growers.

**Coastal Andhra Region**

The commercial crops output was positively and significantly responded by the area under the crop. A positive lagged price influence was noticed in the case of groundnut, sugarcane and tobacco. But its effect is negative on cotton production. A significant price effect was observed in the case of groundnut crop only. Hence, it may be inferred that the commercial crop's output was responded by its area, but not its prices. The crop's output was negatively responded by the rainfall, except in the case of tobacco crop. The collective effect of all explanatory variables on production of commercial crops is significant. It is noticed that the production variations are 40 per cent, 56.7 per cent 80 per cent and 49 per cent in the case of groundnut, sugarcane, cotton and tobacco respectively.
Telangana Region

In Telangana Region, the commercial crop’s production was responded, positively and significantly by lagged farm harvest price. It is also observed that the crop’s output was positively influenced by the current area under the crop. But area’s effect was significant in groundnut and sugarcane crops only. Rainfall in the current year shows a negative effect in the case of groundnut, sugarcane and cotton. But a positive significant rainfall effect was noticed in the case of tobacco crop. It is inferred that the commercial crops output was responded by the area and lagged price. The total variation in crops output by these three variables is 72 per cent, 22 per cent, 85 per cent and 41 per cent respectively. It is also observed that these crops production variation are significant at 5 per cent probability level.

Andhra Pradesh State:

To estimate the traditional equation of production response of major commercial crop in the state of Andhra Pradesh pooled data was considered. The equation six was fed with the data for each crop and the results were analysed in chapter four.

The commercial crops output was positively responded by its area and it is significant in the case of sugarcane production. It means cane output was positively and significantly affected by the current year area. Under the lagged price effect on crop output is negative and significant in the case of groundnut and cotton only. It indicates that the groundnut and cotton growers are negatively responded by the lagged price. It may be concluded that there is
some scope to raise the crop's output by giving encouraging prices to its growers. The lagged price effect is positive and insignificant in the case of sugarcane and tobacco. It reveals that cane and tobacco output was positively responded by lagged price. It may be concluded that the commercial crop's production was not price responsive. It is also observed that the crops output was positively responded by rainfall except in the case of sugarcane. The collective effect of all independent variables on the dependent variable crop output is significant, except in the case of tobacco. Nearly, 82 per cent, 41 per cent, 80 per cent and 2.7 per cent production variations was recorded in the case of groundnut, sugarcane, cotton and tobacco crops respectively.

Change in price and non-price factors will affect the production decisions in allocating the area to a particular crop. The expected prices instead of actual prices may influence the farmers in area allocation. This suggests the use of adaptive expectation model to decide the net effect of factors on crop output. The equation (13) was fed with the data for four selected commercial crops in three regions of Andhra Pradesh and analysed the estimated equations in chapter four. The following conclusions were drawn from the above analysis.

**Rayalaseema Region:**

The commercial crops groundnut, sugarcane and cotton was positively and significantly influenced by area under the crop. The response of lagged area is negative in the case of groundnut and cotton and it is positive in the case of sugarcane output. A positive price influence was noticed in the case of sugarcane and cotton. In the case of groundnut output the effect of price is
negative. The rainfall effect is positive in the case of groundnut and sugarcane and it is negative in the case of cotton. The lagged rainfall effect is negative and significant on groundnut output and it is positive in the case of sugarcane and cotton. The effect of lagged output is positive and significant in the case of cotton and it is only positive on sugarcane. The effect of lagged output is negative on groundnut output. The combined effect of all independent variables on production of commercial crops is significant. It is concluded that about 86 per cent, 57 per cent and 65.4 per cent of variation was noticed in three crops viz., groundnut, sugarcane and cotton respectively.

Costal Andhra Region:

The coefficient of area under the crop was positive and significant in the case of sugarcane, cotton and tobacco output and it is only positive but not significant in the case of groundnut. The lagged area is positively influencing the groundnut and cotton and it is negatively influencing the sugarcane and tobacco productions. The price effect is positive and significant on groundnut output and it is only positive on sugarcane and tobacco. In the case of cotton output, the price effect is negative. The rainfall and lagged rainfall effect was negative on groundnut, sugarcane, cotton and its effect is positive in the case of tobacco crop output. A significant and positive lagged output effect was noticed in the case of sugarcane and tobacco and it is positive only in the case of cotton. The effect of lagged output on groundnut crop was negative.

The collective effect of all explanatory variables on production of commercial crops is significant. It is noticed that the production variations are
48 per cent, 66 per cent, 82 per cent and 67.3 per cent in the case of groundnut, sugarcane, cotton and tobacco respectively.

**Telanga Region:**

The commercial crops like groundnut and tobacco were directly and significantly influenced by area. But the effect of area was only positive in the case of sugarcane and cotton. The response of lagged area was positive and significant on cotton crop. It is only positive in the case of sugarcane and tobacco. In the case of groundnut crop, the lagged area effect is negative. The price effect was positive and significant on groundnut and tobacco and this effect is only positive in the case of cotton. The price is negatively influencing the sugarcane crop output. It is concluded that the price are encouraging to groundnut, tobacco and cotton growers and discouraging to sugarcane growers.

The rainfall effect is negative in the case of groundnut and cotton crops. This effect is positive in the case of sugarcane and tobacco crops. The commercial crops like groundnut, sugarcane and tobacco was positively influenced by lagged rainfall, the lagged rainfall is negative in the case of sugarcane crop output. A positive and significant lagged output’s influence on sugarcane output was recorded, and it is positive in the case of groundnut and tobacco. But its effect is negative on the cotton crop output. The collective effect of all independent factors is significant on production of groundnut, sugarcane, cotton and tobacco.

It is noticed that the production variations in crop’s output by these variables is about 75 per cent, 42.3 per cent, 88.9 per cent and 45 per cent in the case of groundnut, sugarcane, cotton and tobacco respectively.
Andhra Pradesh

To estimate the adaptive expectation equation of production responses of commercial crops in the Andhra Pradesh state, pooled data was considered. The equation (13) was fed with the data for each crop and the results were analysed in chapter four.

The production of groundnut and cotton crops are directly and significantly influenced by area under the crop. It is positive in case of sugarcane and negative in case of tobacco. The effect of lagged area was positive in the case of sugarcane and tobacco and it is negative in the case of groundnut and tobacco. The output of groundnut and cotton were negatively influenced by prices and its effect was positive in the case of sugarcane and tobacco. A negative response of rainfall was recorded in the case of sugarcane and cotton and positive response was noticed in the case of groundnut and tobacco. A significant lagged rainfall effect was noticed in the case of tobacco crop output. The output of groundnut and cotton was positively influenced by lagged rainfall and it was negatively influenced to sugarcane crop output. The groundnut crop output was negatively and significantly influenced by lagged output, but its influence is positive on sugarcane, cotton and tobacco. The tobacco crop output was significantly and positively influenced by lagged output. The combined effect of all independent variables was significant in all crops, except tobacco. It is concluded that, nearly 90.5 per cent, 49.6 per cent, 90.1 per cent and 23.9 per cent production variations was recorded in the case of groundnut, sugarcane, cotton and tobacco crops respectively.
The value of ‘λ’ reveals the price expectations. It is inferred that the groundnut growers are in over expectations about their future groundnut prices in their production decisions in three regions and the stat as a whole. In the case of sugarcane crop output, cane grower are considering way recent years prices in all the regions and the state also except Telangana region. Regarding the cotton production, cotton growers are in over expectations about their future prices in Telangana. In Rayalaseema and Costal Andhra, cotton growers are influenced by way recent year’s prices for their future cotton output decisions. In the case of tobacco crop, tobacco growers are influenced by recent year’s prices for their future output decisions in Telangana region and the state as a whole. In Costal Andhra region, tobacco growers are considering the recent past year’s prices for their future output decreasing.

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