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”Food security and climate change” - opening remarks

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OPENING REMARKS BY DR KIRIT N SHELAT

ON

”FOOD SECURITY AND CLIMATE CHANGE”

ENSURING FOOD SECURITY

- Enough food but in 2010-12 almost 870 million people were estimated to be undernourished (Food and Agriculture Organization of United Nations et al…2012). In addition, another billion people are malnourished.
- The paradox is that concomitantly a large number of people mainly in richer countries are over eating, resulting in long-term health issues.
- For poor farmers, food is not only a basic need but it is the single, and often fragile, support for maintaining livelihood.
- What is true at the household level is also true at the macroeconomic level. There are 32 countries, 20 of them in Africa, facing food crisis and in need of international emergency support. In most of these countries, agriculture is an important source of employment.

Objective is to ensure food and nutrition security, worldwide. Need to make sure that enough food is accessible to everyone, everywhere, physically and economically. Between now and 2050, the world’s population will increase by one-third. Most of the additional 2 billion people will live in developing countries and more people will be living in cities. FAO estimates that production will have to increase by 60 percent by 2050 to satisfy the expected demands for food and feed.

Objective is achievable provided the entire Agriculture sector is moved to adapt climate smart agriculture practices.

THERE ARE THREE KINDS OF IMPACT OF CHANGE IN CLIMATE AT LOCAL LEVEL-VILLAGE LEVEL

A concurrent impact which is taking place over the decades. This has already affected productivity and reduction in water resources, while cost of energy is growing higher	At local level action plan is needed to provide by taking stock of what has happened to soil and its productivity and same about livestock due to changes in weather – increase in temperature etc

Unexpected change in weather pattern during monsoon season like delayed rain, long intervals for rain or heavy rain – flood has already affecting Horticulture crops.	A contingency plan to modify cropping pattern. This has to be part of local level (Taluka Level) action plan and Comprehensive District Agriculture Plan (CDAP). This is already prepared by Agri. Universities but need to be made available to farmers
Major calamity like floods, cyclone/tornado , cloud burst etc	Need restoration strategy because such disasters some time wipe out entire soil strata and sweet water sources including livestock and shelter

Some Important leads

- Amend Agricultural University for Gujarat
- 3°C increase could reduce
  - CERES-Peanut (Groundnut) yield by 31.2% / yr.
  - CERES-Wheat by about 44% / yr.

ACROSS INDIA AS A WHOLE

- Drought in 2002 reduced 15 million hectares of the rainy-season crops - loss of > 10% in food grain production.
- 2013 delayed monsoon rains caused a fall in rice cultivation.
- Terminal heat stress is lowering yields of late-sown wheat yields and cold waves during December 2002-January 2003 significantly affected mustard, mango, guava, papaya, brinjal, tomato and potato in northern India.
- Cold wave in 2006 damaged 50-60 % of young and 20-50 % old mango trees.
- Heat waves
  - Nearly 20 lakh birds perished in June 2003.
  - Can reduce milk yield by 10-30% in first lactation and 5-20% in second and third lactation periods in cattle and buffaloes.

SMALL FARMERS STARED AT BIG LOSSES THE LAST MONSOON SEASON-

- Monsoon delay has pushed 20 of the 75 districts in UP to the brink of drought.

- Worst-hit are in Meerut, Kanpur and Varansi, where dry spell has damaged paddy.
- Unusual rain has harmed crops in parts of Bankura, Purulia and East Midnapore in Bengal.
- Large-scale flooding, after heavy rains affected 23 districts in Odisha and entire regions of Kashmir.
- As per some recent estimates the food production is on decline. Wheat production is severally affected due to unseasonal rain in UP ,Bihar and Gujarat.

EFFECT OF CLIMATE CHANGE ON LIVE STOCK.

- Summer – Drought- heat waves
- Monsoon – Floods , Heavy Rains & long period, interval of rain
- Winter and severe cold
  - Milch cattle: milk yield goes down in increased heat or cold wave
  - Poultry: egg yield goes down
  - Fisheries: fish catch goes away

INDIAN SITUATION

- India's success over six decades:
  - 2 % to 3% sustainable agriculture growth
  - Brought many out of poverty
  - Tackled many adverse climate and geographic challenges
  - Validated research into rise in productivity
  - Several states and individual farmers with average productivity, higher than, or equal to international level

  - But there is unequal growth between agriculture and other sectors like services and manufacturing. Latter have average growth of 8% - 10%. This is increasing rural and urban divide
  - Further there is unequal growth between farmers at local level in same village with similar land and water resources, one makes profit and other fails – commits suicide

- Adverse impacts of climate change pushes even successful farmers back to poverty
- Farmers suicide / large scale exodus to urban centers
- There are still about 30% farmers below poverty line.

Gujarat Situation:-

Decline in food production: in 2014-15.it is 79.49 lac tones in 2013-14 it was 93.82 lac tones (-14 lac tones and in 2011-12 it was 100 lac tones(-21 lac tones).

Non Food crops- Ground nut in 2014-15 it is 53.38 lac tones in 2013-14 it was 74.70 lac tones (-21 lac tones).

OBSERVED IMPACT ON AGRICULTURE IN INDIA.

- Industry and urban township are mostly implicated in the creating the externality through the release of pollutants and other emissions. They have to be made responsible for the challenges caused and sustained support to overcome challenges in the longer term too.
- These are locally felt challenges of a global phenomenon and can be seen as externalities that the farmers are not responsible for. The stakeholders responsible for creating these challenges cannot be determined as there is no direct cause and effect relationship.
- But it is important to deliver justice to the affected communities in a timely manner. These should include technical, technological and financial inputs & safety--net so that the farmers can tackle climate related challenges immediately and sustain such transitions in the future too or for that matter advisory on Climate Smart Practices.

WHY IS CLIMATE SMART AGRICULTURE (CSA) NEED OF TIME?

What CSA means:

- Helps achieve sustainable development goals.
- Integrates and coordinates– social, economical and environmental development to meet the challenge of providing sustainable (a) livelihood to farmers (b) food security to hungry millions, and (c) eradication of poverty.

It is composed of four pillars:

- Increase agriculture productivity and income.
- Adapt and build resilience to climate change.
- Reduce GHG emissions without harming farmer's interest.
- Use agriculture as a major tool for the mitigation of CO_2- absorb CO_2 and release Oxygen through photosynthesis process. It envisages to achieve this through (a) increased cropping by reducing rain fed areas through integrated water and river basin management (b) expansion of agriculture on wasteland, wetland, degraded fallow areas and urban agriculture.

  It prepares farmers to be agriculture smart on a regular permanent basis rather than ad hoc or transitory to survive the onslaught impact of climate change. The challenge before Agriculture Administration: - the Agriculture Scientists, Extension Teams and Agricultural Organizations both Public and Private, and of course Public leadership is to make this happen. It is an approach for addressing the development efforts towards the technical policy and investment condition by mainstreaming agriculture in overall development strategy at local level - village level.

CLIMATE SMART AND SUSTAINABLE AGRICULTURE

Despite adverse climate impact on crops/animals, income to farmers should not decrease. It needs to provide opportunities to farmers to have multiple sources of income from agriculture, animal husbandry, fisheries, milch cattle and poultry. So when one fails, other supports.

1. It provides opportunity to young members of family to acquire multiple skills, support for setting up microenterprise locally, based on demand and supply situation or set up protected agriculture, farmers with use of green house technology.
2. It provides safety net at the time of natural calamities – by way of crop insurance – for crops and animal husbandry.
3. It provides employment in community projects during lean season or at times of drought or whenever needed.

CLIMATE SMART AGRICULTURE INVOLVES:

- Crop pattern based on soil health and moisture analysis of individual pieces of land to support crops that can be sustained by its soil.
- Local Weather Advisory – not national or state level - long term, medium term and short term with inputs to take precautionary actions directly to farmers.
- Immediate Agro – advisory after unexpected weather changes have occurred for timely corrective action to prevent crop loss.
- Nutritional and preventive vaccination to cattle and poultry.

- All these by direct communication to the farmers at their doorsteps.
- And use all available scientific technology to make agriculture more productive, less costly and linked with value added market mechanism.

It further involves use of:

- Biodiversity
- Integrated Soil Fertility Management System (ISFM)
- Conservation of agriculture system
- Organic and inorganic inputs
- Agroforestry , Perennial crops
- Crop selection, crops which can be sustained in such conditions
- Resource Conserving Technologies (RCTS)
- Soil health and moisture analysis card for each farmer with details of (a) that can be sustained (b) nutrient that are needed.

This in context of change in demand for food products and increased demand for poultry products, meat, dairy products and fruits & vegetables.

Sustainable DEVELOPMENT

Sustainable development is a pattern of natural resource use that aims to meet human needs while protecting the environment simultaneously.

- This ensures that the need for resources can be met not only in the present, but also in the infinite future.
- The word “Sustainable Development” has well-known implications.
- It is a long-term activity. It involves the use of natural resources. It implies economic growth with socio economic and environmental content to provide sustainable livelihood.

Sustainable livelihood means.....

- Provide enough to all to live or exist.
- It should not become less and that,
- There is gradual increase in income for better quality of life.
- This should happen at local level – village level

CURRENT SYSTEM FOR MEETING THESE CHALLENGES-. THE INDIAN PERSPECTIVE

Disaster-Reconstruction policy:

- This is National Policy to provide immediate help to people affected by natural calamities-it includes advance precautionary measures like shifting of population
- Government provides financial assistance to affected at time of natural calamities like floods/cyclone-
- Cash doll payment-for 15 days
- Assistance for Household Kit
- Assistance for Replacing livestock-lost/Died.
- Assistance for Repair /Restore Houses collapsed or washed Away.
- Crop and cattle insurance.
- Financial assistance in case of death of adult members of family

Employment Guarantee Scheme (Act)-MNREGA(Mahatma Gandhi National Rural Employment Guarantee Act)

This act provides assured employment in Communities Projects to those who have no source of livelihood and in certain cases even one's own farm laborer work is permitted like Farm Pond. This is available round the year. This scheme is very popular. It has also raised rural wage of agriculture and allied workforce.

Crop and cattle Insurance

- Government provides
- Subsidy in premium
- Majority crops are including horticulture crops are Covered.

Minimum Support Price. (MSP) (Govt. of India, Agri .Mini Website)

Government provides a mechanism to purchase agriculture produce-include food grain at a specific price- if the market price is lower. Government sets up purchase depots to buy at MSP. This protects farmers in time of falling price due to bumper crops or Speculative Movement.

Food Security:

- In September 2013, Government of India has introduced National Food Security Act. The Act provided for food security to both urban and rural poor. Approximately 67% of rural population-81 crore of

population is entitled to receive subsidized food grain form Public Distribution System. The rate recommended imbalance are:

- Rice-Rs 3/-Kg(5 kg per person/month)
- Wheat –Rs 2/- Kg
- Coarse Grain Rs 1/- Kg
- 11 states have introduced this scheme. There are some operational issues-Which are being sorted out.
- This is a massive scheme and provides food security covering all rural poor families which include poor farmers.

SOME ISSUES WHICH NEEDED ATTENTION

- How to assist poor farmers who are left out of Development Process
- Mass communication. Existing successful practices
- Technology
- Weather forecasting
- Availability of Quality inputs-
- How to identify spurious seeds, harmful practices and fertilizer mix.
- Prompt payment
- Crop Insurance-Can it be cashless like automobile insurance?
- How to introduce value added Agriculture?
- New farmers-Women farmers, Young farmers-youth
- Public Distribution system-Storage
- Market Information
- Bringing new area under Agriculture-including wetland
- Multiple Source of Income
- Development of multiple stress seeds,
- Development of Simulation Models