Youth in Agriculture & Allied Sectors

STATE PLANNING COMMISSION
Government of Tamil Nadu
Chennai - 600 005

10.24.2005
Youth in Agriculture and Allied sectors

STATE PLANNING COMMISSION
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Youth in Agriculture and Allied sectors

State Planning Commission, Tamil Nadu

Tamil Nadu State Planning Commission

The State Planning Commission was constituted in Tamil Nadu on 25th May 1971 under the Chairmanship of the Hon’ble Chief Minister as an Advisory body to make recommendations to the Government on various matters pertaining to the development of the State. The Chairman of the Commission is assisted by a team of Members, Consisting of Vice Chairman, Full Time Member & Part Time Members who are experts in various fields. The Additional Chief Secretary to Government, Planning, Development and Special Initiatives and the Principal Secretary to Government, Finance Department are the ex-officio members. The Member Secretary is responsible for administration in the Commission.

The Commission has the following technical divisions:

1. Agricultural Policy and Planning
2. Industries, Power and Transport
3. Land Use
4. Education and Employment
5. Health and Social Welfare
6. District Planning and Rural Development

Main activities of SPC:

The major functions of the State Planning Commission are as follows:

1. Preparation of Five Year and Annual Plans based on the policies and priorities of the Government;
2. Undertake Mid Term review of the Five Year Plan, other special reviews on the Economy and advise the Government on appropriate modification and restructuring of the schemes;
3. Monitor development indicators that influence the Human Development Index, Gender Development Index, etc., at a disaggregated level and suggest correctional measures;
4. Undertake special studies as required for formulation and implementation of plan projects and programmes;
5. Tamil Nadu State Land Use Research Board (TNSLURB) is functioning under the chairmanship of Vice Chairman, State Planning Commission as a permanent body in the State Planning Commission. This Board is intended to promote interaction and study in the vital areas of land use. The State Planning Commission organizes seminars/workshops and undertake studies.
6. Human Development Reports (HDRs) were prepared for Dindigul, Sivagangai, Tiruvannamalai, Cuddalore, Nagapattinam, the Nilgiris, Kanyakumari and Dharmapuri districts. The concept of Human Development has been disseminated to all districts through workshops organized in the concerned districts. Proposal for preparation of District Human Development Reports (DHDR) for the remaining districts is under process.
7. State Balanced Growth Fund (SBGF) is operated to bridge the regional imbalances among the districts.
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## WORKSHOP SESSIONS

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| Discussion | |
| Recommendations | |
EXECUTIVE SUMMARY

The demography of Indian agriculture is fast changing and it has strong imprints in the allied sectors too. Youth constitute 40% of the country’s population. Food security is one of the major issues the country is facing. To do justice and make food available for all, it is necessary to know what would Indian agriculture and allied sector look like in 2025/2050? Who will own and practice agriculture in the years to come? Retaining youth in agriculture pose to be the biggest challenge. Unless farming becomes both intellectually stimulating and economically rewarding, it will be difficult to attract or retain rural youth in farming (Swaminathan 2001). The NSSO Survey (2005), showed that more than 40 per cent of farmers expressed their bitterness with their occupation saying that if given a chance they would like to quit farming. The reasons attributed include new economic policies and also increase in rural non-farm employment opportunities.

During the ‘80s and ‘90s, there existed a number of small holder livestock and poultry production units. These units provided a symbiotic relationship with crop husbandry. The small holder livestock production system was environment friendly and had low environmental costs. Also the change in cropping pattern towards cash crops and reduced small livestock and poultry holdings which were considered labour intensive, followed by promotion of large scale farming by the corporate and contract system of management resulted in poor participation of youth. Similarly, in the composition of per capita income through farm sector has declined from 72 % to 62 % and increase of non-farm self-employment from 7 to 20 % has occurred in the period 1999-2007. But this growth of rural non-farm sector has been primarily distress induced to mitigate the loss from agriculture and allied sectors. In addition to the above facts, the declining value system associated with agriculture and livestock farming among rural communities is also pulling out youth from agriculture.

Even though there is decline in participation of youth in farming activities, at current growth rate of rural non-farm sector and manufacturing sector, the chances of absorption of rural workforce seems to be sluggish in future. Thus, dependence upon a considerable section of rural youth is pertinent for farming. But the farming patterns are not likely to be the same as earlier. In this scenario, it is important for us to understand that in the next 40 years the World’s population will increase from seven billion to over ten billion. At the same time, agriculture is an ageing and under-valued profession for which there is a declining interest among youth. The question that arises is, who will feed this teeming millions and how?.
Access to affordable credit is another key factor in attracting the youth to farming. The young people tend to have fewer chances of obtaining capital or credit. Access is often tied to availability of collateral, which is usually land that the young people do not have. It is, therefore, important that appropriate and affordable financial packages have to be put in place by financial institutions involved in agricultural lending. To further attract the youth into agriculture, agri-support agencies should ensure availability of inputs such as quality seed, fertilisers, basic mechanisation and agricultural market information. Agribusiness support agencies should also play a key role in attracting the youth in agriculture.

Agriculture needs policy support in key areas viz. for popularisation of ICT enabled concept like e_mandi, e-velanmai and mobile based agro advisories etc. Further, to facilitate the rural youth who have studied up to school level & pursue employment, to undertake agriculture as an avocation, a three years diploma course on technical education related to agriculture & allied sector with prime emphasis on agriculture mechanisation is need of the hour. Constitution of an Expart Committee viz., Attracting and Retention of Youth in Agriculture (ARYA) by Govt. of India to suggest ways for attracting rural youth towards agriculture is an appropriate initiative.

The livestock industry needs policy support in four major areas:

a). Fine tuning & active implementation of policy on demarking grazing lands and maintaining them by localbodies or other institutional mechanisms. b). Creating special Livestock Commodity Zones that would provide easy access to all resources and strengthen marketing through collective bargaining, c). Conserving and maintaining resources in the form of lakes and ponds especially near grazing land, so as to provide conducive atmosphere for livestock farming and d). Promoting and building youth forums towards livestock development. This should be a State and National movement that encourage youth to take up livestock for development. Such forum will ensure the youth to take up livestock farming as a commercial business venture. It will also motivate youth to stay in rural areas and produce more milk, meat and eggs by employing modern methods. Government have to support such forums through Public Private Partnership (PPP) models.

Rural youth stakeholdership in agriculture and allied sectors where opportunities are many is a gradual process and an appropriate approach ensuring manifold contribution from the sector is needed to increase the overall growth and development of the country.
Youth in Agriculture and Allied sectors

State Planning Commission, Tamil Nadu
Introduction

Agriculture and its allied sectors is unquestionably the largest livelihood provider in India, more so in the vast rural areas. It contributes significantly to the Gross Domestic Product (GDP) of our country. Sustainable agriculture, in terms of food security, rural employment, and environmentally sustainable technologies such as soil conservation, sustainable natural resource management and biodiversity protection is essential for holistic rural development. In the past, Indian agriculture and allied activities witnessed a green revolution, a white revolution, a yellow revolution and a blue revolution leading to livelihood enhancement of the farming community in rural areas.

The rapid growth and diversification of development activities resulted in much needed expansion of employment opportunities; but, at the same time have triggered rural to urban migration. This trend has inadvertently resulted in shifting of farm labour to non-farm sectors. To sustain food security, it is imperative to encourage farmers to continue with agriculture, where the rural youth have a crucial role to play. At present, there exists a formidable challenge in retaining youngsters in agriculture and it could be due to various socio-economic factors, including profitability in agricultural pursuits. It is imminent to reorient agricultural practices to make them intellectually satisfying and economically rewarding for the youth. India has the largest youth population in the world and is poised to increase further in the coming decade. Nearly 70% of India’s population is below the age of 35 years, making India the youngest nation in the world and interestingly 70% of them live in rural areas. According to 2011 Census, the youth population in the country including adolescent youth is around 550 million. In 2020, the average Indian age will be only 29-year-old, whereas in China, and the United States of America the average age is estimated to be 37 years. We may utilize this demographic dividend for taking Indian agriculture to a new height by channelizing the creative energies of the youth through development of skills, knowledge and attitudes.

Today, agriculture and allied sectors are facing several challenges like aging farmer population, climate change resulting in high incidence of pest and diseases and most importantly the escalating cost of production. In proffer to address this trend, the Indian Council of Agricultural Research (ICAR) has always been endeavoring to empower youth with appropriate technologies. ‘Rural Entrepreneurship and Awareness Development Yojana’ (READY) programme has been envisaged in the Twelfth Five Year Plan
which aims at entrepreneurship development among the rural youth. It combines both Rural Agricultural Work Experience (RAWE) and Experimental Learning courses to make students equipped with the grass-root level experience and entrepreneurship skills; besides, it has also been proposed to initiate a programme entitled ‘Attracting and Retaining Youth in Agriculture’ (ARYA). This initiative aims at analyzing the current policy environment and identifying supporting policies that can check the rate of migration of youth from rural areas.

Information and technology interventions with youth inclusion offers greater opportunities for changing the present scenario. The youth has far more exposure, willingness and capacity to adopt and adapt to technology than the older generation. In the recent past, both private and government organizations have launched various ICT enabled programs, for instance, the Government of India initiated the Digital mandi/ e-mandi—an electronic trading platform for agro-communities, to bring agricultural information to the mobile phones of the farmers. While the virtual support extended by the Government to the farmers could be seen as a positive step, the uptake would have increased dramatically if the youth were also brought into this process to establish the link between technology and the end beneficiaries.

Rural youth stakeholdership in agriculture where opportunities are many is a gradual process and an appropriate approach ensuring manifold contribution from the sector is needed to increase the overall growth and development of the country. As an endeavor to this initiative, the SPC organized a workshop on “Youth in Agriculture and Allied Sectors” on 30.07.2013 under the Chairpersonship of Vice-Chairperson, State Planning Commission.

Strategies for increasing the rural youth participation in agriculture and allied sectors were discussed. A presentation highlighting the success stories of Kolathur model of ornamental fisheries in Tamil Nadu was also presented.
Youth in Agriculture and Allied sectors

State Planning Commission, TamilNadu
Session I - Attracting Rural Youth towards Agriculture

Large scale migration of rural youth from farming to urban areas and non-farm has caused a concern among the country’s agricultural policy makers. When such a trend goes unchecked, it is likely to affect agricultural activities in the future. In a bid to address this trend, the Indian Council of Agricultural Research (ICAR) has constituted a seven-member Expert Committee to suggest ways of attracting youth to agriculture. The committee with a theme on Attracting and Retention of Youth in Agriculture (ARYA) will come out with region-wise recommendations regarding the measures to be taken to attract the youth.

The concern is mainly about the school and college dropouts who migrate to cities in search of menial jobs. It has become a social problem as most of these youth find it difficult to sustain their families with the pittance they earn in cities. They need to be convinced through concrete examples that they can earn much more than they earn in cities if they continue in farming.

Issues such as providing training on innovative and sustainable agricultural practices that helps to make agriculture a profitable venture will be addressed. This would involve a series of activities, including creation of infrastructure facilities in various aspects of farming, providing marketing linkages and exploring opportunities in secondary agricultural operations such as value addition and hiring and servicing of mechanized farm implements.

It is felt that youth tends to shun agriculture due to the attitude of the society especially, the families of prospective brides towards agriculture as a profession. The young also distant themselves from agriculture for a fact that they are seen as a neglected lot by government line institutions that promote the sector. The youth are normally excluded in policy discussions relating to access to agriculture and rural market development. Therefore, the committee would also look into providing social recognition for them.

Perception of women about scope of agriculture

The findings of some studies indicated that the girls’ attitude towards farm employment remains extremely negative. Their orientation in relation to work and place of residence are characterized by strong inclinations for migration to urban or semi-urban areas. Their attitude to the prospect of having a farmer for a husband is more flexible, but only on certain conditions. The
new roles that are promoted for women in the agricultural sector are perceived as low income occupations, which can be seen only as a temporary expedient, acceptable as an answer to the employment problem only until such time as a better solution can be found.

How to attract Youth towards Agriculture?

There are suggestions on the need to change the agriculture curriculum in the universities, to promote agriculture education so that it attracts the interest of the youth and to translate the research activities into direct action on the field for the benefit of farmers. As agriculture is the only occupation of rural people and a means of livelihood for about 60% of workforce, welfare of rural people is impossible without the progress in agriculture in the country. There is a need to create more vocational training centres for the youth to revive agriculture whose contribution has come down to less than 15% of Gross Domestic Product (GDP) in the country.

The youth has to be sensitised towards intensive and indiscriminate use of natural resources that has caused a number of problems including soil erosion, soil salinity and depletion of ground water and loss of biodiversity, posing a great challenge for sustainable development of rural economy in the world especially in developing countries.

There is a need for strategic interventions to attract the youth towards the agriculture sector. The call for youth to return to villages will make meaning only if the youth are encouraged to be more involved in farming. To make this possible, agriculture must be transformed from purely subsistence to commercial farming, where farmers undertake agriculture as a business that can help them to earn enough income for prosperity.

This is an urgent task at hand and requires a multidisciplinary approach. Agriculture development practitioners, policy makers, private sectors, agricultural government agencies and other professionals must articulate a new vision of agriculture that can be attractive to the young people and align with their aspirations and interests.

The first step is to change the image and perceptions about agriculture in the mind of the youth. Agriculture is portrayed as a low-income, high-risk career, and it is imperative to change the public perception on agriculture and farming to entice more youth to choose agriculture as a career.
The youth need to be appropriately educated and made aware on the present scenario of farmers. Agriculture has significantly changed. Farmers are now educated, business-savvy and entrepreneurs who possess some extensive training and knowledge. There are currently many formally employed people who are abandoning their lucrative jobs to venture into farming.

The positive aspects of choosing farming should be emphasized to the youth i.e. owning their own business, choosing their own hours and having a variety of daily responsibilities. The policies at national level also rarely feature the concern or issues of the young on the future of food, farming and development. The line Ministry of Agriculture can, for example, set up a Youth Advisory Committee to look into various ways of attracting and retaining the youth in this sector. The committee can include mainly youth who are engaged in agriculture to act as role models. The main mandate of the committee would be to meet regularly to develop and provide recommendations regarding youth attraction and retention in agriculture.

As an effort to make agriculture attractive, the government should strengthen and maintain agricultural institutions for extension, research and innovation, credit, agro-processing and marketing to enhance the efficiency and effectiveness of the farming enterprises.

Access to affordable credit is another key factor in attracting the youth to farming. The young people tend to have fewer chances of obtaining capital or credit. Access is often tied to the availability of collateral, which is usually land that the young people do not have.

It is, therefore, important that appropriate affordable financial packages are put in place by financial institutions involved in agricultural lending.

To further attract the youth into agriculture, deliberate efforts are to be made by agri-support agencies to make inputs, such as quality seed, fertilisers, basic mechanisation and agricultural market information available at an affordable pace of time and money.

Agribusiness support agencies should also play a key role in attracting the youth in agriculture. They can do this by highlighting in their mandates for interventions, a criterion for youth involvement for programmes they intend to support. The agricultural subsectors that have potential to increase employment of mainly the youth should be strategically supported.
The challenge that we must take up, as leaders, facilitators, policy makers and private sector in agricultural development is, to build the capacity of the youth and equip them to address the emerging requirements of an attractive agriculture and non-farm rural economy that offers prospects for viable incomes and good quality of life.

**Initiatives taken in Tamil Nadu Agricultural University (TNAU) for attracting youth towards Agriculture**

**TNAU is offering the following programmes:**

- B. F. Tech – a 3 years degree programme
- Certificate courses of 6 months duration – 18 courses
- Regular training programmes on mushroom production and honey bee rearing
- Diploma in Agriculture programme in 8 places by TNAU + 6 affiliated Institutes
- Demonstration/Training programmes on new varieties, management technologies/implements and machinaries by colleges, research stations, KVKs
- Supply chain management programmes to benefit farmers – traders – department officials
- Organising growers to facilitate Good Agricultural Practices (GAP) and market linkages – Mango, Banana, Guava, vegetable growers
- Promoting precision farming for better quality/grade produce, higher yields/income.
- Information in TN-AGRI TECH Portal – More than 6 lakh pages of information linked to world wide web.
- Directorate of Agri-business Development – one of the programmes is Agri-Business Incubator in association with ICRISAT
- Regular issue of price and weather forecasting and issue of crop advisories
- Training in post harvest technologies – PHTC
- Training in food processing by the Food Sciences Department
- TNAU conducted a one day State level seminar on Attracting youth towards agriculture on 29-12-2011.

**Issues and suggestions**

- Lack of awareness about productive and profitable farming activity selection
- Lack of strategy: what to produce/when to produce/ where to sell
- Lack of adequate efforts from farmers on marketing
- Lack of organisation among the farming community viz:- Commodity Group, Farmers’ Association, Joint Liability Groups, SHGs etc.,
- Already crossed the era of closed economy – self sufficiency in food production into
an era of open economy: liberalised – globalised – where efficiency/strategy important

- Operate on crops in which we have greater comparative advantage – by cost cutting – to stand competition
- Infusing professional attitude in farmers to treat agriculture as business/ habit of maintaining accounts - accounting for overheads, fixed costs, etc
- State Agriculture Marketing Boards may be nominated as coordinate agency to promote marketing
- Sharing success stories among the farmers
- Promoting agriculture tourism and Eco-tourism in hills
- Agricultural waste management/waste utilization
- Some of the very profitable activities are: Seed production, Nursery operation- Post harvest management facilitation/ Hire and service centers for Agriculture Machinery – in village hubs and provision of common facilities – built up space, water, electricity like in Industrial estates.
- Business Incubators proposed in the Twelfth Five year Plan
- Transfer of public land to youth on lease including some of the State Seed Farms
- Interest free loans to the rural youth to take up identified activities – Special provisions for women
- Creation of corpus fund as in the case of State Balanced Growth Fund
In the ‘80s and ‘90s rural youth and women played a predominant role in livestock farming. This was evident through various research reports which stated that their participation ranged between 29% and 50% across the country. However, the trend of participation of youth is declining since 2000. The recent observations suggest that the average age of livestock farmers are in the increasing trend and the participation of youth are limited. In line with the above findings, many recent studies reported that there is withdrawal of youth from agriculture. The reasons attributed include new economic policies, resulting in a shift from small holder livestock production system to a large corporate farming developing into a business enterprise and increase in rural non-farm employment opportunities.

Prior to 1990s, there existed a number of small holder livestock and poultry production units. These units provided a symbiotic relationship with crop husbandry. The small holder livestock production system was environment friendly and had low environmental costs. Also the change in cropping pattern towards cash crops and reduced small livestock and poultry holdings which were considered labour intensive, followed by promotion of large scale farming by the corporate and contract system of management resulted in poor participation of the youth. Similarly, in the composition of per capita income, income through farm sector declined from 72 % to 62 % and increase of non-farm self-employment from 7 to 20 % occurred in the period 1999-2007. But this growth of rural non-farm sector has been primarily distress induced to mitigate the loss from agriculture and allied sectors. This could be due to market, economic policies of government resulting in decline of support to agriculture, livestock and allied sector through budget allocation and subsidies. Thus, distress inducers may be raging withdrawal of government support to market forces in the open economy. In addition to the above facts, the declining value system associated with agriculture and livestock farming among rural communities is also pulling out youth from agriculture.

The other major reasons include the opportunity that grew in non-farm (service) sector. This sector increased employment between 1999-2000 and 2004-05 by 16 million in principal status of which eight million (nearly 50%) was in the form of self-employment, five million as casual employment and three million as regular employment (Himanshu et.al. 2011).
Strength and weakness of youth involvement in animal husbandry

Strength
Youth is a positive force who has potential strength to change the world over. Their major strength involves latent energy, capacity and ability to produce, excellent source of ideas and innovation and specialized areas of interest in the animal husbandry sector. They also hold the main market for food consumption and knowledge of their own eating peculiarities. They can also voice a significant impact on public opinion, policy and action could drive the country and the State in the desired direction for development.

Weakness
Though the youth population is high in our country, it is important to perceive their weakness and channelize their contribution and strength to more developmental activities viz., livestock development, food processing, marketing, social responsibilities etc. The weaknesses of youth towards animal husbandry sector include:
1) Large sections of youth are untrained and modern animal husbandry requires trained personnel.
2) Youth are negatively influenced by the image created around animal husbandry pursuits as a means of livelihood.
3) They generally gravitate to activities that are popular and perceived to be socially acceptable.
4) They have limited control on their roles, responsibilities and functions which put them into a disadvantage of having to wait for interventions from adults.

How to change?
The whole scenario prompts to bring a desired change to engage youth in livestock activities so as to promote the sector. Four important factors can be considered to bring about this change.
1) Create awareness to change the negative perception of the youth towards participation in livestock activities. The awareness could lead to interest and motivate them to be educated and be skilled to practice livestock farming with better economic returns.
2) Identify the youth belonging to non-farming family who quit software or industry, other technocrats and moved to livestock farming. They could be promoted as model farmers who had ventured towards better livelihood and economic returns.
3) Highlight career opportunities in research, environment, financial management, engineering and other technical areas for the youth to explore.
4) Record and publish success stories in print and other media so that the image of persons in animal husbandry in rural communities be changed and youth can act as a catalyst for such changes.

Strategies to retain youth in animal husbandry

A) Increasing skilled manpower

• There is a need for skilled manpower in our country; livestock industry with no exception to this. Hence, establishment of Veterinary and Animal Husbandry Polytechnics which offer diploma programmes have become indispensible. TANUVAS, Chennai has initiated skill development programmes since 2012.

• Creating infrastructure to train youth. This could be achieved by Public Private Partnership (PPP) models. In all processing industry, for example, hygienic meat production is an important one and everyone in this area need to be trained for which infrastructure is required.

• Increasing the intake of graduates for various degree programmes

• Instituting new degree programmes separately in veterinary science, animal husbandry etc., for specialization and improved contribution.

B) Entrepreneurship development

• Identifying and linking potential youth with the existing entrepreneurs to develop their capacity. Provision of low cost input technologies would be of much use in this endeavor.

• Promoting capacity building activities through Entrepreneurship Development Programmes.

• Providing minimum support price for livestock products so as to encourage and maintain small holder livestock production.

• Strengthening the existing co-operatives and facilitate direct access to marketing among the farmers

• Organising small livestock holders and assist in collective negotiation with other business agencies to promote development.

Policy issues

The livestock industry needs policy support in four major areas

1. Policy on demarking grazing lands and maintaining them by local bodies or other institutional mechanisms.

2. Creating Special Livestock Commodity Zones that would provide easy access to all resources and strengthen marketing through collective bargaining.
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3. Conserving and maintaining resources in the form of lakes and ponds especially near grazing land, so as to provide conducive atmosphere for livestock farming.

4. Promoting and creating youth live stock development forums. This should be a State and National Movement that encourage youth to take up livestock for development. Such forum will ensure the youth to take up livestock farming as a commercial business venture. It will also motivate youth to stay in rural areas and produce more milk, meat and eggs by employing modern methods. Government have to support such forums through PPP models.

**New institutional mechanisms**

To organize the youth and promote them into livestock and poultry activities, it is essential to provide them a conducive atmosphere, which can best be achieved by strengthening or developing institutions. Initiation may be made by the Government / NGOs / Universities to promote livestock rearing groups / association. New generation co-operatives need to be established with forward and backward linkages.

The major support required for youth is to provide capital, insurance, extension service and market interventions. Nationalised banks, insurance agencies, State Animal Husbandry Department and market agencies need to be collaborated for providing the required support to the livestock farmers in an honest and realistic means. Workable models may be established on a trial basis and sustained for large scale adoption.

Since most livestock products are perishable, the farmers may be provided with cold storage facilities at village / block level like bulk coolers and deep freezers to fetch better market price for their products. Farmers need assured and remunerative price for their product for which government need to procure and ensure minimum price to safeguard market price fluctuations. Government need to initiate steps to regulate all livestock markets especially, the sale of animals and meat.

Youth, as seen earlier, are creative and are potential innovators. In order to upscale their innovations, a Grass Root level Innovation Centre in the State may be established to encourage and retain youth to promote livestock industry. This can be achieved by effective University-State Animal Husbandry Department collaborations.

**Newer research area**

The present changing livestock rearing pattern calls for two major challenges to be taken up in the research.
They include:

- Fundamental research on understanding changing farm structure and composition and
- Research on manpower planning of livestock sector.

**Long term strategies**

The long term strategy to retain youth would be to sustain and enhance the potential of new generation of farmers through Livestock Business Development Chamber. The chamber should facilitate identification of potential markets, technologies that are economical and easy to use for dissemination, platform for exchange of knowledge, financial linkage through channelizing private equity, venture capital funding and channelising market through joint ventures.
Youth in Agriculture and Allied sectors

State Planning Commission, Tamil Nadu
The fisheries sector has been playing a vital role in the Indian economy by way of contributing to National Income, Food production, Employment and Foreign Exchange. India has a vast potential for fishery resources both from inland and marine environment. The sector contributes livelihood to 14 million people. During 2012–2013, Indian exports of marine products aggregated to 9,28,215 tonnes with a value of Rs.18,856 crore, registered a growth of 7.68% in terms of quantity and 13.6% in terms of rupee value.

Tamil Nadu is bestowed with the bountiful riches of three major seas, the Arabian Sea on the west coast, the Indian Ocean and the Bay of Bengal on the east coast and has the benefit of both the South-West and the North-East monsoons. The contribution of fisheries sector to the GSDP (2004-05) in 2011-12 was Rs. 2,680 crore which was about 1 % of the GSDP. With 1,076 km coast line, 1.9 lakh sq.km EEZ and 41,412 sq.km of continental shelf area, the state is considered as a pioneer in the exploitation of marine fisheries resources. The state have 13 coastal districts, 608 fishing villages and 363 fish landing centres with a marine fisher folk population of 8.11 lakh. There are 5,600 mechanised and 27,426 motorised and artisanal crafts (Online registered crafts). The estimated fish production is 7.00 lakh tonnes comprising 4.28 lakh tonnes of marine fish production and 1.85 lakh tonnes of inland fish production from the inland water resource area of 3.73 lakh ha. (2012-13). The water spread area of reservoirs and large irrigation and seasonal tanks are estimated at 52,055 ha. and 2,65,641 ha. respectively. The population of inland fishers is 2.25 lakh.

ICAR schemes (12th Plan)

In order to attract and retain youth in Agriculture and allied sectors, the ICAR has formulated the following schemes listed in 12th plan period.

• ATFC Agri-Incubation Fund and Agri-Tech Foresight Centres for research and technology generation
• Farmer FIRST(Farmer’s farm, Innovations, Resources, Science and Technology)
• Student READY (Rural Entrepreneurship and Awareness Development Yojana)
• ARYA (Attracting and Retaining Youth in Agriculture)
• NAEP, e-courses, Modernisation of SAU farms, etc.

A working group has been set up to evolve ways and means of implementing the above schemes in the ICAR and State Agricultural Universities.
**Marine Fisheries**

Marine fisheries development is at cross-roads much like agriculture. Marine fish production in India / Tamil Nadu is almost stagnating with limited scope for increase in production as nearly 90% of the fishing fleet are operating within the near shore waters and only a few are venturing into the deep sea. Excessive fishing capacity leads to overfishing and affects long term sustainability of resources, biodiversity, environment and economic viability of fishing as a method of food production. It also results in overcapitalization and declining employment opportunities. Mechanisation of marine fishing and export-led trawling had created a new class of fishers who are not born fishermen but capitalists and exporters who were benefited more than the fisher folk themselves. The keen competition among different fishing sectors in harvesting the available resources particularly in the inshore waters, declining catches and reduced profits had caused labour migration to interior areas and diversification into other farm and non-farm avocations. Hence, new opportunities in marine farming and other non-farm areas need to be identified for undertaking capacity building programmes.

Globally, aquaculture is the fastest growing food production sector. India is in the forefront, occupying the third position in respect of inland fish production. Adequate supply of protein food is an important aspect of nutritional security. Perhaps, the most significant impact of climate change is expected in respect of availability of water. Therefore, restoring physical health of water bodies as well as increase in water spread area and its subsequent integrated use in fisheries may serve the purpose in food production, poverty alleviation, employment generation, rain water harvesting, biodiversity conservation and amelioration of environment up to a great extent. Integrated approach involving commitments for desired policies, economic institutions and social values should be pivotal to change the present trend of sequential events of multi-dimensional problem. Synergistic use of natural resources, coupled with proactive participation of all stakeholders have to contribute much with changed mindset with respect to exploitation and extraction of diminishing resources. Considering the limited scope of capture fisheries from natural inland waters like rivers and estuaries, emphasis on aquaculture and culture-based fisheries from reservoirs and flood plain wetlands to meet the targeted fish requirements sounds appropriate for youth, considering the availability of vast water resources, rich cultivable species, diversity and sound technological base.
Maritime education for fisher youth

To meet the challenges faced by the fisheries sector, it is very essential that a cadre of Professionals and Para-professionals is to be created through human resources development. The Government of Tamil Nadu is extending financial assistance to fisher youth to pursue maritime education after completing 10th or 12th for providing more employment opportunities. Under this scheme, 100 suitable fisher youth are to be trained every year and will be given financial assistance of Rs. 50,000/- each per year for upgradation of skills in Maritime education and Nautical Science.

The financial assistance of Rs. 50,000/- per student will be provided for the following courses.

1. Diploma in Nautical Science
2. Diploma in Marine Engineering
3. Deck cadets – One year course leading to B.Sc (Nautical Science)
4. Two years course of Trainee Marine Engineering for Diploma Engineers
5. One year course of Trainee Marine Engineering for Graduate Engineers
6. Three years course of B.Sc (Nautical Science)

The assistance is provided in 2 phases/periods- (viz.,) 50% of amount released at the time of joining the course and balance 50% amount released at the end of course period. The father / mother/guardian of the beneficiary shall be a member of Marine / Inland Fishermen Co-operative Society.

This scheme should also include Certificate and Diploma courses in Fisheries offered by the TNFU so that fisher children could study in the University at free of cost.

Tamil Nadu Fisheries University (TNFU) Initiatives

Considering the huge potential in fisheries sector of the State, Tamil Nadu Fisheries University came into existence during 2012. Efforts are being made to make the University a center of fisheries education on par with global standards in the country with new and innovative approaches in teaching, research and extension of Fisheries Science and Technology. The University will embark on enhancing the availability of quality human resource at various levels including para-professionals to meet the growing demand for trained and skilled human resource.

The TNFU had quota for fisher children (3-5 seats out of 20) in B.F.Sc. earlier and it is now not in operation. Moreover, Institutes of Fisheries Technology, one at Ponneri in Thiruvallur district and another at
Nagapattinam, Nagapattinam district offer Diploma courses in Shrimp Farming and Ornamental Fish Farming to the fisherfolk community (Open to all). A three-year Diploma in Fisheries Engineering is being envisaged at the Institute of Fisheries Technology (IFT), Nagapattinam. Such Diploma holders may be able to study BE (Fisheries Engineering), if offered later, through lateral entry. Other certificate, diploma and PG diploma courses in Fisheries Engineering as well as in other areas are being envisaged at the IFT, Nagapattinam. Similar courses with focus on Inland Fish Farming, Seed Production and Hatchery Management, Aquaculture, Mariculture, etc., will be offered at the IFT, Ponneri on need basis. The TNFU also plans to offer many other short term and long term courses in marine diesel engine maintenance, OBM repair, fishing equipment repair, ornamental fish farming, sea weed farming, etc. The TNFU could offer many diploma and PG diploma courses (regular and evening class courses) in fisheries and non-farm avocations to the fisher youth specifically, if the cost of their education is fully borne by the government. Fisher youth could avail these opportunities very well for their livelihood development.

The ICAR envisages Agricultural Innovations in Science Pursuit for Inspired Research (ASPIRE) for agriculture graduates along the lines of Innovations in Science Pursuit for Inspired Research (INSPIRE) of DST. Tamil Nadu State government may introduce a special scholarship for fisher children to study professional fisheries courses in the TNFU. To take this forward, special tailor-made courses in professional fisheries in Tamil medium may also be introduced for them.

**Finance**

Lack of timely and adequate credit is still a major constraint to the entrepreneurs in venturing into Agriculture and allied sectors. NABARD may be persuaded to evolve a special package of assistance for young entrepreneurs to establish Small and Medium Enterprises (SME) in Fisheries.

**Insurance**

Insurance companies underwrite crop production expenses in the event of any calamity. This benefit is not available to fisheries entrepreneurs, particularly in inland aquaculture activities. Insurance companies have now come forward to underwrite shrimp farming which is export-oriented. Union Ministry of Agriculture should take initiatives in this regard to provide insurance cover to all fisheries enterprises.
Areas for establishing fisheries enterprises

The various avenues of developing entrepreneurial skills in fisheries and Aquaculture for youth participation are as follows:-

Aquaculture

Carp seed production and farming, Ornamental fish breeding, culture and trade, Integrated fish farming, Fish culture in lakes, ponds and reservoirs, Cat fish breeding and culture, Aqua clinic Aqua business centres, Grow-out culture in enclosures (Cages / pens), Seed rearing in cages and pens, Feed mill plant, and Fish kiosks

Marine fisheries

Shrimp seed production and farming, Brackish water fish culture, Sea weed culture, Mussel farming, Lobster and crab fattening, Cold storage and ice plant unit

Post harvest Technology

Fishery products and by products Development and Preservation and Processing

General

Soil and water quality analysis lab, Quality control lab, Disease diagnostic lab, Village Knowledge Centres – (VKC) Single window info kiosk., Farm Technicians and Laboratory Assistants

Fisheries Engineering

Engine repair (Mechanic), Spare parts sale, and Equipment Service

Trade

Fish marketing and distribution, export of fish and fishery products, Clearing and Forwarding agents and Export / Import Documentation Assistants
Youth in Agriculture and Allied sectors

State Planning Commission, Tamil Nadu
Kolathur, a small village in the outskirts of Chennai has become the hub of ornamental fisheries. The advantageous geographical location (presence of two lakes) is the prime reason for the success. Water with low TDS on one side and large scale availability of natural food for fishes (phytoplanktons and zooplanktons) favoured the growth of ornamental fishes. At present, Kolathur has nearly 102 shops and more than 550 farmers are in the culture and rearing of ornamental fishes. Recently, Kolathur Ornamental Fish Farmers Cooperative Society (KOF COS) has been established to enhance the livelihood of the member farmers. A SWOC analysis was done and the details are provided as below.

### Strength
- 30 year experience in ornamental fish rearing
- Congregation of farmers and accessories
- Low Cost Chinese products

### Weakness
- Obsolete technology
- Farmers mindset
- More number of rental farmers
- Decrease in water quality due to rapid urbanization
- Quarantine issues

### Opportunities
- Wide market base due to Vastu
- Increased affordability
- Cheaper products with more features
- Untapped export potential

### Constraints
- Reduced culture of varieties
- No mechanism for knowledge improvement and technical enhancement
- Urbanization and land prices

The following strategies were put forth for long term sustenance of the Kolathur Model of ornamental fisheries hub:

- Establishment of an ornamental fish park with facilities like technology park, market regulation for appropriate price fixation of choice varieties and a commercial centre to cater to the needs of the consumers.

- In addition to the proposed facilities, establishment of an extruder mill for feed production is emphasized to reduce the cost of fish production and as such large share of the revenue realized is being exhausted by the purchased feeds from the market / overseas.

- Also, the proposed ornamental park to have an analytical lab which assists the farmers in disease diagnosis and early detection is the best option in the ornamental fish rearing.

The key features of success of the Kolathur model were presented by Dr. K. R. Jahanmohan, Head of Division, Agricultural Policy and Planning, State Planning Commission and Mr. NUS.Veeramaindhan, President, FMC 09 Kolathur Ornamental Fish Farmer Cooperative Society.
Recommendations

- High priority may be given to promote traditional agriculture/horticulture products especially millets. As these crops have immense agripreneurship avenues, this would help to create more vibrant employment opportunities in the rural areas that attract the rural youth.
- Since the ornamental fisheries is a highly profitable venture, similar to the Kolathur model, many more area specific projects may be developed throughout the State. The Cluster approach needs to be popularized. The Fisheries department may develop Ornamental Fisheries Park on a PPP mode wherein all the infrastructure should be made available for entrepreneur to venture into fisheries business and make conducive environment for promotion of ornamental fish exports.
- There is ample potential for ornamental marine fisheries; therefore, it is suggested that ornamental marine fisheries may be encouraged without degrading the fisheries resources and environment for which necessary training/workshops may be organized.
- SPC is in the process of approving schemes of innovative nature under Part II. Departments may forward the viable projects which will attract the youths towards agriculture and allied sector and also serve as contributor for growth of the economy for approval under this assistance.
- State Skill Development Mission may be utilized fully towards the skill development of farmers which facilitates them to become entrepreneurs and that ultimately paves way for making the agriculture to attain the industrial status.
- To retain the youth in agriculture and allied sector, ICT enabled concept like e_mandi, e-velanmai and mobile based agro advisories etc needs to be popularized.
- Though agricultural & allied sectors entrepreneurs are preparing the project report professionally viable, technical feasibility and economically viability are the fundamental prerequisite of a project. Therefore, it is suggested that a Compendium of bankable projects in coordination with development departments, research institutions and bankers may be prepared by SPC and documented.
- Access to affordable credit is another key factor in attracting the youth to farming. Access of credit is often tied to the availability of collateral, which is usually land that the young people do not have. It is, therefore, important that appropriate affordable financial packages are put in place by financial institutions involved in agricultural lending.
- In the rural areas due to the prevalent situations, students pursue the studies upto 8th standard and seek employment opportunities. Hence, provision of facilities to have a three years diploma course technical education related to agriculture and allied sector with prime emphasis on agricultural mechanization is most needed.
- The allocation for enrolment of students to State Agricultural Universities by ICAR is fixed at a low level and an increase in the enrolment strength will pave way for pursuance of agriculture as a stream by more youngsters.
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