GOVERNMENT OF ANDHRA PRADESH

WHITE PAPER

ON

AGRICULTURE, HORTICULTURE, SERICULTURE,
ANIMAL HUSBANDRY, DAIRY, FISHERIES AND
AGRICULTURAL MARKETING

23 July 2014

Departments of Agriculture, Horticulture, Sericulture,
Animal Husbandry, Dairy, Fisheries and Agricultural
Marketing
Background

The white paper briefly describes how agriculture, horticulture, sericulture, animal husbandry, dairying and fisheries have evolved over last two decades time in Andhra Pradesh. The main objectives of the study were to: a) appraise the general structure, conduct and performance of the sectors; b) identify the main constraints in the sectors that are impacting on biological sustainability and economically healthy practices; c) draw on national and international experience to recommend alternative policy approaches and strategies to address these issues; and d) inform about long-term transformations towards better sub-sector performance.

The note provides a major step forward in understanding current issues and future opportunities facing the sectors. Identifies key issues and opportunities, and sets out proposed reforms that could support more effective policies and management practices to gradually improve the productivity of agriculture, animal husbandry, dairying and fisheries to increase net benefits, and improve equity and livelihoods.

AGRICULTURE

II. AGRICULTURE

1. Introduction

Andhra Pradesh State is “the bejewelled rice bowl of India”. Agriculture plays an important role in the livelihoods of people as 70% of the population in Andhra Pradesh live in rural areas and depend on agriculture and related livelihood opportunities. The agriculture plays an important role not only in the economy but also for achieving the food security for the state and also for the country. Our main challenges are, growing water scarcity, degrading natural resources like land and decreasing per capita availability of land and water resources. Further, rainfed agriculture in the whole state
and irrigated agriculture in the coastal region is very much vulnerable to the impacts of natural calamities.

The new State of Andhra Pradesh with 13 districts has great potential for agriculture and allied sectors. Andhra Pradesh State consists of six agro climatic zones and five different soil types to grow wide range of crops throughout the year.

2. Agriculture Sector in Andhra Pradesh

During the period from 1994 to 2004

During 1994-2004, the Government played important role through innovative, institutional and policy interventions to benefit agriculture and farming families in the state. For example, the programs like “Neeru-Meeru”, was launched in mission mode for rainwater harvesting and for meeting the challenges of growing water scarcity and achieving the food and nutritional security. The state of Andhra Pradesh became an exemplary state as a leader in the area of rainwater harvesting in the country. Similarly, desilting of tanks through farmer participation as well as passage of WALTA contributed for protecting the environment.

In agriculture sector, the state introduced several institutional reforms. Some of those are mentioned below:

(a) Rythu Mithra Groups: During 2002, 1.21 lakh RMGs were formed to organize farmers as a group and to act as a conduit in the process of transfer of technologies and knowledge, training and information to all members of the group to achieve maximum production and productivity.

(b) Water users Associations: Water Users’ Associations were formed for improving the water use efficiency with the participation of farmers.

(c) Establishing soil testing labs in AMCs:
To focus on soil health management and improve productivity, for the first time in the country, 54 Soil Testing Laboratories were established in the Agricultural Marketing Committees (AMCs) of the state and soil health cards were issued

(d) Gypsum and zinc sulphate:
Special focus was given for supply of gypsum and zinc sulphate on a large scale on subsidy to correct the micro nutrient deficiency and enhancing the yield of ground nut, other oilseeds, paddy etc.

(e) **Crop Monitoring and Productivity enhancement:**
A team of Subject Matter Specialists (SMS) was set up at state level to monitor the condition of diseases & pests and for effective surveillance and for improving productivity. Focus was on training and extension and coordination between department and university to increase productivity.

(f) **District Agriculture Advisory and Transfer of Technology Centers (DAATTC)** were established at all district headquarters to advise and train the farmers and staff of the department on productivity related issues.

**Outcome:**

Yield of rice increased from 2609 kg / ha in 1994 to 3111 kg /ha in 2004 due to these initiatives.

Growth rates in agriculture: The GSDP of Agriculture and Horticulture at constant price has recorded the highest increase of 25.21% in 1998-99 over the previous years, followed by 2003-04 (17.50%), 2000-01 (17.10%) and 1995-96 (11.27%) and in some years recorded negative growth i.e., 1994-95 (-9.80%), 1996-9 (-0.01%), 1997-98 (-17.82%), 1999-2000 (-4.59%), 2001-02 (-6.80%) and 2002-03 (-17.95%).

**During the period from 2004 to 2014**

During the decade of 2004-2014 the agriculture in united AP faced number of problems and farmers suffered due to declining crop yields, widening yield gaps in comparison with best yields in the country, increasing prices of agriculture inputs resulting in increased cost of cultivation along with changes associated with climate variability.

The following major problems were noticed during this period:

a) **Cost of cultivation:**

The cost of cultivation registered steep increase in this period thus affecting the income of the farmers. The following table shows the cost of cultivation of different crops.
<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Crop</th>
<th>2004-05</th>
<th>2013-14</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cost of Cultivation/ha</td>
<td>MSP /qtl.</td>
<td>Cost of Cultivation/ha</td>
</tr>
<tr>
<td>1</td>
<td>Paddy</td>
<td>22461</td>
<td>590</td>
<td>65534</td>
</tr>
<tr>
<td>2</td>
<td>Maize</td>
<td>12085</td>
<td>525</td>
<td>37340</td>
</tr>
<tr>
<td>3</td>
<td>Redgram</td>
<td>6690</td>
<td>1390</td>
<td>23350</td>
</tr>
<tr>
<td>4</td>
<td>Groundnut</td>
<td>13207</td>
<td>1500</td>
<td>32735</td>
</tr>
<tr>
<td>5</td>
<td>Cotton</td>
<td>34451</td>
<td>1960</td>
<td>62430</td>
</tr>
</tbody>
</table>

Source: DES, Gov. of AP

As the income of the farmers has not registered any increase, the financial condition of the farmers has worsened leaving them in an unending cycle of indebtedness and adversity.

**Inflation:** over the years the rate of inflation is 4.43 in 2005-06, 6.59 in 2006-07, 4.74 in 2007-08, 8.05 in 2008-09, 3.80 in 2009-10, 9.56 in 2010-11, 8.94 in 2011-12, 7.36 in 2012-13 and 5.98 in 2013-14. Consequently the real income of the farmer has come down drastically due to increase in labour cost and inflationary pressures on prices of inputs and other consumer items which farmer buys.

As the increase in productivity and price increase have not kept pace with rate of inflation the real income realized by farmer has come down and worsened his situation. This left many of the farmer’s debt ridden and led to real crisis in Agriculture sector.

**b) Low and stagnant productivity:**

During this period the area and yield of crops like paddy, pulses remained stagnant and in oilseeds there was decline.

The yield levels on comparison with other states, showed gaps in all crops except in maize. In crops like rice, redgram, groundnut, sunflower, castor the gap between the yield of the state and highest yielding state in the country is very high. It indicates the possible potential for enhancement of productivity in the state and also
highlights the failure of government initiated programmes and also the research initiatives of the university (Table 1).

Table 1. Yield Gap in different crops across different states: TE 2011-12 (in kg./ha.)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Andhra Pradesh</th>
<th>Highest</th>
<th>Second Best</th>
<th>Percentage Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>3116</td>
<td>3918 (TN)</td>
<td>3741 (PUN)</td>
<td>20.0</td>
</tr>
<tr>
<td>Jowar</td>
<td>1887</td>
<td>2011 (MP)</td>
<td>-</td>
<td>6.6</td>
</tr>
<tr>
<td>Bajra</td>
<td>1704</td>
<td>2452 (TN)</td>
<td>2040 (HAR)</td>
<td>43.9</td>
</tr>
<tr>
<td>Maize</td>
<td>7012</td>
<td>7012 (AP)</td>
<td>6042 (TN)</td>
<td>-</td>
</tr>
<tr>
<td>Redgram</td>
<td>402</td>
<td>1693 (KER)</td>
<td>1514 (BIH)</td>
<td>321.0</td>
</tr>
<tr>
<td>Bengalgram</td>
<td>1142</td>
<td>1295 (BIH)</td>
<td>-</td>
<td>13.4</td>
</tr>
<tr>
<td>Groundnut</td>
<td>640</td>
<td>2751 (TN)</td>
<td>1938 (WB)</td>
<td>329.8</td>
</tr>
<tr>
<td>Sunflower</td>
<td>713</td>
<td>1857 (PUN)</td>
<td>1809 (TN)</td>
<td>160.4</td>
</tr>
<tr>
<td>Soybean</td>
<td>1615</td>
<td>2000 (KER)</td>
<td>1694 (MEG)</td>
<td>23.8</td>
</tr>
<tr>
<td>Castor</td>
<td>381</td>
<td>1988 (GUJ)</td>
<td>1530 (RAJ)</td>
<td>421.7</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>82000</td>
<td>102837 (TN)</td>
<td>90251 (KAR)</td>
<td>25.4</td>
</tr>
<tr>
<td>Cotton</td>
<td>386</td>
<td>703 (HAR)</td>
<td>698 (PUN)</td>
<td>82.1</td>
</tr>
<tr>
<td>Tobacco</td>
<td>1805</td>
<td>3069 (UP)</td>
<td>1899 (GUJ)</td>
<td>70.0</td>
</tr>
</tbody>
</table>

Source: DES, Gov. of AP

Rice: The productivity of the state is 30.09 q/ha. It is highest in Nellore (38.11 qtls/ha) and low in Visakhapatnam (16.04 qtls/ha) followed by Srikakulam districts (19.90 qtls/ha). The low yields are due to light soils, low carbon content, planting of aged seedlings due to delayed monsoon and crop lodging because of floods in north coastal districts.

Pulses: The maximum area under pulses is under bengal gram (4.96 lakh ha.) followed by black gram (3.81 lakh ha.). The area of rabi pulses is affected due to Yellow Mosaic Virus (YMV) and Powdery Mildew (PM). Introduction of short duration, resistant to YMV & PM green gram and black gram varieties and high yielding varieties of horse gram will improve the situation.

Millets: There is need to increase the production of millets like jowar, bajra, ragi etc. The area of these millets has come down during this period.

Oilseeds: Groundnut is grown during kharif as rain fed crop on a large scale in Rayalaseema region with low rainfall. The productivity of groundnut is only 6.40 qtls /ha during kharif and 22.42 qtls/ha during rabi.
In major crops like paddy, groundnut and pulses, the farmers have been using varieties which are more than 10 years old and in some cases more than 20 years.

In paddy the popular varieties grown and accepted by the farmers are MTU 7029 (Swarna), BPT 5204 (Samba mashuri), MTU 1001(Vijetha) and MTU 1010 (Cotton dora sannalu). The paddy varieties such as Swarna and Samba mashuri are evolved more than 25 years back. The variety Swarna was susceptible for lodging and the Krishna and Godavari delta is prone to frequent floods and cyclones. The newly developed varieties like Swarna sub lacks farmers acceptance. The variety Samba mashuri is susceptible to bacterial leaf blight. So, far the varieties with the acceptable quality of Samba mashuri were not evolved. The hybrid paddy varieties developed are also poor in cooking and milling quality and the market prices are low. As a result the rate of seed up gradation from old to new varieties is low and productivity of paddy remained stagnant during the last decade.

Research efforts have not been successful in developing varieties which are viable in the field. Continuous dependence on old varieties has pushed the farmers into a tough situation of stagnant yields and increasing cost, ultimately cutting into their income.

c) Failure of extension system:

**Adarsha rythus** were introduced in the year 2007 to provide interface between farmers and extension staff of agriculture and allied departments for dissemination of technology and other activities.

There is no tangible contribution of Adarsha rythus in extension work, though the government spent Rs. 28 crores approximately every year.

- It is felt that most of the Adarsha rythus were non practicing farmers
- Adarsha rythus were not qualified or not having requisite knowledge to sensitize the farmers
- They could not achieve the desired results.

Hence, the government has now decided to replace the Adarsha rythus with qualified persons for ensuring strong extension delivery system for the benefit of farmers.

d) Soil health management

Indiscriminate use of fertilizers and degradation of soil health:
Soil health management was not given due importance which resulted in land degradation and excess use of chemical fertilizers, thereby disturbing the balance of nutrients and crop growth. The saline and alkali soils where productivity and income to farmers was very low have not been reclaimed.

Indiscriminate use of fertilizers lead to imbalance in soil fertility and increase in input cost resulting into not only non availability of micronutrients but also led to yield losses. Imbalanced use of inorganic fertilizers also resulted in soil health degradation.

The fertilizer consumption during 1994-95 was 21.08 Lakh MT; in 2003-04 it was 24.28 Lakh MT and 38.12 Lakh MT in 2013-14. The fertilizer consumption has increased 15% from 1994 to 2003 where as the per cent of increase was 57% from 2003 to 2013.

e) Fertilizer crisis in 2008-09 & price rise in DAP and other complexes:

During 2008-09, timely action was not taken for indenting and positioning of fertilizers. The delay in supply of fertilizers like DAP and other complexes resulted in long queues of farmers at sale points causing unrest among the farming community and law and order problem.

In the years 2011-12 and 2012-13 there was steep rise in price of DAP (from Rs.485 in 2009 to Rs.1386 in 2013/-) and other complex fertilizers (Rs.362 in 2008 to 1323 in 2013) and as a result the cost of cultivation has gone up substantially.

Due to increase in the cost of complex fertilizers, the farmers opted for excessive use of urea which resulted in crisis of fertilizers and also in increase of cost cultivation. Excessive urea application also resulted in imbalanced use of fertilizers which led to yield losses and also increase in input cost. Imbalanced use of inorganic fertilizers also resulted in soil health degradation and non availability of essential micronutrients to the plants.

f) Cloud seeding:

Cloud seeding operations were conducted by the government from 2004 to 2009 at a cost of Rs 127.10 Crores in united state of Andhra Pradesh.

During 2005 and 2006 ten districts were covered in each year and from 2007 to 2009 twelve districts were covered in each year.
The total exercise was shrouded in controversy about the operations and the achievement of targeted results.

Though the programme was intended to induce rain by using technology of cloud seeding there is no effective evidence to show that it really induced rains and benefitted the farmers.

g) Crop holiday:

The crisis in agriculture sector is evidenced by the “Crop holiday” observed by the farmers of East Godavari district in an area of 85,050 acres in kharif 2011.

The farmers did not take up agricultural operations due to late release of canal water, high cost of cultivation, non availability of labour in peak season of agriculture operations on account of NREGS, non availability of credit, ineffective procurement, insufficient storage space, poor drainage maintenance, delayed settlement of crop insurance making agriculture an unmanageable and uneconomical activity. This shows the condition of agriculture and problems of farmers.

h) Farmer suicides:

Farmer suicides are a key concern in agriculture sector. The farmers were in deep distress due to failures of cotton crop and heavy indebtedness as the farmers were more dependent on private money lenders with higher rates of interest. The number of suicides from 1994 to 2003 was 310 whereas from 2004 to 2014 they were 1,943. Due to the insecure conditions and increasing uncertainty and unsustainability in agriculture the younger generations are not coming forward to take up agriculture as a career.

i) Marketing, storage and processing:

Farmers were not getting remunerative price for their produce due to market price fluctuations and undue dependence on the middle men who exploited the farmers. Adequate storage facilities were not available for the farmers to store the produce in times of distress sale. Processing facilities for agriculture commodities were not given any impetus and value addition was not created.

j) Growth rates in agriculture:

In agriculture, with regard to agricultural production in 13 districts, the per cent of growth over previous years at constant prices in some years recorded negative
growth i.e., 2005-06 (-3.47), 2006-07 (-3.14), 2008-09 (-12.41), 2010-11 (-7.93) and 2011-12 (-7.33) and during 2007-08 (32.36), 2009-10 (4.45), 2012-13 (6.12) and 2013-14 (6.25) recorded the percentage of positive growth over previous years.

k) **Growth rates in Agriculture and allied sectors:**

Andhra Pradesh has recorded percentage of negative growth rate in Agriculture and allied sectors at Constant price during 2005-06 (-1.54), 2008-09 (-1.78), 2010-11(-1.14) and there was marginal increase in growth rate during 2006-07 (3.22) & 2011-12(1.36). The performance of major states is given below:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gujarat</td>
<td>23.10</td>
<td>-0.73</td>
<td>8.73</td>
<td>-7.17</td>
<td>-0.74</td>
<td>21.64</td>
<td>5.02</td>
<td>-6.96</td>
</tr>
<tr>
<td>2</td>
<td>Tamilnadu</td>
<td>13.26</td>
<td>13.24</td>
<td>-4.41</td>
<td>-0.29</td>
<td>6.35</td>
<td>7.47</td>
<td>9.51</td>
<td>-10.22</td>
</tr>
<tr>
<td>3</td>
<td>Karnataka</td>
<td>9.92</td>
<td>-2.84</td>
<td>12.37</td>
<td>2.27</td>
<td>4.07</td>
<td>16.17</td>
<td>-1.95</td>
<td>2.30</td>
</tr>
<tr>
<td>4</td>
<td>Maharsahtra</td>
<td>9.20</td>
<td>14.03</td>
<td>13.76</td>
<td>-15.45</td>
<td>1.02</td>
<td>17.75</td>
<td>4.58</td>
<td>-2.14</td>
</tr>
<tr>
<td>5</td>
<td>Andhra Pradesh</td>
<td>-1.54</td>
<td>3.22</td>
<td>17.92</td>
<td>-1.78</td>
<td>6.84</td>
<td>-1.14</td>
<td>1.36</td>
<td>7.69</td>
</tr>
</tbody>
</table>

Source: Dept. Of Agric. & Cop, GOI.

i) **Natural Calamities :**

An amount of Rs. 47838.02 crores was sought as assistance from GOI from 2004-05 to 2014-15 for input subsidy to natural calamities affected farmers. The GOI has released Rs 7895.52 crores, which is seventeen percent of the assistance sought.

3. **Impact of bifurcation of Andhra Pradesh state on newly formed Andhra Pradesh in agriculture sector**

a) **Agricultural education, research and extension:** In united Andhra Pradesh there is one Agricultural University, located in Hyderabad and presently it is in Telangana state. So the important laboratories like DNA Finger Printing, Tissue culture, NMR Oil analysis are in Telangana state. Colleges and Research Stations, based on the location, are allotted to respective States.

b) **Department of Agriculture:** The DNA finger printing & transgenic crops monitoring laboratory, Bio-pesticides quality control laboratory and pesticide residue testing laboratory are located in Hyderabad and are allotted to Telangana.
State. No such facilities are available in A.P. and they are high level technology labs. The apex agriculture training institute SAMETI is also allotted to Telangana state. It takes considerable time and expenditure to develop such facilities in A.P.

c) **Seed industry:** Major portion of paddy seed production is taken up in Telangana region, whereas pulses and groundnut major seed production is in Andhra Pradesh. Regarding other crops the seed production is taken up in both the States. There are 969 private seed processing units in Telangana as against 309 in Andhra Pradesh. As a result the capacity or facility of seed processing or supply are affected adversely in the state of Andhra Pradesh.

d) **Natural calamities:** Due to natural calamities, in last six years (2008-09 to 2013-14) an area of 20.18 lakh ha was affected in united Andhra Pradesh and out of that, 15.16 lakh ha falls in 13 districts of residuary Andhra Pradesh. So, seventy five percent of the area prone to natural calamities is in residuary Andhra Pradesh.

4. **Way Forward:**

The goal of the achieving food and nutritional security, with growing water scarcity, degrading land resources, depleting per capita availability of water and land and the impacts of climate change, has become a big challenge to the state.

There is need to evaluate the results of different initiatives taken during the previous years and to reorient the strategies as the productivity of major crops has stagnated. There is need for a very comprehensive long term planning encompassing all the Government and Non Government agencies in agriculture sector.

5. **Goal and objectives of plan:**

The overall goal of the agriculture department is to achieve the food and nutritional security along with improved livelihoods for the rural farming families through sustainable intensification of agriculture in the state. Our main goal is to make agriculture in the state, climate resilient, sustainable, productive and profitable and transform agriculture from “a way of life” into an “enterprise”.

The specific objectives of the plan are as follows:

a) Increasing productivity of the crops
b) Use of advanced tools like soil health mapping, use of Remote Sensing Data GIS, simulation model optimum utilization of balanced fertilizer application for reducing cost of cultivation and increasing profits.

c) To strengthen the agricultural extension system for increasing productivity, profitability, sustainability and incomes for the farmers.

d) Enabling policies for providing the market access to small and marginal farmers.

6. Strategies:

The issue of food security as well as nutritional security and improved livelihoods for rural people need urgent attention and following steps are proposed for sustainable intensification of agriculture.

a) Waiver of agriculture loans:

Andhra Pradesh state is much vulnerable to natural calamities like floods and cyclones in coastal districts and frequent droughts in Rayalaseema region. Every year the occurrence of natural calamities made agriculture unmanageable and uneconomical even in high productive regions like Konaseema in Godavari and central delta of the state at times, forcing farmers to declare crop holiday.

The cost of farm inputs and thereby cost of production has increased substantially over the years, while the sale price of farm produce has not increased commensurately and crop productivity remained stagnant. The low productivity coupled with increased cost of cultivation led to indebtedness of the farmers forcing them in some cases to commit suicides. During the last few years the farmers suffered heavy losses due to crop failures and are in dire need of assistance to sustain the agriculture.

So, the waiver of the agriculture loans is declared to rescue the farmers from deep indebtedness and to revive the crisis hit agriculture and to create confidence among the farmers.

b) Strengthening the extension system to reach seven million farmers

There is need to strengthen the existing departmental extension system to improve the reach to the farmers in the state. It is proposed to use ICT-based technologies.
Muti Purpose Extension officers will be appointed for every 1000 ha to strengthen the Extension reach to the farmers.

Rythu Mithra Groups (RMGs) of 1.21 lakh formed during 2003-04 are now reduced to 8,917 by 2012-13. Steps will be taken to reorient this programme. Strengthening of these groups will be helpful to facilitate crop loans to tenant farmers and for channelizing different programmes of the department.

c) **Soil health mapping and balanced fertilizer use for increasing profitability and minimising land degradation.**

There is imbalanced use of fertilizers. It has been observed by soil mapping exercise undertaken by Department of Agriculture with ICRISAT / APSRAC that there is large scale deficiency of multiple nutrients such as micro and secondary nutrients like zinc, boron, sulphur, iron. Due to lack of exposure about the soil health farmers keep on increasing the doses of nitrogen and phosphorus which do not result in increased crop yields. It is proposed to undertake soil health mapping through stratified sampling and by using GIS to devise soil test based nutrient recommendations through soil health cards to the farmers in a phased and mission mode.

d) **Use of satellite imagery and use of other technologies:**

- Satellite imagery and remote sensing data will be used for soil mapping and crop coverage area estimation at village level, progress of restoration of waste and degraded lands, area covered by canal irrigation in each season, monitoring of farm pond and water conservation / watershed development activities and condition of the crop during the season at fixed intervals. This data in GIS environment with the expertise of APSRAC and Agriculture University will be used for making recommendations to the farmers for selection of crops, for changing the cropping pattern, for monitoring crop condition and for taking the corrective actions wherever needed.

- Supply of Soil health cards: A comprehensive soil health card will be issued to every farmer. This will contain the details of soil test analysis, the crops that can be grown in the land, ideal doses of the fertilizers, amendments’ requirement and green manures etc.
e) Developing Andhra Pradesh state as seed industry hub

The farmers of the state will be encouraged to produce their own seed through Seed Village Programme (SVP) to make quality seed available at the door step of the farmers at affordable price. The programme will be streamlined to ensure transfer of seed from seed growing farmers to other farmers. Andhra Pradesh will be developed as seed industry hub by increasing the seed production in districts like Prakasam, Chittoor, Anantapur, Kurnool and Kadapa.

f) Farm mechanization:

Farm mechanisation accelerates the pace of the growth in agriculture sector. Focus will be to make available the best machinery for farming operations like land preparation, sowing, inter cultivation, harvesting and post harvesting. Establishing Custom Hiring Centers (CHC) and Implement Hiring Stations (IHS) which facilitates the availability of high cost machinery to small and marginal farmers on hire basis will be a priority item.

g) Organic farming:

To ensure healthy agricultural produce and to save the soil, extensive program will be taken up for encouraging the organic farming program by coordinating programmes of both agriculture department and SERP.

h) Drought proofing of rainfed areas:

Rainfed agriculture areas are facing acute water scarcity and are prone to severe land degradation and more vulnerable to impacts of climate change. It is necessary to work towards making these areas climate resilient and profitable for the small farm holders for improving their productivity, profitability along with sustainability.

Comprehensive and viable package of water and moisture conservation, farm pond development, integrated farming system approach backed by micro irrigation for crops will be taken up to improve the productivity and economic returns in rainfed areas.

Government decided to cover all the well irrigated areas in Anantapur and upland mandals of West Godavari districts with micro irrigation in the coming 2 years. The drip and sprinkler units will be supplied to, SC&ST farmers on 100%, Small, marginal farmers on 90% and other farmers on 50% subsidy.
Drip and sprinkler systems shall be adopted for agricultural crops like cotton, sugarcane and groundnut crops. Funds from Rainfed area development scheme of GOI shall be used for this purpose throughout the state.

i) Marketing:

The farmers are not getting fair price due to lack of proper linkages between buyers and farmers in many cases. Price fluctuations also affect the farmers adversely. So market interventions will be initiated in every season at appropriate time.

J) Agri processing policy will be formulated to give support to the processing of agriculture produce for achieving value addition.

k) Convergence of Agriculture and allied sectors

During 2013-14, the GSDP at current prices in Agriculture and allied sectors was Rs 131019 crores in which contribution and the percentage of contribution to total GSDP of Agriculture was Rs 45132 crores (9.48%), Horticulture 30088 crores (6.32%), Livestock Rs 33600 crores (7.06%), Forestry Rs 4904 crores (1.03%) and fisheries Rs 17295 crores (3.63%). Nearly 70% of the population depend on agriculture and allied sectors.

The entire focus will be to integrate all the line departments of Agriculture, Horticulture, Animal Husbandry, Irrigation, Forestry, Sericulture, Fisheries, Marketing and Rural development etc, for the benefit of the farmers and to reduce cost of cultivation and increase their income.

l) Research

Intensive programme will be taken up to strengthen the existing system of research & development in the University. Focus will be for the development of suitable high yielding varieties in paddy, groundnut, pulses and other crops which are resistant to pests and diseases with tolerance to floods and drought and suitable for different agroclimatic zones.

7. Conclusion:

The primary focus is on cost reduction and increasing productivity by strengthening the extension system introducing new seed varieties and adopting appropriate farm
mechanisation and focusing on optimum use of fertilizers to maintain sustainable soil health.

The Government accords the highest priority to the agriculture sector and the welfare of farmers. The constraints and problems which have been troubling the farmers over the years will be addressed through a systematic approach. Every effort will be to make agriculture in the state productive, profitable, sustainable and climate resilient through building the partnerships with research organizations.

The Government requests all stakeholders and general public to study this white paper and provide their valuable suggestions / comments which would help the agriculture sector to achieve the highest level of production and prosperity to the farmers.
HORTICULTURE

INTRODUCTION:-

The Department of Horticulture was formed in the year 1981 after getting bifurcated from the State Department of Agriculture. Horticulture over the years has emerged as an indispensable part of Agriculture by offering wide range of crop diversification choice to farmers and providing opportunities for sustaining large number of agro-industries which have created employment opportunities to semi-skilled and unskilled labour force.

In view of the increased public investment in Horticulture sector, the Govt., of A.P. has been giving much needed emphasis to Horticulture development, primarily targeting at increasing the production and productivity of horticulture crops, development of infrastructure for Post Harvest Management and providing access to domestic and export markets.

Horticulture sector contributes approximately 5.16% of the State GSDP. Horticulture sector is also identified as one of the growth engines to contribute GSDP growth in the vision 2020 document.

OBJECTIVES:-

- To bring a transition from a traditional outlook to an income-oriented outlook with a perceptible change in the concept of Horticulture development in the State.

- To improve efficient water-use management, fertilizer and savings in energy.

- To increase the Horticulture crops area, rejuvenation of old & senile gardens, encouraging farm mechanization equipments, post harvest management and protected cultivation etc.,

- To promote Oil Palm crop area expansion.
To encourage hybrid vegetable seeds, provide new technologies and Good Agriculture Practices.

To provide holistic growth of the Horticulture sector in cluster approach which includes research and technology promotion.

To enhance productivity of Horticulture produce, improve nutritional security and income support to farm households.

INITIATIVES IN HORTICULTURE (A.P.):

During the period 1994-2004:

As Horticulture sector was identified as one of the growth engines in Vision 2020 document, the State Govt. has introduced the following new initiatives:

1. During the year 2003, for the first time in India A.P. Govt. has launched A.P. Micro Irrigation Project (APMIP) to conserve the available ground water and also to increase the productivity of Horticulture crops.

2. A new initiative has been taken up by the State Government to uplift small and marginal farmers of Kuppam constituency in Chittoor district, by promoting Micro Irrigation Technologies for cultivation of high value Horticulture crops.

3. Created Agri. Export Zones (AEZ) for mango, grapes and gherkins and chillies to promote quality production and exports.

4. Promoted post harvest technologies and Protected cultivation of cut flowers in a large scale.

5. Top priority was given to cultivation of Oil Palm in the State.

6. Introduced subsidy for cultivation of Hybrid Vegetables for increasing productivity under the State Plan.
During the period 2004-2014:

The following major problems were identified during this period:-

1. Sufficient efforts were lacking in introducing new varieties to increase the production of various fruits and vegetable crops.

2. Agri Export Zones established for Mango, Chillies, Grapes to promote quality production for export became non functional.

Strategies for development of Horticulture from 2014 onwards

1. Increase “Pandal” cultivation of vegetables for better quality and higher production.

2. Distribute more Farm Fresh Vegetable Vending Vans to farmer groups for direct marketing of their produce.


4. Identification of crop specific clusters and promotion of high value Horticulture crops including fruits, vegetables and flowers.

5. Convergence of MGNREGS with Horticulture Department for better utilization of labour and empowerment of backward communities.

6. Promotion of Post Harvest Management practices through establishment of pack houses, cold storages, ripening chambers and reduce postharvest losses thereby increasing Horticulture exports.

7. Improving marketing facilities through Rythu bazaars, vegetable markets, collection centers and Refer vans so that the farmers get remunerative prices for their produce.
8. Promotion of precision farming through micro irrigation, fertigation, Green House Cultivation, Mulching for better water conversation and quality production.

9. Encouragement of modern farm machinery and tools to save time and labour.

10. Establishment of Center of Excellence to demonstrate new technologies and practices and training to farmers and officers.

11. More focus will be given for training and extension for better coordination between Department and Horticulture University for increasing the productivity of Horticulture Crops.

12. For improving productivity a team of subject matter specialists and technical support group members will be visiting the horticulture fields regularly to advise the farmers on better management practices.

13. The productivity gap between the State and the Country will be reduced through introduction of high yielding varieties and better extension by the Horticulture University and the Department of Horticulture.

**CONCLUSION:**

The Govt. accords top priority to the Horticulture Sector. Steps are being taken to overcome the constraints and challenges faced by the farming community. Every effort will be made to make Horticulture sustainable and profitable to the farmers.

The Government requests all stakeholders and general public to study the “white paper” and give their valuable suggestions/comments to make Horticulture sector more profitable to the farmers and other stakeholders and thereby contribute substantially to the GDP of the State.
Sericulture in Andhra Pradesh is a sustainable farm based economic enterprise positively favouring the rural poor in the unorganized sector because of its relatively low requirement of fixed capital, and higher returns at frequent intervals on the investment.

Andhra Pradesh stands second in the country in silk production next only to Karnataka. One acre of mulberry generates a steady income to a farmer with an average of Rs.75,000/-annually in 5 to 6 crops. The industry has an immense potential of generating employment for not less than (5) persons per acre throughout the year, both directly and indirectly. An important feature of Sericulture industry is involvement of female labour for more than 60% in silkworm rearing and cocoon reeling, which are critical operations in the silk production.

Progress of Sericulture industry during 1993-94 to 2003-04

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Sector</th>
<th>Units</th>
<th>1993-94</th>
<th>2003-04</th>
<th>% of Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mulberry cultivation</td>
<td>Acres</td>
<td>75,000</td>
<td>1,43,076</td>
<td>90.76</td>
</tr>
<tr>
<td>2</td>
<td>Brushing of Dfls</td>
<td>Lakh. No</td>
<td>555.04</td>
<td>1008.10</td>
<td>81.62</td>
</tr>
<tr>
<td>3</td>
<td>Cocoon production</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cross Breed</td>
<td>MTs</td>
<td>22541.00</td>
<td>53693.00</td>
<td>138.00</td>
</tr>
<tr>
<td></td>
<td>Bivoltine</td>
<td>MTs</td>
<td>56.60</td>
<td>611.28</td>
<td>979.00</td>
</tr>
<tr>
<td></td>
<td>Total cocoon production</td>
<td>MTs</td>
<td>22546.66</td>
<td>54304.28</td>
<td>140.85</td>
</tr>
<tr>
<td>4</td>
<td>Farmers</td>
<td>Nos</td>
<td>85,000</td>
<td>1,17,221</td>
<td>37.90</td>
</tr>
<tr>
<td>5</td>
<td>Employment generation</td>
<td>Lakh. No</td>
<td>3.75</td>
<td>7.15</td>
<td>90.66</td>
</tr>
</tbody>
</table>
A steady progress was noticed from 1993-94 to 2003-04 in Mulberry cultivation, Brushing of Dfils, Cocoon production and employment generation due to control on import of Raw silk from China, which led to encouragement in price support to farmers.

**Industry during 2003-04 to 2013-14.**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Sector</th>
<th>Units</th>
<th>2003-04</th>
<th>2013-14</th>
<th>% of Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mulberry cultivation</td>
<td>Acres</td>
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<td>109329</td>
<td>-23.50</td>
</tr>
<tr>
<td>2</td>
<td>Brushing of Dfils</td>
<td>Lakh.No</td>
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<td>819.979</td>
<td>-18.66</td>
</tr>
<tr>
<td>3</td>
<td>Cocoon production</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cross Breed</td>
<td>MTs</td>
<td>53693.00</td>
<td>45717.00</td>
<td>-14.85</td>
</tr>
<tr>
<td></td>
<td>Bivoltine</td>
<td>MTs</td>
<td>611.28</td>
<td>2472.00</td>
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<tr>
<td></td>
<td>Total cocoon production</td>
<td>MTs</td>
<td>54304.28</td>
<td>48189.00</td>
<td>-11.26</td>
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<tr>
<td>4</td>
<td>Farmers</td>
<td>Nos</td>
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<td>1,00,785</td>
<td>-14.02</td>
</tr>
<tr>
<td>5</td>
<td>Employment generation</td>
<td>Lakh. No</td>
<td>7.15</td>
<td>5.46</td>
<td>-23.63</td>
</tr>
</tbody>
</table>

**Industry during 2004-2014:**

- Inadequate production of BVH & CB silkworm seed in the Departmental Grainages resulted in procurement of seed from private graineurs and sources of CSB Grainages.
- The extent of mulberry acreage drastically reduced from 1,43,076 acres in 2004 to 109329 acres in 2014 due to steep fluctuations in reeling cocoons and raw silk due to indiscriminate import of raw silk which resulted in decrease in mulberry extent.
- The cost of mulberry cultivation registered steep increase in this period thus affecting the income of the farmers. As income of the farmers did not register
any increase, the financial condition of the farmers worsened leaving them in an unending cycle of indebtedness and adversity.

- **Stagnant Productivity:** The sericulture farmers have been rearing silkworm varieties which are more than 20 years old. Research efforts have not been very successful in developing silkworm seed varieties for the coastal districts. Continuous dependence on old variety of silkworm have pushed the farmers into a tough situation of stagnant yields and increase in cost, ultimately cutting into their incomes.

- **Extension in terms of new technology, use of fertilizers etc.,** could have been better, which suffered due to large number of vacancies in the Department.

- **Farmers did not get remunerative prices for their produce due to in-adequate market network, lack of storage facility and post-harvest handling losses and processing of cocoons.**

**Vision from 2014 onwards:**

- To place Andhra Pradesh as one of the leading states in silk production to meet the domestic requirements first and exports of silk and silk garments later.

- To promote sericulture as an alternate and viable option to meet the challenges of agrarian crisis.

- To promote rural livelihoods for employment creation and poverty alleviation through Vanya silk sector.

**STRATEGY:**

- There is need to evaluate the results of different initiatives taken during the previous years and to reorient the strategies as productivity of BVH silk. There is need for every comprehensive long term planning encompassing Govt. and non-Govt. agencies in sericulture sector.

- Increase in mulberry area, production and productivity / cluster development projects.

- Improving soil health and reducing cost of Mulberry cultivation.
• Ensuring fair price to produce of sericulture farmers increasing the income of the sericulture farmers.
• Integrated project planning i.e. leaf to cloth (soil to silk)
• Sericulture Department is striving to achieve higher productivity through
  ➢ Increased investments
  ➢ Strengthening extension efforts through training to technical staff of Dept and wide publicity about Departmental schemes.
  ➢ Technology adoption and adaptations
  ➢ Cluster approach in pre & post cocoon sectors (i.e. Mulberry cultivation, Silkworm rearing, Silk reeling, Twisting, Weaving sectors)
  ➢ Production incentives and subsidies in pre & post cocoon sectors.
  ➢ Soil health management.- soil testing for optimum fertilizer usage.
  ➢ Organic farming – neem cake / Poshan / Bio-fertilizer / stem crushing & mulching.
  ➢ To ensure quality BVH silk production, soil health management, Mulberry and Silkworm disease management are prioritized.

• Increasing cropped area production and productivity:
  • Ensure self-sufficiency in silk production in domestic requirements.
  • Ensuring quality V-1 mulberry saplings through kissan nurseries.
  • Ensuring timely supply of quality silkworm seed,
  • Strengthening of Research & Development to trans-gene to control silkworm diseases.
  • Convergence of sericulture activity with MG-NREGS, RKVY to achieve synergy and enhanced production & productivity.
  • Encouragement of Farm Mechanization for mulberry cultivation and silkworm rearing.
• Establishment of proper linkages between farmers and buyers for getting better market price and market intervention at appropriate time to be initiated.

• Use of multi-media / electronic media for disseminating technology / information to farmers through regular TV shows / print media. Farmers’ meets / field visits / exposure visits etc to carry out.

• WATER CONSERVATION:
Sericulture is being practiced mostly in drought prone areas like Ananthapur, Chittoor, Kurnool, Kadapa where irrigation water is very scarcely available. Since Mulberry is a perennial crop, irrigation water is required throughout the year. For sustenance of sericulture in these areas, water and soil conservation methods such as micro-irrigation, farm-ponds & bunding etc are being adopted. Drip irrigation has to be promoted on large scale for 100% saturation mode.

Focussed Initiatives:

➢ Installing of solar energy lighting & cooling systems and irrigation pump sets to help mulberry cultivation.

➢ Establishment of reeling cocoon & raw silk processing units i.e improvised silk reeling devices of multi-end & automatic silk reeling for consumption of entire quantum of cocoon produced / marketed locally in the State and twisting units to meet domestic demand from weavers in the State.

Conclusion:
The Govt. accords highest priority to Agriculture and Allied sectors for the welfare of farmers. The constraints and problems which have been troubling the farmers / reelers /
weavers over the years have to be eliminated. Every effort will be made to make Sericulture sustainable and profitable to all the stakeholders. The Govt. requests all the stakeholders and general public to study this “White Paper” and provide their valuable suggestions / comments which would help the Sericulture sector to achieve the highest level of production and prosperity for the stakeholders.
ANIMAL HUSBANDRY

1. Introduction

Animal husbandry, Dairying and Fisheries sectors play an important role in the national economy and in the socio economic development of the country. The contribution of these sectors to the national economy in terms of Gross Domestic Product is 3.9% at current prices for Livestock sector. This sector contributes Rs. 33600.0 crore to the State at current prices which amounts to 7.06% to GSDP. The Value of Output of Livestock Sector has increased steadily in both current and constant prices during XI\textsuperscript{th} Five Year Plan period with an average annual growth rate of 16.36% and 5.07% respectively.

2. Livestock Sector in Andhra Pradesh during the period from 1994 to 2004

During 1994-2004, various innovative, institutional and policy interventions adopted by the Government resulted in improving the socio economic standards of the poor rural farmers engaged in Livestock rearing activities. For example, the programs like “\textit{Gopal Mitra}” was launched for upgrading the genetic potential of the non descriptive cattle and buffaloes resulted in perceptible improvement of the breed. Andhra Pradesh became a role model in the country for other States in implementing the scheme.

\textbf{Highlights of Livestock Sector in Andhra Pradesh during the period from 1994 – 2004:}

\textbf{Livestock Breeding}

\begin{itemize}
  \item 1. Andhra Pradesh Livestock Development Agency (\textit{APLDA}) was established in 1999 as nodal agency for Livestock Breeding activities in the State – first of its kind in the country.
  \item 2. Breed Up-gradation activities were intensified through provision of doorstep Artificial Insemination facilities through \textit{GOPAL MITRA Scheme} (From Zero during 1999-2000 to 1116 during 2003-04).
\end{itemize}
3. Coverage of breedable bovine population was improved by 5% through involvement of NGO / JK Trust Gram Vikas Yojana under PPP mode (150 Centres) in remote areas of the State.

Livestock Health Care

1) For the first time in the country, vaccination for economically important disease like Foot and Mouth in Bovines, Sheep and Goat De-worming was undertaken benefiting 50 lakh livestock farmers.
2) Animal Health and Fertility Camps on massive scale were conducted in all the villages during Janmabhoomi Programmes.

Feed and Fodder aspects:

1) Popularized Fodder Conservation methods through usage of Chaff Cutters, baling machines etc.,
2) Large scale distribution of sufficient quantities of quality fodder seed.
3) Fodder camps were organized in drought hit districts to check distress sale of cattle.

Extension and Awareness programmes

1) Large scale technology transfer was facilitated among farmers in the JANMABHOOMI Programme.
2) Functional and Economic indicators were identified for reviewing the performance of all functionaries in the Department which enabled to assess contribution of Livestock sector to GSDP.
3) Introduced usage of IT infrastructure for better Livestock service delivery.

Major gaps noticed during the period from 2004 to 2014

a) Low productivity - Though the State is in 5th position in the country as far as Milk Production is concerned, the average productivity per animal is very low (13th position) i.e. 4.67kg/day.
b) No efforts to conserve Indigenous Livestock breeds native of Andhra Pradesh like Ongole and Punganur.

c) Due to lack of adequate processing infrastructure, remunerative prices to livestock products is not ensured whenever there is glut in the market.

d) Inadequate attention to augment feed and fodder leading to inadequate availability even during normal seasons.

e) Degeneration of Common Property Resources which were badly neglected.

f) Inadequate effort to develop and make available vaccines for economically important Diseases like Blue Tongue, Foot Rot in Sheep and Goat and other Emerging Diseases resulting in severe loss to the farmers.

g) Inadequate budgetary allocations vis-à-vis GSDP contribution, Only Rs.11/- per annum per animal is provided for healthcare & to promote production from livestock which is grossly inadequate.

8. Impact of bifurcation of Andhra Pradesh state on newly formed Andhra Pradesh in Livestock sector

e) The state is deprived of Livestock Vaccine Production and Disease Diagnostic facilities due to Veterinary Biological Research Institute devolving to Telangana state.

f) Major National Institutes related to Livestock Development like National Research Centre on Meat; National Institute of Animal Bio-Technology (NIAB); Central Research Institute for Dry Land Agriculture (CRIDA), Centre for Cellular Micro-Biology (CCMB), Indian Immunological Limited (IIL), Fodder Research Station, AICRP on Poultry and Project Directorate on Poultry etc., have devolved to Telangana, as such the residual Andhra Pradesh is devoid of such national institutes.
9. **Way Forward:**

The goal of achieving food and nutritional security through Livestock sources, with reducing Livestock numbers, degrading land resources, impact of climate change, increasing human population, affordable prices of livestock products to the consumers and remunerative prices to the producers has become a big challenge to the state.

There is need to evaluate the results of different initiatives taken during the previous years and to reorient the strategies as the productivity of animals has to be increased.

10. **Goal and objectives:**

It is targeted to achieve a growth rate of 8% in Milk Production, 10% in Meat Production, 5% in Egg Production and overall Growth Rate of 8-10% from Livestock Sector by the end of 12\textsuperscript{th} Five Year Plan.

**The sector wise objectives are as follows :**

**A) Milk Production and Productivity**

- State Livestock Mission will be launched immediately. Similarly, at District level, District Livestock Mission will be launched. Under SLM, various schemes worth Rs.350 crore will be implemented.
- Credit of Rs.3663 Crs for Diary development, Rs.870 Crs for Poultry, Rs.290 Crs for sheep & goat sector will be mobilized from different banks. (Total: Rs.4823 Crs for AH sector).
- Breed improvement through large scale cross breeding, up-gradation of local buffaloes with Murrah, selective breeding in indigenous cattle like Ongole.
- Massive frozen semen, dose production and establishing Embryo Transfer (ET) technology facilities.
- Taking up pilot project to import and introduced sexed semen of very superior bulls in selected farms to increase in production.
- Promotion of commercial dairy farming in the areas surrounding Smart Cities like Vijayawada, Guntur, Visakhapatnam, Rajahmundry, Kakinada, Tirupathi, Kurnool and in North Coastal and Rayalaseema Districts of Andhra Pradesh.
- Privatising specific Animal Husbandry services - that can be run on a commercial basis and where individual interest is greater than the public interest such as Artificial Insemination and fodder development.
- Comprehensive Livestock Health Care activities including disease surveillance program for quick response and control of diseases like vaccination in campaign mode, large number of Animal Health camps etc.,
- Establishing a large vaccine production centre at Indira Gandhi Centre for Advance Research on Livestock (IGCARL) at Pulivendula, Kadapa dist.
- Creating a feed and fodder development programme which includes encouraging research on high yield fodder seeds and ways of upgrading crop residue (Total Mixed Ration - TMR); developing wastelands as fodder grounds through corporate/Gram Panchayat participation; working with agricultural extension and education officers to encourage fodder cropping; making available high yield fodder seed in rural areas; and setting quality standards for feed concentrates and mixes.
- 2 lakh acre will be covered under green fodder cultivation every year.
- Fodder banks will be established in four Rayalseema Districts (drought prone) under cooperative/ppp/Joint venture mode.
- Establishing 5-10 fodder block making in fodder surplus areas (like Godavari districts, Guntur, Krishna) through unemployed youth entrepreneurs- to supply fodder blocks to deficit areas of Rayalseema.
- Policy decision to ensure that the Veterinary Doctors attend the Veterinary Institution during Hospital hours from 8AM to 12 Noon invariably and to attend other duties from afternoon.
- Policy decision to prevent VAS (Veterinary Assistant Surgeons) on deputation work in other departments which is non-technical in nature.

B) Egg Sector

- Government support for private investment on three fronts: reform regulation; provide infrastructure; and actively promote the sector.
- Reforming regulation which will include simplifying procedures, providing policies to enable large players to work closely with farmers, and ensuring policies that facilitate exports, enabling contract farming, simplifying land acquisition and export procedures, and rationalising sales tax on processed food.
- Promotion of Backyard Poultry for the benefit of rural/tribal farmers.

C) Meat Sector

- Mass vaccination of sheep & goat with PPR and Entero-toxaemia, Sheep Pox.
- De-worming to increase weight gain.
- Thrust on Meat Breeds – promoting exchange of breeding rams among farmers to avoid inbreeding which is a common problem now.
- Quality and Hygienic Meat Production – promoting rural slaughter houses and training the butchers.
- Process Development and Technology Up-gradation - Appropriate technologies for efficient utilization of Animal byproducts like variety meats, wool, hides, skins, bone, hoof, horn, tallow and others of pharmaceutical importance.
- Promoting Marketing Agencies – facilitation sheep/goat, market yards under co-operative/PPP mode.
**DAIRY**

- **Introduction**

  The APDDCF (Andhra Pradesh Dairy Development Cooperative Federation) has its genesis in the year 1981 under cooperative ambit, Plays a vital role between Milk Producer (Procure at remunerative price) and Consumer (sell at affordable price).

  The objective of APDDCF is to develop Dairy Value Chain with primary focus on Milk Procurement by organized sector. The APDDCF is a nodal agency for implementing Dairy Development Schemes on behalf of Government and is involved in formulating Dairy Development policies.

- **Status during the period from 1994-2004**

  1. **VIJAYA** brand was made popular by enhancing its national presence. The markets were developed for VIJAYA by expanding marketing network to Delhi, Jaipur, Jodhpur, Chandigarh, Jammu & Kashmir, Ahamedabad, Bhubaneswar, Mumbai, Calcutta, Goa, Bangalore, Chennai, Guawahati, Pune etc.

  2. Because of these efforts the brand value of VIJAYA, which was Rs. 800 Cr. has increased to Rs. 1500 Cr. now

  3. The milk producers were extended subsidy towards differential milk purchase price.

  4. The District milk unions were supported by creating facilities for Ultra High Treatment(UHT) packing, Table Butter, Cheese making, VIJAYA Baby food.

  5. Dairy Plants were established at Visakhapatnam, Krishna, Guntur, Prakasam, Nellore and Kurnool with modern facilities to benefit the small and marginal farmers in terms of higher payment for their produce.
Status during the period from 2004-2014

1. Milk Unions under APMACS Act 1995 could not be prevented from conversion as Producers Companies under Indian Companies Act 1956, leading to loss of Government control over its assets.
2. No efforts were made for resumption of the Government assets from the MAC Milk Unions or getting lease on it. Consequently, no revenue to Government for developing dairying in the State.
3. Development of milk marketing in different parts of the State ignored, importance was given only to develop Hyderabad market at the cost of other areas.
4. No efforts were made to revive the Sick Milk Unions viz., Kadapa, Chittoor and Godavari Milk Union.
5. No focus was given to build local pouch milk markets at district level in AP and the focus has been given only to develop Hyderabad market at the cost of other areas.
6. The national glory of Vijaya Brand was diminished

Challenges after bifurcation

1. The Milk Products Factory at Hyderabad has devolved to Telangana. Consequently there is no Milk Products Factory under AP Dairy Federation in Andhra Pradesh. Because of this loss, the Andhra Pradesh would suffer severely in serving the consumers with milk and variety of milk products;
2. Also there are no cattle feed factories in the residuary Andhra Pradesh as the Gadwal Cattle Feed Factory devolved to Telangana.

Way forward

- Develop dairy value chain, cover uncovered areas in the State under Cooperative ambit
- Facilitate common cooperative brand i.e "VIJAYA". Make the cooperatives competitive to International brands.
- Provide online Milk Monitoring & Payment Gateway (OMM&PG) Milkosoft - aiming direct payment to farmers through their Bank Account. This will enable timely payment of proper price to farmers.
- Extend Financial Incentive to private entrepreneurs in dairy sector as per the provisions under APR Act of 2014.
- Enabling establishment of Dairies in all the Smart Cities with Private Participation, Joint Venture and Cooperatives;
- Formulate HR Policy on corporate/professional like that Amul.
- Increase the share of milk procurement by organized sector to about 70% from the present level of 30% in next five year by 2018-19 by establishing rural cold chain i.e Bulk Milk Cooling Units (BMCUs), Milk Chilling Centers (MCC), Dairy Plants under Cooperative, Joint Venture, PPP modes;
- Invite and involve various stakeholders at national and international level in Dairy Development in the State.
- Use Information Technology & Communications (IT&C) to promote farmers empowerment and best practices in Dairy Sector.
- Provide common platform to the milk producers and consumers who are two end of the spectrum in achieving win-win situation.
- Evolve effective coordination between Livestock Development and Dairy Development activities to ensure seamless service delivery to farmers.
- Policy initiatives and institutional support to:
  - Encourage Research and Development in Milk and Milk Products
  - Capacity building through training & extension rural women
  - Research and knowledge transfer
**FISHERIES**

1. **Introduction**

The new state of Andhra Pradesh has vast potential for fisheries from both marine and inland resources. Fisheries is contributing Rs 11000.0 crore (5.42% to GSDP at constant price of 2004-05), Rs. 17295.0 at current price, as well as generating income and employment. The sector aims at exploitation of water resources under capture and culture fishery for increasing fish production and productivity through sustainable development. The sector is contributing considerably to the food security, nutrition, health and livelihood security of rural population and the welfare of fishers besides earning from exports. Recognizing the importance of fisheries sector, it has been identified as a growth engine for economic development based on an evaluation of the potential of this sector to build upon accumulated strength, to make significant impact on the Gross State Domestic Product, and to exploit opportunities created by global trends.

2. **Fisheries sector in Andhra Pradesh during the period from 1994-2004 -**

During 1994-2004, the Government has taken many initiatives in aquaculture which paved the way for expansion of aquaculture and also caused increase in production and productivity of fish and prawn in the state. The following are the initiatives which took place between 1994 and 2004 -

(a) **Establishment of Disease Diagnostic Labs:** Two labs at State Institute of Fisheries Technology (SIFT), Kakinada and Kaikaluru of Krishna Districts were established which catered to the needs of all coastal districts of AP.
(b) **Popularization of Scampi culture:** About one lakh acres of agriculture lands in Nellore, Prakasam, Guntur, Krishna, East Godavari and West Godavari Districts were converted for Fresh Water Prawn culture (Scampi). It has vastly improved the economic status of marginal and small farmers. Nellore District alone contributed about 80% to the total Scampi production in India.

(c) **Regularization of Brackish Water Aquaculture:** In 1994-95, there was an outbreak of White Spot Syndrome Virus (WSSV) which resulted in huge crop and economic losses (of about Rs. 900 crores) to shrimp farmers of Penaeus monodon (Tiger Shrimp) in the 9 coastal Districts of Andhra Pradesh. This loss was attributed to unsustainable culture practices. It led to the government taking initiative to promote good management practices in shrimp culture and the establishment of Aquaculture Authority by GOI.

(d) **Promotion of quality fish seed production through private fish seed farms:** Due to inbreeding and poor management of brood stock, there was a deterioration of seed quality which resulted in low productivity in fish culture farms. The Government has taken initiative in imparting the techniques of production of quality fish seed to the private fish seed farms. The seed producers of AP are now supplying fish seed to many parts of the country.

(e) **Stocking of fish seed in reservoirs:** Prior to 1994, there was no practice of fish seed stocking in reservoirs. Over exploitation and fishing during breeding season resulted in depletion of fishery wealth in the reservoirs. The government for the first time has taken up fish seed stocking in the major reservoirs in the state. This programme became the starting point for the making of a major programme under NFDB (National Fisheries Development Board), RKVY (Rashtriya Krishi Vikash Yojana), etc. in subsequent years.
(f) **Enactment & Enforcement of APMFR Act 1994:** To sustain the marine fishery resources and to avoid conflict among the different sectors of fishers (traditional, motorized and mechanized), the AP Marine Fisheries Regulation Act, 1994, was enacted with a mandate to register all sea going fishing vessels, to delineate fishing zones and to regulate mesh size to prevent catching of juveniles and to irresponsible fishing.

(g) During this period, the government implemented schemes for Sales Tax exemption & Fisheries Development Rebate on HSD oil for fishing craft registered before 10\textsuperscript{th} Five Year Plan to promote marine fisheries sector.

All these initiatives resulted in increasing the productivity of fish from 1.5 tonnes to 3.0 tonnes per acre per annum. About 30,000 tonnes of freshwater prawn (scampi) was produced in the 2001-02 which was about 80\% of India’s total scampi production at that time.

3. **Status during the period from 2004 to 2014:**

The initiatives taken by the Government with regard to Aquaculture sector and welfare of the marine fishers during the period from 1994-2004 has paved the way for taking up many more initiatives during 2004-2014 for promotion of fisheries sector.

However the performance in fisheries sector could have been much more if the obstacles faced by the sector were overcome in a timely and effective manner.

5. **Obstacles faced**

1) Inadequate availability of quality/SPF shrimp seed in Aquaculture
2) Inadequate cadre strength at field level for vessel monitoring for coastal security
3) Inadequate staff for monitoring and surveillance for disease control
4) Reluctance of insurance companies to cover shrimp crop due to high risk of crop losses
5) Lack of implementation of AP Aquaculture Seed (Quality Control) Act 2006

6. Way Forward

1. Establishment and management of more Fishing Harbours in places such as Juvvaladinne (Nellore District), Uppada (East Godavari District), Vadarevu (Prakasam District) and Nizampatnam Phase-II (Guntur District) through PPP Mode.
2. Establishment of SPF Brood stock for Fresh Water Aquaculture and Brackish water Aquaculture and import of SPF seed for shrimp farming so as to make available quality seed to shrimp farmers
3. Putting in place a policy framework to promote fish processing and fish feed industry by private participation
4. Large Scale participation of women fishers through Mahila Matsya Mitra Groups (MMGs) in fish marketing and fish processing through up-gradation of their skills
5. Promoting “Blue Revolution” through a multi-pronged approach including large scale Cage Culture in the sea and large reservoirs in coordination with CMFRI, establishment of cold chain etc., through PPP Mode/ Government schemes
6. Developing a Policy Framework for allotment of marine areas and areas in large reservoirs for Cage Culture through Fishermen Cooperatives/ private participation
7. Strengthening of cadre strength for coastal security with GoI assistance.
7. **Conclusion**

Though A.P fisheries occupies prime position compared to other states with regard to fish/prawn production in terms of quantity and value, there is still vast scope for going for higher yields in the next 5 to 6 years. The quality of fish/prawn seed is getting deteriorated due to factors like in-breeding leading to lesser growth of fish. Dedicated efforts to develop improved strains of captive brood bank will go a long way in solving this problem. The intervention of ICAR institutions like CIFA with active support from the state can help to solve this problem. Inadequate availability of SPF (Specific Pathogen Free) L. vannamei shrimp seed is greatly hampering the production potential of the Brackish Water sector. The active involvement and coordinated efforts among of MPEDA (Marine Products Export Development Authority), CIBA (Central Institute of Brackish Water Aquaculture), CAA (Coastal Aquaculture Authority) and other central fisheries institutions will solve this problem. The economy of fisheries sector in the state is mainly dependent on export to other states and outside the country. Promotion of hygienic domestic markets within the state and also development of cold chain facilities, fish processing industries in private sector, establishment of fish and prawn feed plants, strengthening and up-gradation of existing fishing harbours, fish landing centres, creation of more fish landing centres on par with international standards will give a boost to the fisheries sector in terms of generation of more employment as well as more income to the state and the country.
AGRICULTURAL MARKETING

INTRODUCTION:

According to the National Commission on Agriculture (XII Report, 1976), agricultural marketing is a process which starts with a decision to produce a saleable farm commodity, and it involves all the aspects of market structure or system, both functional and institutional, based on technical and economic considerations, and includes pre-and post-harvest operations, assembling, grading, storage, transportation and distribution.

The actors in the product marketing sub-system include farmers, village/primary traders, wholesalers, processors, importers, exporters, marketing cooperatives, regulated market committees and retailers.

Agricultural marketing, therefore, can be defined as comprising of all activities involved in supply of farm inputs to the farmers and movement of agricultural products from the farms to the consumers. Agricultural marketing system includes the assessment of demand for farm-inputs and their supply, post-harvest handling of farm products, performance of various activities required in transferring farm products from farm gate to processing industries and/or to ultimate consumers, assessment of demand for farm products and public policies and programmes relating to the pricing, handling, and purchase and sale of farm inputs and agricultural products.

In the new State of Andhra Pradesh with 13 Districts, there are 190 Agricultural Market Committees governed by APMC Act, 1966.


(a) Rythu Bazars:

During 1999 to facilitate direct marketing between consumers and farmers, the concept of Rythu Bazars is introduced. It was evolved as an alternate marketing strategy where growers & Consumers are benefited. It provides direct interface between farmers & Consumers eliminating intermediaries in trade and ensure availability of vegetables at location convenient for both farmers & Consumers. It is a great reform in the marketing Sector and became a model for other state Governments in ensuring remunerative prices to farmers and provide fresh vegetables to consumers at reasonable prices.
The Government have given top priority for effective implementation and appointed an IAS Officer as Chief Executive Officer at State level to monitor the Rythu Bazars effectively, which yielded good results.

(b) **Rythu Mithra:**

To make availability of quality seeds, pesticides and fertilizers to the farmers in the market yards, the sale of inputs was introduced in Market Yards on no loss no profit basis. The details are furnished below;

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (Rs. In Crores)</th>
<th>No.of Farmers Benefitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>33.06</td>
<td>2,89,951</td>
</tr>
<tr>
<td>2000-2001</td>
<td>17.05</td>
<td>1,42,482</td>
</tr>
<tr>
<td>2001-2002</td>
<td>14.02</td>
<td>1,81,158</td>
</tr>
<tr>
<td>2002-2003</td>
<td>16.72</td>
<td>1,43,822</td>
</tr>
<tr>
<td>2003-2004</td>
<td>22.10</td>
<td>3,44,288</td>
</tr>
</tbody>
</table>

(c) **Cold Storage Units:**

The Andhra Pradesh Capital Incentive subsidy Scheme for Cold Storage has come into force 1-7-1999 and was implemented through this department for a period of 2 years. Subsidy was given to the private entrepreneurs to the extent of 25% of the fixed capital investment subject to a maximum of Rs. 50 Lakhs per unit of the Cold Storage setup by them.

(d) **Soil Testing Labs:**

To facilitate farmers to get their soils tested in nearest places, Government established Soil Testing Laboratories in the Market Yards located in Revenue Divisional Head Quarters. Accordingly 29 Soil Testing Laboratories were established in Market Yards. The respective AMCs will meet the cost of the Chemicals and maintenance of labs. The Staff were allotted by the Agriculture Department.

(e) **Farmer Training Programmes:**

To create awareness and to develop capacity building on the Pre & Post harvest operations, the Government in 1999 introduced farmers training programmes four per year in each AMC with the Co-ordination of Agriculture / Horticulture
depts and Agricultural University / District Agricultural Advisory and Transfer of Technology Centre (DATTC).

(f) Gramin Bhandaran Yojan:

The Scheme was introduced during in the year 2001-2002 to enhance the storage capacity in the Market Yards. 207 warehouses were constructed with a total capacity of about 2.0 lakh MTs of additional storage space was created in Andhra Pradesh with Agricultural Market Committee funds.

(g) Rural link roads:

To facilitate farmers to transport the produce to market places rural link roads were taken up with Agricultural Market Committee funds.

(h) Reliable market information:

Upto date market price information was made available to the sellers in the form of KIOSKS in the Farmer Information Centers located in select Agricultural Market Committees.

DURING THE PERIOD FROM 2004-2014

OBSTACLES/ DIFFICULTIES FACED BY THE DEPARTMENT:

(a) Rythu Bazars:

The scheme of Rythu Bazars could not be taken forward due to withdrawal of Horticulture Consultants from Rythu Bazars who used to distribute the seed and provide extension services to the farmers. The earlier scheme of conducting training camps to horticulture farmers jointly by the Marketing and Horticulture Departments was also not continued.

The continuance occupation of Self Help Groups is allowing monopoly of them in the Rythu Bazars even after fixing period of 3 years for them for their operation in the Rythu Bazars.

(b) Rythu Mithra:

The Rythu Mitra Scheme of sale of seeds, fertilizers and pesticides could not be taken forward due to heavy losses incurred in the transactions due to non professionalism in marketing strategies in Agricultural Market Committees. The practice of sale of inputs was discontinued.
(c) **Cold Storage Units:**

The scheme was intended only for two (2) years period from 1999-2001 and not extended further as such the scheme was not taken up during the period 2004-2014.

(d) **Soil Testing Laboratories:**

The Soil Testing Laboratories became non functional in certain Market yards due to withdrawal of staff by the Agriculture Department.

(e) **Farmers Trainers programme:**

Farmers training programmes were discontinued during this period

(f) **Storage Capacity:**

The Gramin Bhandaran Yojan Scheme could not be utilized by Agricultural Market Committees because it was linked up with institutional credit and Government decided not to stand guarantee for availing this credit facility by the Agricultural Market Committees from NABARD. Moreover, lack of awareness on the lengthy procedures involved in obtaining credit facility also was a big obstacle.

(g) **Rural Link Roads:**

The Government have not permitted to take up the link roads during the 2004-2014. However, the Government restored the practice as was existing prior to 2004 subject to not exceeding the 20% of surplus market fee collected by the Agricultural Market Committees during the 2013-14. But no work of link road has been taken up.

(h) **Reliable Market Information:**

The dissemination of prices through KIOSKS which were established previously was discontinued at present.

(i) **Market fee exemptions:**

The life time exemption given in 2013 on collection of market fee from chicken, eggs and rice exported to other countries and outside the State and also reduction of market fee @ 0.25% from 0.50% on prawns are also hampered in
achieving target of Market fee collection, due to which there was scarcity of funds available for implementing various farmers welfare activities.

**WAY FORWARD:**

(i). Strengthening of the existing Rythubazars and establishing new Rythubazars wherever feasible with Cold storage facility, to be managed by Farmers Producers Processors Organisations (FPPO).

(ii). Rythu Bandhu Pathakam – Pledge Loan to increase from Rs. 1 Lakh to 2 Lakhs, free of interest upto 180 days.

(iii). Warehousing Corporation will access Rs.250 Crores assistance under Warehouse Infrastructure Fund, announced by the Hon’ble Finance Minister, Govt. of India, for construction of Warehouse of 5,000 MTs and above capacity.

(iv). Ensure fair price to the farming community by creating competitive marketing scenario and the mission of achieving this by enforcing Act and Rules more effectively and also implementing new technologies aimed at reducing post harvest losses through appropriate methods and encourage value addition.

(v). Ensuring daily updation of prices in agmarknet and department website, which enable farmers to negotiate with traders and also facilitates spatial distribution of products from rural areas to towns and between markets.

(vi). Developing modern communication technologies for market information services to improve information delivery through SMS, voice mails and FM radio channels.

(vii). Imparting training to officers of agriculture, horticulture departments and other extension staff on marketing and post harvest technologies since they are often well trained in production techniques but not in post harvest techniques.

(viii). Developing new marketing linkages between agri business, large retailers and farmers gradually through contract farming etc.,

(ix). Shaping Agricultural Market Committees into integrated supply chain centers with a view to minimize post harvest losses to provide scientific storage facility, provide post harvest credit through Warehousing receipt financing.

(x). Strengthening convergence with line departments and Agricultural universities in implementing and creating awareness and different welfare programmes.

(xi). Creation of additional storage facility upto 5,000 MTs Capacity in Agricultural Market committees.

(xii). Computerisation of Agricultural Market Committees to facilitate E-trading and online issue of E-permits to enable traders to transport produce to processing place without hassle.
(xiii). Revival of Soil Testing Laboratories in Agricultural Market Committees with the coordination of Agriculture Department and establishing new Soil Testing Laboratories in the market yards on need basis.

(xiv). Revival of farmer training programmes.

(xv). Permitting essential rural link roads to connect missing links.

(xvi). Market Price information to be disseminated upto Gram Panchayat level.

(xvii). To establish sub market yard in each Mandal with required infrastructure to facilitate Marketing and Minimum Support Price (MSP) operations.

(xviii). The Terminal Markets are proposed for stimulating trade in agricultural commodities at Guntur, Kurnool and Anantapur. These places because of their location on National Highways enjoy better transport facility.

CONCLUSION:

“Agricultural Production, Processing and Marketing” are three pillars of the agricultural economy. Agricultural marketing infrastructure plays a pivotal role in the fostering and sustaining the tempo of rural economic development. Marketing is critical for better performance of the agriculture sector as a whole. Effective marketing infrastructure is essential for cost effective marketing, to minimize post harvest losses.

Successful marketing requires learning new skills, new techniques and new ways of obtaining market price information. In order to provide dynamism and efficiency into the marketing system, large investments are required for the development of post harvest and cold chain infrastructure nearer to the farmers field. A major portion of these investments is expected from private sectors, for which Model Act of the Govt. of India was adopted in A.P. which provides scope for establishment of private markets.

The department intends to come to the rescue of farmers in terms of getting remunerative prices, reducing post harvest losses by adopting various modern techniques.

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