



National Agriculture Policy 2013

Ministry of Agriculture
Government of the People's Republic of Bangladesh

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



প্রধানমন্ত্রী

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

২১ আশ্বিন ১৪২০

০৬ অক্টোবর ২০১৩

মুখবন্ধ

বাংলাদেশ কৃষিনির্ভর দেশ। কৃষি এবং কৃষকরাই বাংলাদেশের অর্থনীতির মেরুদণ্ড। সর্বকালের সর্বশ্রেষ্ঠ বাঙালি, জাতির পিতা বঙ্গবন্ধু শেখ মুজিবুর রহমানের নেতৃত্বে বাঙালি জাতি দীর্ঘ সংগ্রাম ও সশস্ত্র মুক্তিযুদ্ধে বিজয়ের মাধ্যমে স্বাধীনতা অর্জন করে। মহান মুক্তিযুদ্ধে কৃষকরা ছিলেন সামনের সারিতে।

জাতির পিতার স্বপ্ন ছিল এদেশকে সোনার বাংলা হিসেবে গড়ে তোলা। জাতির পিতার প্রত্যক্ষ নির্দেশনায় প্রণীত বাংলাদেশের সংবিধানে কৃষি বিপ্লবের লক্ষ্যে কার্যকর ব্যবস্থা গ্রহণ, জনগণের পুষ্টির স্তর উন্নয়ন ও জনস্বাস্থ্যের উন্নয়নকে রাষ্ট্রের অন্যতম কর্তব্য হিসেবে চিহ্নিত করা হয়। সংবিধানের আলোকে জাতির পিতা কৃষিখাতের জন্য নীতিমালা প্রণয়নের কাজে হাত দিয়েছিলেন। কিন্তু জাতির দুর্ভাগ্য, সে কাজ তিনি শেষ করে যেতে পারেননি। পরবর্তীকালে কোন সরকারই এ সাংবিধানিক দায়িত্ব পালনে উদ্যোগ গ্রহণ করেনি। ফলে স্বাধীনতার দীর্ঘ সময় পরেও কৃষি তথা ফসল উৎপাদনের ক্ষেত্রে সরকারের কার্যক্রম পরিচালনায় কোন সঠিক দিকনির্দেশনা বা নীতিমালা ছিল না। তাই স্বাধীনতার পর দীর্ঘ সময় নির্দিষ্ট নীতিমালা না থাকায় কৃষিখাতের উন্নয়ন কার্যক্রমের ধারাবাহিকতা বারবার ব্যাহত হয়েছে।

বাংলাদেশ আওয়ামী লীগ ১৯৯৬ সালের নির্বাচনী ইশতেহারে কৃষিকে সর্বোচ্চ অগ্রাধিকার খাত হিসেবে চিহ্নিত করে কৃষির উন্নয়নে সুনির্দিষ্ট কার্যক্রম গ্রহণে অঙ্গীকার ব্যক্ত করে। ১৯৯৬ সালের ২৩ শে জুন বাংলাদেশ আওয়ামী লীগ সরকার গঠনের পরপরই নির্বাচনী ওয়াদা এবং সাংবিধানিক দায়িত্ব পালনে কার্যকর পদক্ষেপ নেয়। স্বল্পমেয়াদী পদক্ষেপ হিসেবে জরুরিভিত্তিতে কৃষিখাতে বিনিয়োগ বৃদ্ধিসহ বিভিন্ন উন্নয়নমুখী সরকারি সহায়তা কার্যক্রম বাস্তবায়ন করে। জাতির পিতার স্বপ্নকে বাস্তবে রূপদান এবং সাংবিধানিক দায়িত্ব অনুযায়ী আওয়ামী লীগ সরকার কৃষক ও কৃষির সার্বিক উন্নয়নের দীর্ঘমেয়াদী পরিকল্পনা হিসেবে 'জাতীয় কৃষি নীতি ১৯৯৯' প্রণয়ন করে।

বর্তমান মেয়াদে সরকার পরিচালনার দায়িত্ব গ্রহণের পর আমরা পরিবর্তনশীল বাস্তবতার আলোকে ১৯৯৯ সালে প্রণীত জাতীয় কৃষি নীতির সংশোধনের উদ্যোগ গ্রহণ করি। এর মাধ্যমে সরকার জাতির কাছে দেওয়া প্রতিশ্রুতি পূরণসহ কৃষি ও কৃষকের উন্নয়নের দৃঢ় অঙ্গীকারকে উর্ধ্বে তুলে ধরেছে। সাম্প্রতিককালে গৃহিত বিভিন্ন উন্নয়ন দলিল, বিশেষ করে রূপকল্প-২০২১, সহস্রাব্দ উন্নয়ন লক্ষ্যমাত্রা (এমডিজি), সার্ক উন্নয়ন লক্ষ্যমাত্রা (এসডিজি), ৬ষ্ঠ পঞ্চবার্ষিকী পরিকল্পনা ইত্যাদিতে সরকারের লক্ষ্য ও উন্নয়ন কৌশল অনুসরণে ইতঃপূর্বে প্রণীত 'জাতীয় কৃষি নীতি, ১৯৯৯' পরিমার্জন ও সংশোধন করে সময়োপযোগী নতুন 'জাতীয় কৃষি নীতি, ২০১৩' প্রণয়ন করা হয়েছে।

নতুন প্রণীত 'জাতীয় কৃষি নীতি, ২০১৩' কৃষিখাতের পরিকল্পিত উন্নয়নকে ত্বরান্বিত করবে এবং জাতির পিতার সোনার বাংলা গড়ার স্বপ্ন বাস্তবায়নে মাইলফলক হিসেবে অবদান রাখবে বলে আমি আশা করি।

'জাতীয় কৃষি নীতি, ২০১৩'-এর সফল বাস্তবায়ন সার্বিক কৃষি উন্নয়ন তথা ফসল উৎপাদনে যেমন বিপ্লব আনবে, তেমনি গ্রামীণ দরিদ্র জনগোষ্ঠির আর্থ-সামাজিক উন্নয়নে প্রত্যক্ষ অবদান রাখবে বলে আমি দৃঢ়ভাবে বিশ্বাস করি।

আমি 'জাতীয় কৃষি নীতি ২০১৩' এর সফল বাস্তবায়ন কামনা করি।

জয় বাংলা, জয় বঙ্গবন্ধু

বাংলাদেশ চিরজীবী হোক।

(শেখ হাসিনা)



মন্ত্রী
কৃষি মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

পটভূমি

বাংলাদেশের মানুষের জীবন ও জীবিকার সাথে অত্যন্ত ঘনিষ্ঠভাবে মিশে আছে কৃষি। কৃষিকে বাদ দিয়ে এদেশের অর্থনৈতিক উন্নয়ন সম্ভব নয়। দেশের ক্রমবর্ধমান জনসংখ্যার সাথে তাল মিলিয়ে কৃষি খাতের সার্বিক উন্নয়নের জন্য সুষ্ঠু পরিকল্পনা একান্ত অপরিহার্য। স্বাধীনতার পর দীর্ঘ সময় অতিবাহিত হলেও কৃষি তথা ফসল উৎপাদনের জন্য জাতীয় পর্যায়ে কোন নীতিমালা ছিল না। জাতির পিতা বঙ্গবন্ধু শেখ মুজিবুর রহমান স্বাধীনতা উত্তর পুনর্গঠন প্রক্রিয়ায় সাংবিধানিক অঙ্গীকারের ভিত্তিতে কৃষি খাতকে সর্বাধিক গুরুত্ব আরোপসহ কৃষি বিপ্লবের সূচনা করেছিলেন। তাঁর অসমাপ্ত কাজ সম্পন্ন করার জন্য মাননীয় প্রধানমন্ত্রী শেখ হাসিনার গতিশীল নেতৃত্ব ও যথোপযুক্ত নির্দেশনায় বিগত আওয়ামী লীগ সরকার একটি সুচিন্তিত, সমন্বিত ও পরিকল্পিত কার্যক্রম গ্রহণ ও বাস্তবায়নের মাধ্যমে ফসল উৎপাদন ব্যবস্থাকে লাভজনক পর্যায়ে নিয়ে যাওয়ার লক্ষ্যকে সামনে রেখে জাতীয় কৃষি নীতি, ১৯৯৯ প্রণয়ন করে।

বর্তমান সরকার ক্ষমতা গ্রহণের পরপরই ১৯৯৯ সালে প্রণীত জাতীয় কৃষি নীতিকে যুগপোয়োগী করার প্রয়োজনীয়তা অনুভব করে। প্রায় এক যুগ পূর্বে প্রণীত এ কৃষি নীতির অনেক প্রেক্ষিতেই বর্তমানে পরিবর্তিত হয়েছে। জলবায়ু পরিবর্তনসহ কৃষি খাত নানাবিধ চ্যালেঞ্জের সম্মুখীন হচ্ছে। এসকল চ্যালেঞ্জ যথাযথভাবে মোকাবেলা করে কৃষিকে টেকসই করে ভবিষ্যতে বাণিজ্যিক কৃষিতে রূপান্তর, খাদ্য ও পুষ্টি নিরাপত্তা বিধানের লক্ষ্যকে সামনে নিয়েই 'জাতীয় কৃষি নীতি, ২০১৩' প্রণীত হয়েছে। প্রণীত এ নীতিতে সংশ্লিষ্ট মন্ত্রণালয়, সংস্থা ছাড়াও আপামর জনসাধারণ, জনপ্রতিনিধি, কৃষি বিজ্ঞানী, সম্প্রসারণ কর্মী, বিভিন্ন পেশাজীবী সংগঠন, এনজিওসহ সকলের মতামত গ্রহণ করা হয়েছে। কৃষি খাতের সার্বিক উন্নয়নের লক্ষ্যে 'জাতীয় কৃষি নীতি, ২০১৩'-তে যে সকল বিষয় অন্তর্ভুক্ত করা হয়েছে তার মধ্যে উল্লেখযোগ্য হচ্ছেঃ কৃষি খাতের সমস্যা ও সমাধান, গবেষণা ও উন্নয়ন, কৃষি সম্প্রসারণ, কৃষি উপকরণ যথাযথকরণ, প্রতিকূল জলবায়ু, প্রাকৃতিক সম্পদের কাংখিত ব্যবহার, কৃষির যান্ত্রিকীকরণ, কৃষিতে সমবায়, কৃষি বিপণন, কৃষিতে তথ্য প্রযুক্তির ব্যবহার, কৃষিতে নারী, মানবসম্পদ উন্নয়ন ইত্যাদি বিষয়ে প্রয়োজনীয় দিক নির্দেশনা। এ নীতিমালার উদ্দেশ্যসমূহ এবং তা অর্জনের লক্ষ্যে গৃহীতব্য পদক্ষেপ সম্পর্কে এতে বিস্তারিত রূপরেখা সংযোজিত হয়েছে। এক্ষেত্রে সংশ্লিষ্ট সকলের মতামত অত্যন্ত গুরুত্বের সাথে বিবেচনা করা হয়েছে।

বর্তমান সরকারের কার্যকালে সম্পূর্ণভাবে আমাদের কর্মকর্তা ও স্থানীয় পর্যায়ে বিশেষজ্ঞদের দ্বারা 'জাতীয় কৃষি নীতি, ২০১৩' প্রণয়ন ও প্রকাশ করতে পেরে আমরা আনন্দিত ও গর্বিত। প্রণীত কৃষি নীতির যথাযথ বাস্তবায়ন এবং সেই সাথে উপযুক্ত প্রযুক্তির ব্যবহার করে দেশের কৃষি উন্নয়নকে ত্বরান্বিত করা এবং একই সাথে কৃষি বিষয়ক আমাদের লব্ধ জ্ঞান সুসংহত করা সম্ভব হবে বলে আমার দৃঢ় বিশ্বাস। কৃষি খাতের সাথে সংশ্লিষ্ট সকলে এ ব্যাপারে স্বতঃস্ফূর্তভাবে এগিয়ে আসবেন এবং সর্বাঙ্গিক সহযোগিতা করবেন বলে আমি আশা করি।

(মতিয়া চৌধুরী)

Contents

Sl. No.	Subject	Page No.
1	Introduction	1
2	Objectives of the National Agriculture Policy	4
3	Strengths, Weaknesses, Opportunities and Threats of Agriculture Sector	5
4	Research and Development	8
5	Agricultural Extension	11
6	Seeds and Planting Materials	15
7	Fertilizer	17
8	Minor Irrigation	18
9	Agricultural Mechanization	20
10	Agricultural Cooperatives	21
11	Agricultural Marketing	22
12	Women in Agriculture	24
13	Natural Resource Management	25
14	Human Resource Development	26
15	Labor in Agriculture	29
16	Non-farm Activities	29
17	Dominance of Bangla Language	29
18	Conclusion	30

1.0 Introduction

- 1.1 Agriculture is the main activity and lifeline of Bangladesh economy. The role of agriculture is important in improving the wellbeing of the vast population through enhancing productivity, profitability and employment generation in the rural areas. Agriculture sector (crops, livestock, fisheries and forestry) makes an important contribution to GDP of the country, provides employment of about 50% of the labor force, and remains a major supplier of raw materials for agro-based industries. Agriculture is a special field of social activities that are directly involved in food and nutritional security, income generating opportunities and poverty reduction. Besides, it is the largest source of market for a variety of consumer goods, particularly in the rural areas. Hence, improvement of agriculture sector and acceleration of its growth is essential to reduce the rural poverty.
- 1.2 Agriculture sector encompasses crops, fisheries, livestock, and forestry sub-sectors. Separate policies on fisheries and livestock, food, forestry and environment, land and jute and textile have been formulated by the respective Ministries *e.g.* Environment Policy 1992, National Forest Policy 1994, National Fisheries Policy 1998, National Land Use Policy 2001, National Jute Policy 2002, Livestock Policy and Action Plan 2005, National Livestock Development Policy 2007, National Food Policy 2008, and National Poultry Development Policy 2008. In this perspective, Ministry of Agriculture has drafted this policy document in order to undertake and guide proper development activities in the crops sub-sector. Issues of research, extension, seeds, fertilizers, minor irrigation, marketing, and Human Resources Development (HRD) related to crop production have been prominently highlighted, as expected, in this policy document. Since crop sector plays a major role in Agriculture of Bangladesh and gets the utmost importance in various agriculture related programs of the government, the policy is titled as “**National Agriculture Policy**”, following the previous policy.
- 1.3 In Bangladesh, agricultural land is declining approximately 1% per year and the land quality is deteriorating due to degradation of soil fertility (*e.g.* nutrient imbalance), soil erosion and increased soil salinity. Water resources are also declining. In order to produce more food for an

increasing population and raw materials for agro-industries from a decreasing land, there is a need for increasing agricultural production through higher productivity, agricultural intensification, diversification and value addition.

- 1.4 The ultimate goal of the Government of Bangladesh (GoB) is to achieve a 50% reduction of the proportion of population living below the poverty line by 2015 compared to 1990 in accordance with the Millennium Development Goals (MDGs). Besides, to maintain a sound macro-economic framework, the Sixth Five Year Plan (2011-15) and the “Perspective Plan (2010-2021)” highlight the need for higher and quick economic development, higher growth in the rural areas, development of agriculture and rural non-farm activities concurrently.
- 1.5 In order to achieve a higher GDP growth, agriculture sector should have similarly higher growth rate. This is possible through the increased productivity of agriculture by using modern technology in all the sub-sectors (crops, horticulture, livestock, fisheries and forestry) and by linking farmers with the supply chains of consumers in the domestic and overseas markets. As a result, poverty will be reduced and life status will be improved.
- 1.6 Small farms dominate the agrarian structure of Bangladesh. The agriculture sector has a great influence on the economic progress and livelihoods of the people. For rural poverty reduction and livelihood improvement, it is therefore necessary to develop existing agricultural production system into a more dynamic and sustainable commercial agriculture. Agriculture has the vast potentiality to reduce food deficit and shortage of industrial raw materials, and also to generate huge employment opportunities with reasonable income that can improve the rural living standard.
- 1.7 Sustainable intensification and diversification of agriculture through technological innovation needs efficient and productive agricultural management along with agricultural research and extension. Proper value addition and market management are needed in this regard. For sustainable knowledge-based agriculture, productivity, efficiency in resource use, use of cutting edged technology, increase in research and experiment facility along with skilled man-power supply are utmost

important. Increasing scientific and technological assistance are needed for Agriculture in Bangladesh. It is necessary to enhance the effectiveness of public expenditure in agricultural research and extension management during the present multi-dimensional national and economic environment.

- 1.8 Major challenges for Bangladesh agriculture are to raise productivity and profitability, reducing instability, increasing resource-use efficiency, producing highly nutritious food and agricultural products, improving quality for diversification and commercialization of agriculture.
- 1.9 The previous National Agricultural Policy was adopted in April 1999. With the passage of time some issues and concerns have emerged in agriculture with new dimensions. In the perspective of dwindling agricultural resources, declining biodiversity, climate change, increasing frequency and intensity of natural disasters, increasing input prices, hike of food prices, etc, agriculture needs such renovation that would address challenges to meet the demands. So updating of agricultural policy is necessary to make it appropriate to the present agro-economic context.

2.0 Objectives of the National Agriculture Policy

The main objective of the National Agriculture Policy is to ensure food and nutrition security for all and improvement of rural livelihoods through increased crop production with higher productivity and creating employment opportunities through diversification of agricultural activities.

2.1 Specific Objectives

The specific objectives of the National Agriculture Policy are:

- Ensure sustainable and profitable agricultural production system;
- Develop and disseminate improved crop varieties and sustainable production technologies through research and training;
- Increase productivity and generate income and employment by transferring appropriate technologies and improving inputs management;
- Promote and continue competitiveness of agriculture through its commercialization;
- Promote effective initiatives to establish a self-reliant and sustainable agriculture that is adaptable to climate change and responsive to farmers' need;
- Ensure fair price of agricultural commodities along with improved marketing;
- Encourage quality production of agricultural products to meet the demands of international markets and increase the export opportunity;
- Create opportunity for agricultural product processing and establish agro-based industries; and
- Diversify agriculture to meet the nutritional demand of people and encourage production of more nutritious crops.

3.0 Strengths, Weaknesses, Opportunities and Threats (SWOT) in Agriculture Sector

For developing a pragmatic, and fruitful National Agriculture Policy, it is pre-requisite to analyze and consider the strengths, weaknesses, and opportunities in and potential threats to the implementation of such a policy.

3.1 Strengths

- Favorable agro-climate generally prevails throughout the year for crop production;
- Research and extension systems exist for technology generation and technology transfer/extension at farm level;
- Experts, scientists and trained manpower are available for agricultural research and development;
- Appropriate technologies are there for production of major crops;
- Agricultural input supply network thoroughly covers the country;
- Farmers are innovative and responsive and adaptive to new technologies;
- Sufficient workforce for agricultural activities is available;
- Considerable biodiversity exists for different crops;
- Irrigation is available;
- A facilitative institutional and regulatory framework is in place;
- Government financial assistance/incentive system prevails;
- Country-wide land management monitoring network exists and, considerably detailed upazila-wise land and soil resources information and guidelines prevails;
- Farmers' ancient knowledge and experience exists; and
- Agriculture subsidy card and farmer's bank account are available.

3.2 Weaknesses

- Agricultural marketing management system is comparatively weak;
- Post-harvest loss of crop is higher ;
- Farmers' own capital for agricultural activities is not enough;

- Institutional agricultural credit is limited;
- Farmers' organizations (club, group) are not well organized;
- Input (water, fertilizer, pesticides, etc.) use efficiency is low ;
- Technologies for quality production for export market is inadequate;
- Insufficient technologies to cope with unfavorable environment;
- Private sector investment in research and development is insignificant;
- Insufficient trained scientists and infrastructural facilities for advanced agricultural science;
- Lack of diversification in agriculture;
- Weak management in quality control of agricultural inputs:
- Lack of coordination among the public and private universities and research organizations;
- Insufficient use of ICT in agriculture sector;
- Inadequate training for farmers and entrepreneurs:
- Inadequate production and supply of quality agricultural inputs (e.g. seed, fertilizer and irrigation);
- Insufficient storage and processing facilities for agricultural commodities; and
- Inadequate transport facilities for agricultural commodities.

3.3 Opportunities

- Transferable modern technology and technical know-how are available;
- Scope for expanding hybrid technology is exists;
- Prospect for adoption of advanced technology in agriculture;
- Potentials for proper utilization of agro-ecologically disadvantaged regions including hilly areas exists;
- Export potentials for high-value crop in foreign and expatriate Bangladeshi dominated markets outside the country:
- Scope of crop diversification and intensification:

- Scope for value addition to agricultural produces;
- Opportunity for market expansion for value added products;
- Scope of employment opportunity and raising income in agriculture;
- Scope for reducing yield gaps; and
- Opportunity for personal entrepreneurship and institutionalization of commercial agriculture.

3.4 Threats

- Environmental vulnerability (climate change, flood, drought, storm, salinity, diseases, pest infestation and river erosion) prevails;
- Degradation of soil health;
- Decrease of cultivable land and water resources;
- Increasing use of farmland for non-farm activities;
- Uncertainty of fair prices of agricultural product is causing disincentive to farmers;
- Decline of agricultural biodiversity;
- Excessive and non-regulated use of pesticides;
- Agricultural environment degradation; and
- Inadequate budget allocation in agriculture, especially for research.

4.0 Research and Development

Development of technologies through agricultural research and its dissemination plays an important role in economic development. So, a well-organized research plan is essential for rapid agricultural development. Paradigm shift from a supply-driven to a demand-driven agriculture through research is possible. This will require a change of focus from a production level to production efficiency and productivity. It also needs equity, employment, environmental sustainability, nutrition, food quality and trade as new areas of concern to maintain food security. This demands effective introspection, reprioritization and consolidation of R & D activities besides overall accountability. The key strategies to address multifaceted challenges are as follows:

4.1 Governance of Research Institutions

- Constant measures to strengthen coordination, planning, priority-setting, and monitoring and evaluation mechanisms in the National Agricultural Research System (NARS) will be taken for the improvement of research;
- Incentives and built-in rewards will be provided to individual researchers or research institutions for innovation, and excellence in agricultural research;
- Adequate research contingency support will be provided to scientists and project-based activities will be institutionalized;
- Appropriate infrastructure will be built and existing infrastructure will be upgraded for research, training and outreach programs; and
- Research system will be developed through National Agricultural Research System which will ensure the highest social benefits per unit of research inputs and value addition.

4.2 Research Planning and Funding

- Emphasis will be provided on the practicing of bottom-up approach in research program planning and prioritization;
- Public-private participatory approach for conducting research activities will be encouraged; and
- Adequate and timely funding for research programs will be ensured.

4.3 Research Focus Areas

- Research programs focused on intensification, diversification and integrated farm activities in agriculture;
- Innovation and development of high yielding, stress-tolerant, short cycle and low-input varieties and their cultivation technologies;
- Post-harvest technologies, high value crops, value addition, agri-business management and trade;
- Research support on emerging issues, like biotechnology, plant genetic research, hybrid, climate change, disaster and stress including flood, waterlogging, drought, cyclone and salinity;
- Upland/hill and deep water crop management, sustainable land and water management and organic farming;
- Research on Rain-fed crops to increase productivity and sustainability;
- Research activities to solve the problem in farm management;
- Research on the weather forecast in the context of climate change and crop production;
- Promotion of farm mechanization, and innovative research & development of appropriate farm machinery;
- Innovation and development of Integrated Pest Management (IPM) and bio-pesticides;
- Research programs should be taken on trans-boundary movement of infectious diseases, cross-cutting issues having application across. Besides research on one or more production systems and the sustainability of the production systems, poverty alleviation and livelihood improvement, household food security, off-farm income generation, and rural development;
- Research on agricultural policy and technology dissemination systems of unique nature; and
- Development and promotion of eco-friendly technology and sustainable land and water management for different agro-ecological zones.

4.4 Technology Transfer

- All research institutes will highlight technology assessment, refinement and transfer by improving interface with farmers and other stakeholders; and
- Agricultural research institutes will take initiative to enhance involvement of scientists in outreach extension programs.

4.5 Equity in Service Delivery

- The National Agricultural Research System (NARS) will make efforts to bring the system in proximity with the target people or beneficiary through decentralization of agricultural research management; and
- The government will take initiative to remove regional disparity in the development of institutional infrastructure and human resources.

4.6 Informatics

- Agricultural Research Institutes will develop a comprehensive database to facilitate planning of agricultural research and development. A functional electronic network of Agricultural Research Information System will be developed for all the stakeholders under the NARS and other national, regional and international centers of excellence.

4.7 Development of Participatory Cooperation

- NARS institutes will create opportunities for promotion of research through increased public and private sector collaboration;
- NARS will complement research efforts among institutions and agencies at national and international level; and
- The government will take steps for strengthening research and extension linkage.

4.8 Intellectual Property Rights

- Support will be provided to establish Intellectual Property Rights (IPR) for new innovation in agriculture.

5.0 Agricultural Extension

Agricultural extension is one of the key driving forces for growth and development of agriculture in Bangladesh. To increase farm productivity and farmer's income, access to new technology is to be ensured. The government recognizes agricultural extension as a service delivery system which will assist farmers by giving appropriate technical and farm management advice and information, new technology, improve farming methods and techniques aimed at increasing production efficiency and income. To ensure sustainable production system there is an increasing need for strengthening agricultural extension services and appropriate institutional arrangement desires to be established. An institutional management system will be developed between research and extension so that research and extension can interact effectively with each other as well as with farmers to address the critical needs of the production practices at the farm level. The following provisions are adopted to make extension services more efficient and effective.

5.1 Extension Coverage

- The government will support public, private and voluntary extension initiatives to achieve diverse agricultural goals and to address needs of target population;
- Extension services will be provided to all categories of farmers *viz.* landless, marginal, small, medium and large, with special emphasis on women and youths; and
- The government will decentralize extension activities at the grass-root level to deliver efficient and coordinated services.

5.2 Extension Method/Approach

- Farmers, either as individuals or as groups, will be encouraged to express their needs and problems to extension staff. Local extension staff will act as primary source of information and response to service network to meet the requirements;
- The government will make a shift from the top-down, hierarchical approach to bottom-up participatory approach in which farmers, researchers and extension workers can work together as peers;
- The government will recognize and adopt approaches that emerge locally through growing understanding of the nature of technological change, learning and adaptation to prevailing situations;

- Collaboration will be initiated among research and extension organizations and universities in the field of adaptive research; and
- The government will encourage promotion of location specific crops and cropping patterns suitable to agro-climatic conditions of a particular region based on crop-zoning.

5.3 Communication Media

- Traditional and advanced media and ICT will be utilized for extension activities;
- Agricultural Information Service (AIS) will be strengthened both in terms of workforce and modern facilities to enable effective information dissemination and technology transfer;
- Dissemination of agricultural information and technology through print and electronic media will be enhanced with focus on enhanced collaboration among AIS, BTV, Bangladesh Betar and other private TV and radio channels; and
- Use of community radio, web radio, and mobile communication technology will be encouraged for extension of agricultural information and technology.

5.4 Partnership

- Extension activities that foster GO-NGO-Private sector partnership will be facilitated;
- Public-Private-Partnership (PPP) for production of agricultural commodities will be encouraged;
- Strategies will be undertaken to deliver extension services in collaboration with local government at union and upazila levels; and
- The government through the Department of Agricultural Extension (DAE) and allied agencies will maintain liaison with the NGOs and other development partners at local level for cooperation and coordination.

5.5 Agricultural Productivity

- The government will continue and strengthen support for major crops production related to food security and livelihood improvement. In addition, measures will be taken to promote high value crops for enhancement of farmers' income and boost of agricultural export;

- Measures will be taken to increase cropping intensity, and to bring fallow land under cultivation;
- Diversification of crop will be pursued to augment food and nutrition security;
- The government will monitor supply, availability and distribution of inputs (seed, fertilizer, pesticides, irrigation, etc.) to farmers through extension (DAE) and other inputs service providers and will also ensure effective monitoring for maintaining the quality of inputs supplied by both public and private organizations;
- Efforts will be made to provide credit support at preferential rate for selective crops;
- Adequate financial support in the form of credit will be extended for farmers to encourage increased production. Small, marginal, medium and sharecroppers will be given preference to agricultural credit; and
- Institutional framework will be developed to ensure easy access to credit.

5.6 Quality Assurance

- The government will promote Good Agricultural Practices (GAP) in crop production for local and export market and in supply chain management;
- Sanitary and Phytosanitary (SPS) measures will be ensured during production, processing and marketing; and
- Quarantine services will be strengthened to meet the needs of both domestic and export market.

5.7 Program for Adverse Agro-climatic Regions

- The government will pursue program for hilly area, barind tract, char land, drought prone area, haor-baor and coastal belt with appropriate technological support.

5.8 Addressing Vulnerabilities

- The government will combine instant assistance, and short, mid and long term development programs for the affected farmers during and after crises to enhance productivity and create employment involving the private sectors, NGOs, philanthropic organizations and private individuals;

- The government will undertake agricultural rehabilitation programs immediately after the occurrence of natural calamities to compensate crop damage;
- Measures will be taken to protect crops in the coastal, haor, beel and char areas keeping harmony with other sub-sectors' production;
- Introduction of crop insurance program will be considered; and
- "Agricultural Disaster Response Fund" will be created to start post disaster rehabilitation program immediately after a disaster.

5.9 Environment and Resource Conservation

- The government will promote development of modern eco-friendly technology and infrastructure for a safe and sustainable future;
- Integrated Pest Management (IPM) and Integrated Crop Management (ICM) will be promoted for conservation of biodiversity and sustainable land and water management; and
- Measures will be taken to restrict the use of agricultural land for non agricultural purposes.

5.10 Database

- Agriculture related agencies will develop and maintain a comprehensive database by integrating existing resource base, inputs, technology, production and marketing aspects for agricultural development and planning;
- The government will prepare a comprehensive user friendly database on farming and agricultural technologies; and
- Efforts will be taken to disseminate information and to facilitate access of the stakeholders to database.

6.0 Seeds and Planting Materials

Quality seed is one of the main and basic agricultural inputs for increased crop production and food security. Quality seed alone can increase yield upto 15-20%. At present, significant portion of the quality seeds required for different crops are made available by the public sector. Few seed companies and NGOs have started supplying quality seed of primarily hybrids of rice, maize and vegetables. A portion of the required quality seed is produced, preserved and used under private management especially at the farmer's level.

6.1 Breeding, Development and Maintenance of Crop Varieties

- National agencies/ individuals will be encouraged to undertake plant breeding programs, besides, import of breeder/foundation seeds of notified crops by individual/company for variety development and promotional purposes will also be encouraged;
- Individuals, companies or agencies engaged in the seed sector will be provided opportunities for getting institutional credit;
- Impartial development of the seed sector will be provided by promoting opportunities to the public and private sector seed industry from breeding to marketing; and
- Any individual or company may be involved in seed development, registration, and marketing related activities subject to prior approval from the government.

6.2 Multiplication and Distribution of Seed

- Supply of breeder and foundation seed will be facilitated for easy access to public and private agencies, and farmers;
- The government will maintain seed security stock to cope with the emergent or dependent situations; and
- Government and private sector will be encouraged to build necessary facilities for seed production, processing, preservation, quality control and marketing.

6.3 Supports to Public and Private Sector Seed Industries

- The competency of the contract farmers will be developed in the public and the private sector to produce quality seed; and
- Both the public and private sector will initiate programs to create awareness among the farmers for adoption of new varieties and new technologies of the farmer's field.

6.4 Strengthening Activities for Quality Control of Seed

- Seed certification and enforcement of seed regulations will be strengthened for increasing availability of quality seeds; and
- Quality assurance of seed will be enforced at all stages of seed system from production to marketing including seed import and export.

7.0 Fertilizer

Fertilizer is one of the essential inputs for increasing crop production. The expansion of modern agricultural practices together with intensified cultivation has led to an increasing demand for fertilizers. It is, therefore, necessary to ensure timely supply of fertilizers to meet the increasing demand. Imbalanced use of chemical fertilizers is causing land degradation and excessive mining of plant nutrients resulting in the decline of soil fertility on one hand and reduction in the potential yield on the other. It is, therefore, important to adopt effective measure to encourage farmers using balanced fertilizers to maintain soil fertility. To strengthen fertilizer management, the government will pursue the following principles.

7.1 Procurement and Distribution

- Procurement and distribution of fertilizers will continue both in the private and the public sector; and
- Steps will be taken to maintain a fertilizer buffer stock at the regional, district and upazila levels.

7.2 Quality Control

- The government will make sure availability of quality fertilizers at farmers level;
- Production, import, marketing, distribution and use of any kind of fertilizer that are harmful or detrimental to plant, soil, flora and fauna will be banned; and
- The government will strengthen the analytical facilities to assess the quality of fertilizers.

7.3 Promotion of Organic Fertilizer and Balanced Fertilizer Use

- The government will encourage the use of organic manure, compost and bio-fertilizer at farmers level;
- Awareness will be built to follow suitable cropping patterns for maintaining natural balance of soil nutrients;
- Necessary support will be provided to farmers to encourage use of balanced, cheap and organic fertilizers; and
- Program on the production and use of Urea Super Granule (USG) will be intensified.

7.4 Fertilizer Monitoring

- The government will monitor supply, storage, price and quality of fertilizers at different levels.

8.0 Minor Irrigation

Irrigation is considered as one of the most essential inputs for increasing crop production. A significant portion of the country is not getting irrigation during dry seasons due to climate change and lifting ground water in an unplanned way. Moreover, river linking project of the upper riparian country is likely to aggravate the situation. Therefore, a well-planned irrigation management system is essential for gradual increase of cropping intensity as well as yield. The government has laid special emphasis on the increased use of surface water and reduced use of groundwater in irrigation for protection of the ecological balance and reduction of irrigation expenses. As such, National Agriculture Policy has given special emphasis on the judicious use of water resources. The government will prepare "Integrated Minor Irrigation Policy" by stating elaborate information on the increased use of surface water in irrigation and the reduction of dependence on the groundwater. Although minor irrigation is largely the domain of the private sector, the public sector holds the responsibility of efficient water management system by which expansion of low cost sustainable irrigation facilities can be provided. The following steps will be taken for effective minor irrigation management.

8.1 Irrigation Efficiency and Water Productivity

- Irrigation efficiency will be ascertained and modern water management technology will be promoted to enhance irrigation efficacy and water productivity through optimal use of available water resources;
- Modern irrigation, drainage and water application systems will be introduced for expanding irrigation coverage in difficult and disadvantaged areas including char, hills, barind tract, drought-prone and saline areas;
- Distance among Tube well will be chosen in such a way so that it will ensure of safe extraction of groundwater, salinity protection and increase of irrigation efficiency; and
- The use of surface water for irrigation will be emphasized and therefore, appropriate measures will be taken for expansion and use of appropriate technology. Conjunctive use of surface and groundwater would be emphasized.

8.2 Planning and Monitoring

- The existing survey and monitoring activities of both quantity and quality of irrigation will be strengthened to formulate pragmatic irrigation and water management plan;
- Associated agencies will prepare plan and update groundwater zoning map for effective use of groundwater resources. The consequence of the changeable groundwater table on minor irrigation will be monitored; and
- The monitoring data of groundwater fluctuation, sea water level and saline water intrusion will be updated and forecasted after analysis regularly.

8.3 Conservation and Utilization

- The government will promote re-excavation of canals, ponds and other water bodies for conservation and utilization of surface water through inter-agency collaboration;
- For efficient use of water the government will encourage the replacement of suction mode pump by forced mode pump in critical areas;
- Versatile use of irrigation water will be encouraged;
- The government will encourage groundwater recharge through watershed management; and
- The government will take initiatives to reclaim water logged agricultural lands.

8.4 Power for Irrigation

- Preferential access will be given to power-source for irrigation through intimate inter-agency collaboration;
- Efforts will be made for a balance between irrigation cost of electricity and diesel; and
- The use of solar energy along with other renewable energy will be encouraged.

9.0 Agricultural Mechanization

Mechanization is an important tool for profitable and competitive agriculture. The need for mechanization is increasing fast with the decrease of draft power. Without mechanization, it will not be possible to maintain multiple cropping patterns, which is associated with quick land preparation, planting, weeding, harvesting, processing, etc. The use of agricultural machinery primarily in tilling, seeding, weeding and threshing has been increased remarkably. This trend has to be extended further so that efficiency in production can be achieved with higher production by reduced cost. Mechanization should include post harvest activities including processing and preservation.

9.1 Manufacturing of Agricultural Machinery and Equipment

- The government will encourage production and manufacturing of agricultural machineries suitable in socio-economic, environment and climate change context; and
- Appropriate support will be provided to manufacturing factory and industries engaged in agricultural mechanization.

9.2 Support and Incentives

- Exemption of import duties and the existing facilities for testing and standardization of agricultural machineries will be continued to keep the price within the reach of the farmers;
- Efforts will take to rationalize import duties on raw materials of agricultural machinery to encourage local manufacturers and to keep the price of local machineries competitive with the imported ones;
- To speed up the process of agricultural mechanization both producers and users of agri-machineries will be provided with necessary support including credit;
- The government will promote mechanization by giving cash incentives for selective machinery at producer, manufacturer and farmer levels;
- Agriculture subsidy, input support and agriculture credit will be provided through farmer's bank account; and
- Farmers' group based cultivation and marketing will be encouraged.

10.0 Agricultural Cooperatives

In the context of declining arable land and the socio-economic condition of farmers, agricultural production and marketing on cooperative basis will draw economic benefit to the farmers.

10.1 Cooperative based Agricultural Production

- Self-motivated cooperatives of group based agricultural production will be encouraged and supported with the aim of securing crop production by marginal, small and medium sized agricultural producers and entrepreneurs;
- The government will support agricultural production activities based on co-operatives with individual land ownership remaining intact;
- Collection of agricultural inputs like seed, fertilizer, pesticides, fuel and farm machineries on cooperative basis will be encouraged and supported; and
- Self-motivated group cultivation on cooperative basis will be encouraged keeping individual land ownership.

10.2 Cooperative based Marketing

- The government will encourage and support marketing through cooperatives or group marketing by marginal, small and medium sized agricultural producers and entrepreneurs to ensure fair price;
- Introduction of cooperative based modern marketing system; and
- Access of cooperative based agricultural products to high-value price market will be supported.

11.0 Agricultural Marketing

The agricultural marketing system provides the linkage between farm products and the consumers of food and agricultural products. A strong market infrastructure needs to be built for bringing efficiency in marketing services of agricultural products. The government will help farmers in enhancing their bargaining power and enabling them to get fair prices for their products through the development of an efficient agricultural marketing system.

11.1 Market Infrastructure Development

- The government will facilitate smooth flow of agricultural products from the production level to the consumer level by setting up village markets and improving distribution at wholesale markets;
- Efforts will be made to develop effective value chain between producers and consumers;
- Both the public and private sector initiatives in market improvement of agricultural products will be encouraged;
- The agri-marketing institutions will be strengthened and reformed;
- The government will encourage private sector investment in establishing warehouses and cold storage facilities for agricultural products along with the public initiative; and
- Investment of public-private partnership will be encouraged for necessary establishment of laboratories and testing centers for quality assessment and standardization of agricultural products.

11.2 Market Information and Extension Services

- The government will encourage collection and dissemination of market information of agricultural produces and inputs to farmers, traders, entrepreneurs and consumers;
- The government will promote the services required by farmers and entrepreneurs for value addition of agricultural produces;
- Both the public and the private initiatives on agro-market research for fair price and quality product will be encouraged;
- The government will promote food safety issues during production and post-production activities; and
- Packaging, grading and labelling of agricultural products activities will be encouraged.

11.3 Agro-processing

- The government will encourage agro-based industries;
- Efforts will be given for value chain of agricultural products; and
- The government will take special initiative for incentives of agro-based industries.

11.4 Export and Market Promotion

- The government will encourage export of agro-products to both the ethnic and the upstream markets;
- The government will take steps to diversify agricultural products and to *explore new and potential markets abroad*;
- Initiatives will be taken for expansion of local and international market of eco-friendly /organic agriculture products; and
- Establishment of e-infrastructure will be encouraged in data collection and distribution for export promotion and related networking.

11.5 Market Regulation and Facilitation

- Market rules and regulation will be strengthened and updated in order to increase efficiency of market operation;
- The government will encourage partnership and coordination between public and private sector for efficient market operations; and
- The government will establish 'Agriculture Price Commission' to provide guidelines to strengthen agricultural marketing to ensure fair price for farmers and affordable price for consumers in order to firmly sustain a food self-reliant nation and food secured state.

11.6 Agri-business Prospects in Private Sector

- Agri-business initiatives by farmers and entrepreneurs will be facilitated and necessary supports and incentives will be provided as and when deemed necessary; and
- Amicable environment will be created for national and international market opportunities in agri-business activities.

12.0 Women in Agriculture

About half of the population of the country are women. For this, more female officials and farmers should enter the agricultural sector. Women have potentials to contribute to agricultural growth, it is obligatory for the government to ensure meaningful participation and to develop their human resources in following agriculture-related income-generating activities.

12.1 Empowerment of Women

- Necessary support will be provided for capacity building of women in promoting household food and nutrition security;
- Women's participation will be encouraged in decision making process of agricultural management; and.
- Efforts will be made to ensure women's equal access to agricultural inputs and management.

12.2 Participation in Production and Marketing

- The government will encourage participation of the rural poor women in agricultural production and particularly in agro-processing and agribusiness activities so that they can improve their economic safety.
- Women's participation in agricultural production system will be facilitated through access to agricultural technologies;
- Women's participation in agricultural production system will be facilitated through establishment of their rights in availing of agricultural technology; and
- The government will take steps to encourage women's participation in various extension programs like training, farmer's rally and workshop.

12.3 Income Generation

- The government will provide credit support to women in activities like homestead gardening, post harvest activities, seed production and preservation, nursery, bee-keeping, food processing, etc.;
- The government will provide micro-credit support to women for small-scale agro-processing, storage and preservation; and
- Efforts will be made to eliminate gender discrimination in wages.

13.0 Natural Resource Management

The government will take following measures for conservation and management of natural resources and agricultural land upon which crop production is dependent:

- The government will take steps to control the declining trend of agricultural land. To ensure food security, efforts will be taken to stop the use of agricultural land for non-agricultural purposes;
- The government will take measures to increase agricultural land through recovery of submerged agricultural land and sea shore land;
- Action will be taken to conserve soil, water, and life system of plant, animal and atmosphere and their effective use; and
- The government will strengthen the collection, conservation and utilization of genetic resources.

14.0 Human Resources Development

As a predominantly agricultural country, Bangladesh needs to have a vast pool of skilled, educated and trained agricultural workforce to cover the gap between the production capacities of farmers and consumption requirements of the citizens, and to ensure their food security. Appropriate human resource and career planning are necessary for effective Human Resource Development (HRD). This can be achieved through developing appropriate training and education packages along with in-service training and performance based reward system. Major challenge is to develop an efficient workforce capable enough to cope with the emerging issues of technology, institutional capacity, and to acquire skills of development entrepreneurship. The government will plan to introduce innovative approaches to upgrade the skills of researchers, extension providers/personnel and farmers; and technological empowerment of women engaged in agriculture.

14.1 Training Coverage

- Personnel associated with research and development in agriculture will be brought under the umbrella of training; and
- National Agricultural Training Academy (NATA) and other agricultural education and research institutes will offer training courses regularly for officials engaged in agriculture.

14.2 Training in Research Field

- Need based skill development training for the present human resources in research will be arranged so that they will be nationally and globally competitive;
- Higher training opportunities will be created in the field of up-to-date science and technology, and agricultural research management;
- Due emphasis will be given in research and human resource development planning; and
- Continual training framework will be designed and implemented to enhance scientific, technical and managerial ability of individuals and capacity building of organizations involved in agricultural research and technology transfer.

14.3 Agriculture Education and Training

- Agricultural education system, specifically diploma courses will be strengthened; and
- Regular training will be conducted to ensure effective development and technology transfers, innovation and development planning. Farmers and officials at all levels will be trained as a strategy for upholding professionalism and morality and maintaining the professional skill.

14.4 Training on Seed

- Government and non-government entrepreneurs and farmers will be trained on seed production, storage, quality control and seed marketing management.

14.5 Training on Fertilizers

- Appropriate training on the use of balanced fertilizers will be provided to farmers; and
- Officers, researchers, fertilizer dealers, suppliers and entrepreneurs will be trained to improve fertilizer management capacity.

14.6 Training on Irrigation Technology

- The government will encourage and train non-governmental entrepreneurs and unemployed youths on the use, repairing and maintenance of irrigation machinery; and
- Training facilities for farmers and technical personnel on on-farm water management technology will be enhanced so as to reduce knowledge gap and yield gap.

14.7 Training on Farm Mechanization

- Farm mechanization beneficiaries like driver, farmer, youths and manufacturer will be trained in repairing and maintenance of agricultural machinery.

14.8 Facilities and Programme Development

- Developing human resources in agriculture will be initiated through short, medium and long-term training;
- The government will facilitate and strengthen different training related scope based on demand-driven research and extension; and
- Training facilities will be strengthened in such a way so that it becomes competitive at national and globally.

14.9 Incentives

- Awards will be institutionalized to recognize and promote excellence in teaching, training, research, extension, crop production and agricultural development activities; and
- Provision for visiting scientists, sabbaticals, and national fellows will be introduced to promote excellence in agricultural science, extension and research management.

14.10 Partnership

- The government will encourage strategic partnership with agriculture-centered HRD institutions of both developed and developing countries to enrich knowledge base and to harness technology in the agricultural sector; and
- Efforts will be made to enrich the mutual sharing of ideas by harnessing complementarities and synergies through strong linkages among institutions at national and international level.

15.0 Labor in Agriculture

- Welfare of farm laborers will be incorporated in the development activities; and
- Child labor will be discouraged in risky farm activities (e.g. insecticide spraying, operating heavy, sharp and rotating farm machinery).

16.0 Non-farm Activities

- Efforts will be given on poverty reduction of poor and disadvantaged farmer through increasing employment opportunities in non-farm enterprises; and
- Necessary support will be provided to poor and disadvantaged farmers for earnings from non-farm activities.

17.0 Dominance of Bangla Language

A reliable English version of the policy may be published by the government through gazette notification after putting the policy into effect. The Bengali version will prevail if any confusion arises between the English and Bengali version.

18.0 Conclusion

The provisions as detailed above have been drawn on the basis of practical knowledge of researchers, practitioners and experts. The proper implementation of the National Agriculture Policy will expedite the crop production system. As a result, overall agriculture will be transformed into a dynamic sector which will bring optimistic change in the economy of the county with a passage of time. It is expected that farmers, researchers, scientists, extension providers/personnel, agri-business communities, civil servants and politicians will make their respective contributions to the implementation of the present National Agriculture Policy and through this process the goals of 6th Five Year Plan, PRSP, MDGs, (Millennium Development Goals) and Perspective Plan will be achieved.