

National Agricultural Policy 2013

Ministry of Agriculture

Government of People's Republic of Bangladesh

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Prime Minister

Government of People's Republic of Bangladesh

Foreword

Bangladesh is an agriculture-dependent country. Agriculture and the farmers are the backbones of Bangladesh's Economy. Under the leadership of the Father of the nation, Bangabandhu Sheikh Mujibur Rahman, the Bengali nation won freedom through a long struggle culminating in the victory of the armed Liberation War. The farmers were the frontline warriors in the great liberation war. Besides participating in the frontal war, they have helped in many other ways to achieve victory in the liberation war. Their contribution to the great liberation war is undeniable. The Father of the nation dreamt of transforming Bengal into Golden Bengal. The Holy Constitution of Bangladesh, formulated under the guidance of the Father of the nation, listed three objectives as the duty of the nation: adoption of necessary steps to initiate an agricultural revolution, raising the nutrition levels of the common people and improving the health of the citizens. In the light of the constitution, Bangabandhu had undertaken the formulation of policies for the agricultural sector. Unfortunately, he could not complete the task. In the later years, no government took up the constitutional duty to formulate the said policy. As a result, for a long time after Independence, the government did not have a set of guidelines or policies to direct the growth of the agricultural sector or crop production associated with it. Thus, even after long years of attaining freedom continuity in the development of the agricultural sector was repeatedly disrupted in the absence of a concrete policy.

In the 1996 Election Manifesto, Awami League highlighted the agricultural sector as the topmost priority of the nation and promised to take concrete measures to promote agricultural development. On 23rd June 1996 immediately after the formation of the Awami League government, it took effective steps to execute the election promise and to carry out the constitutional duty. As a short-term measure, the government on an urgent basis implemented a programme to increase spending in this sector along with other developmental assistance from the government. To implement the dreams of the father of the nation into reality and to carry out the constitutional duty, Awami League government

formulated a National Agricultural Policy 1999 as a longterm planning for the overall development of agriculture and the farmers.

Coming to power in the recent term, the Awami League government took initiatives to amend the National Agricultural Policy 1999 with the perspective to modernize agriculture in the context of changing realities. Through this effort, the government has upheld its firm commitment made to the nation for the development of agriculture and improvement of the farmers. In this context, the **'National Agricultural Policy 2013'** has been formulated by refining and amending the previously formulated **'National Agricultural Policy 1999'** in pursuance of the government's goals and objectives mentioned in various development plans adopted lately, especially Rupakalpa-2021, Millennium Development Goals (MDG), SAARC Development Goals (SDG), 6th Five Year Plan and the like.

The newly drafted **'National Agricultural Policy, 2013'** will accelerate the process of agricultural development and at the same time, I hope, it will be a milestone in fulfilling the dream of the Father of the nation of creating a 'Golden Bengal'. The successful implementation of the **'National Agricultural Policy, 2013'** will not only bring revolution in the overall development of agriculture and crop production but at the same time, I sincerely believe, will directly contribute in the socio-economic conditions of the poor rural people.

Sheikh Hasina

Background

Agriculture is intrinsically related to the lives and livelihoods of the people of Bangladesh. The economic development of this country is not possible excluding agriculture. It is necessary to develop a well thought out policy for the overall development of the agricultural sector in tandem with the increasing population of Bangladesh. Although a long period has passed since independence, there had been no policy at the national level for the agricultural sector and crop production. The Father of the nation, Bangabandhu Sheikh Mujibur Rahman had initiated an agrarian revolution giving utmost importance to the agricultural sector based on the constitutional promise in the post-independence reconstruction process. To finish his unfinished work, under the dynamic leadership and proper guidance of respected Prime Minister Sheikh Hasina, the past Awami League government adopted the National Agricultural Policy 1999 with the objective to formulate and implement a thoughtful,

integrated and planned programme with a view to taking the crop production system to a profitable level.

Immediately after coming to power, the present government felt the necessity to update the National Agricultural Policy adopted in 1999. The contexts of the agricultural policy formulated a decade ago have changed in many respects. Along with climate change, the agricultural sector has been facing several challenges. The National Agricultural Policy 2013 has been formulated with the perspective to tackle all these challenges in a proper way, and by making agriculture more sustainable, thereby transforming to commercial agriculture in the future, and making provisions for food and nutrition security. While formulating this policy, besides the opinions of the associated ministry and agency, the opinions from the broad masses, public representatives, agricultural scientists, extension officials and several other professional organizations, NGOs and all others have been considered. With the aim of overall development of the agricultural sector, the following important aspects have been included in the '**National Agricultural Policy, 2013**' among others: the problems and possibilities in the agricultural sector, research and development, agricultural extension, proper use of the agricultural ingredients, adverse climate, desired use of natural resources, mechanization of agriculture, agricultural cooperatives, agricultural marketing, use of information technology in agriculture, women in agriculture, and necessary directives regarding the development of human resources. The objectives of the policy and the necessary steps to achieve the same have been outlined in detail and added here. In this regard, the opinions of all the associated people have been considered with the utmost importance.

We are happy and proud to formulate and publish the "**National Agricultural Policy 2013**" within the present government's tenure, with the help of our executives and local-level experts. I firmly believe that with proper implementation of the formulated agricultural policy along with the use of suitable technology it will be possible to accelerate agricultural development and integrate the acquired agricultural-related knowledge. I hope that everyone associated with the agricultural sector will come forward spontaneously and cooperate whole-heartedly in this regard.

Motiya Choudhary

1. Introduction

1.1 Agriculture is the main activity and lifeline for the economy of Bangladesh. 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. The agriculture sector (crops, livestock, fisheries and forestry) makes an important contribution to GDP of the country. It provides employment to 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 rural poverty.

1.2 Agriculture sector comprises of crops, fisheries, livestock, and forestry sub-sectors. Separate policies on fisheries and livestock, food, forestry and environment, land and jute and textiles 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 these sub-sectors. Issues of research, extension, seeds, fertilizers, minor irrigation, marketing, and Human Resources Development (HRD) related to crop production have been prominently highlighted 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, the quantity of agricultural land is declining by approximately 1% every year and land quality is deteriorating due to degradation of soil fertility (e.g. nutrient imbalance), soil erosion and increasing 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 In consistency with Millennium Development Goals (MDGs), the intended goal of the Bangladesh Government is to reduce the number of people living below the poverty line by 50% in comparison with the data of 1990. 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 rapid economic development of the people, higher growth in the rural areas and development of non-farm economic activities associated with rural agricultural sector.

1.5 In order to achieve the higher growth of the Gross Domestic Product (GDP), it is necessary for the agricultural sector to grow at a high rate. This is possible through 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. This will lead to poverty alleviation and improvement in the standard of living of the people.

1.6 Small farms dominate the agrarian structure of Bangladesh. Agriculture has a massive impact on the economic development of the masses and livelihoods of the people. It is essential to make agricultural production more dynamic and create a system of durable commercial agricultural production to alleviate rural poverty and for developing the quality of life of the rural masses. Agriculture has immense potentiality to remove shortage of food and raw materials necessary in industries and for employment generation with adequate income, which can be helpful in improving the living standard of the rural people.

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 resources use, use of cutting-edge technology, increase in research and experiment facility along with skilled man-power supply are of utmost importance. Increasing scientific and technological assistance are needed for agriculture in Bangladesh. In the present day multidimensional national and economic environment, it

is necessary to enhance the effectiveness of public expenditure in the management of agricultural research and extension.

1.8 Major challenges for Bangladesh agriculture are to raise productivity and profitability, reduce instability, increase efficiency in resource-use, produce highly nutritious food and agricultural products and meet increasing demand for diversification and commercialization of agriculture.

1.9 The existing National Agricultural Policy was adopted in April 1999. With the passage of time, some new issues have emerged, and, in some cases, new dimensions have been added. In the perspective of depleting agricultural resources, declining biodiversity, climate change, increase in the frequency and intensity of natural disasters, rising prices of agricultural implements, hike in the price of food products 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. 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:

- Ensuring sustainable and profitable agricultural production system;
- Developing and disseminating improved crop varieties and sustainable cultivation technologies through research and training;
- Increasing productivity, employment and generate income opportunity by applying appropriate technologies and improving material management;
- Promoting and maintaining the competitiveness of agriculture through its commercialization;
- Formulating plans and promoting effective initiatives to establish self-sufficient and sustainable agriculture, adaptable to climate change and competent to meet farmers' need;
- Ensuring fair price of agricultural commodities along with improving marketing;
- Encouraging production of standard agricultural products so as to meet the demands of international markets and increase the export opportunity;
- Creating opportunities for agricultural product processing and establishing agro-based industries; and
- Diversifying agriculture to meet the nutritional demand of people and encourage the production of more nutritious crops.

3. Strengths, Weaknesses, Opportunities and Threats in Agriculture Sector

For developing a realistic, effective and fruitful National Agriculture Policy, it is prerequisite to analyse and consider the strengths, weaknesses, and opportunities in and potential threats to the implementation of such a policy.

3.1 Strengths:

- Favourable agro-climate generally prevailing throughout the year for crop production;
- Research and extension facilities existing for technology innovation and technology transfer/extension at farm level;
- Availability of experts, scientists and trained manpower for agricultural research and development;
- Existence of appropriate technologies for production of major crops;
- Existence of agricultural material supply network throughout the country;
- Innovative farmers responsive to new technologies;
- Availability of adequate workforce for agricultural activities;
- Existence of considerable biodiversity for different crops;
- Availability of irrigation water;
- Existence of a facilitating institution and regulatory framework;
- Availability of government financial assistance/incentive systems;
- Existence of country-wide agricultural management monitoring network, semi-detailed land and soil resources information/data at the Upazila level along with useful guidelines;
- Farmers' traditional and experience-based knowledge; and
- Agricultural subsidy cards and farmer's bank accounts.

3.2 Weaknesses:

- Comparative weak agricultural marketing management system;
- High post-harvest loss of crops;
- Farmers' own capital for agricultural activities is not adequate;
- Limited institutional agricultural credit;
- Farmers' organizations (club, group) are not so active;
- Lacking efficiency in the use of materials (water, fertilizer, pesticides, etc.);

- Inadequate technology for producing quality products for the export markets;
- Deficiency in technology to cope with unfavourable environment;
- Insignificant private sector investment in research and development;
- Lack of trained scientists and infrastructural facilities for advanced agricultural science;
- Lack of diversification in agriculture;
- Weak management in quality control of agricultural materials;
- Lack of coordination among the public and private universities and research organizations;
- Insufficient use of information technology in the agriculture sector;
- Inadequate training for farmers and entrepreneurs:
- Inadequate production and supply of quality agricultural materials (e.g. seed, fertilizer and irrigation);
- Insufficient storage and processing facilities for agricultural commodities; and
- Inadequate transportation system for agricultural goods.

3.3 Opportunities:

- Availability of transferable modern technology and technical knowledge;
- Existence of scope for expanding hybrid technology;
- Existence of possibilities for the adoption of advanced technology in agriculture;
- Existing potential for proper utilization of ecologically disadvantaged agricultural regions including hilly areas;
- Presence of export potential for export of high-value crops in foreign and expatriate Bangladeshi 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;
- Existence of scope for reducing yield gaps; and
- Opportunity for institutionalization of individual entrepreneurship and commercial agriculture.

3.4 Threats:

- Prevalence of environmental vulnerability (climate change, flood, drought, storm, salinity, diseases, pest infestation and river erosion);
- Increasing degradation of soil health;
- Decreasing availability of cultivable land and water resources;
- Increasing use of farmland for non-farm activities;
- Uncertainty over availability of fair price for agricultural product causing disenchantment among farmers;
- Declining agricultural biodiversity;
- Excessive and non-regulated use of pesticides;
- Degradation of agricultural environment; and
- Inadequate budget allocation in agricultural research.

4. Research and Development

Development of technologies and its dissemination through agricultural research plays an important role in economic development. So, a well-coordinated research plan is essential for rapid agricultural development. The paradigm shift from a supply-driven to demand-driven agriculture through research is possible. This will require a change of focus from enhancing production level to enhancing production efficiency and productivity. Keeping into consideration new areas like equity, employment, environmental sustainability, nutrition, food quality and trade, this requires continued efforts towards food security. This demands effective introspection, reprioritization and consolidation besides overall accountability of research and development activities. The key strategies to address these 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 will be undertaken for improvement of the quality of research;
- Incentives and built-in rewards will be provided to individual researchers or research institutions for achieving 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
- A research system will be developed through the 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 practising of 'bottom-up approach' in research program planning and prioritization;
- Encouraging participatory approach of public and private for conducting research activities; and
- Timely and need-based funding for executing research programs will be ensured.

4.3 Research Focus and Areas of Research:

- Research programs will focus on intensification, diversification and integrated farm activities in agriculture;
- Innovation and development of high yielding, stress-tolerant, short cycle and least input-dependent crops and their cultivation technologies;
- Post-harvest technologies, high-value crops, value addition, agricultural-business management and trade;
- Research support on emerging issues, like biotechnology, plant genetic research, hybrid, climate change caused disasters and stress resulting from flood, drought, cyclone, salinity, water-logging etc. and activities like crop management on riverbed, upland/hilly areas and in deep water along with sustainable land and water management and organic farming;
- Research on rain-fed crops aiming to increase productivity and sustainability;
- Research activities to solve problems and issues arising 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 undertaken on the topic of trans-boundary movement of infectious diseases. Besides, researches will be conducted on one or more production systems and sustainable production systems, poverty alleviation and improvement of living standards, household food security, increase in non-farm income generation, and rural development;
- Research on agricultural policy and technology dissemination in an uniform way; 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 emphasise on technology assessment, refinement and transfer by improving the interface with farmers and other stakeholders; and
- Initiatives will be taken to enhance the involvement of scientists in outreach extension programs.

4.5 Equity in Service Delivery:

- The National Agricultural Research System (NARS) will take necessary efforts to bring the system in proximity to the target people or beneficiaries 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 agricultural research and development planning.
- An effective electronic network will be created to share agricultural research-related information within institutions under the National Agricultural Research System and other national, regional and international organizations specialized in research.

4.7 Development of Participatory Cooperation:

- Institutes under the National Agricultural Research System (NARS) will create opportunities for increased research activities by enhancing collaboration between public and private sectors;
- The National Agricultural Research System (NARS) will complement research efforts among institutions at national and international levels; and
- The government will take steps to strengthen the link between research and extension.

4.8 Intellectual Property Protection:

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

5. 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 needs to be ensured. The government recognizes agricultural extension as a service delivery system which will assist farmers by providing them appropriate technical and farm management advice and information, new technology, improved farming methods and techniques aimed at increasing production efficiency and income. To ensure sustainable production system the need for strengthening agricultural extension services and appropriate institutional arrangement is increasingly realised. In this context, efforts will be taken to develop an institutional management system 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.

Provisions to make extension services more efficient and effective are as follows-

5.1 Extension Coverage:

- The government will support public, private and voluntary extension initiatives to achieve diverse agricultural goals and to address the needs of the 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 youth; 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 the primary source of information and response to strengthen demand-based service network;
- 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 methods and approaches that emerge locally through adaptation to existing situation and growing understanding of the nature of technological change and knowledge;

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

5.3 Communication Media:

- Traditional and advanced media and information communication technology 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 a focus on collaboration among AIS, Bangladesh Television, Bangladesh radio and other private TV and radio channels; and
- Use of community radio, web radio, and mobile communication technology will be encouraged for the extension of agricultural information and technology.

5.4 Partnership:

- Extension activities in partnerships between government, private and individually owned companies 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/sub-district levels: and
- The government through the Department of Agricultural Extension (DAE) and allied agencies will maintain liaison with NGOs and other development partners at the local level for cooperation and coordination.

5.5 Agricultural Productivity:

- The government will continue and strengthen support for production of major crops 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 export of agricultural products.

- 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 raw materials (seed, fertilizer, pesticides, irrigation, etc.) to farmers through extension and ingredients supply organizations and will also ensure effective monitoring for maintaining the quality of raw materials supplied by both public and private organizations;
- Efforts will be made to provide credit support at an easily affordable rate for selective crops;
- Adequate financial support in the form of credit will be extended to farmers to encourage them to increase production, with priority to small, marginal, medium farmers and sharecroppers; 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 undertaken during production, processing and marketing; and
- Quarantine services will be strengthened to meet the needs of both the domestic and export market.

5.7 Program for Adverse Agricultural Climatic Regions:

- The government will pursue programs for hilly areas, arid tracts, *Barendra* tracts, char/riverine lands, vast waterbodies (*haor-baor*), drought-prone areas and harbour and coastal belts to provide appropriate technological support.

5.8 Addressing Vulnerabilities:

- The government will undertake development activities by combining instant assistance and short, mid and long-term development programs for the affected farmers during and after

any emergency situation or crisis period to enhance productivity and create employment involving the government, private sectors, NGOs, philanthropic organizations and volunteers.

- 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, marshy and riverine land in balance with the production of other sub-sectors;
- Introduction of crop insurance program will be considered; and
- "Agricultural Disaster Response Fund" will be created to start the post-disaster rehabilitation program immediately after a calamity.

5.9 Environment and Resource Conservation:

- The government will promote the 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 the 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 the database.

6. Seeds and Planting Materials

High quality seed is one of the primary and basic agricultural inputs for increasing crop production and ensuring food security. High quality seeds alone can increase yield up to 15-20%. At present, a significant portion of the quality seeds required for different crops is made available by the public sector. Few seed companies and NGOs have started supplying quality seeds primarily of hybrids of rice, maize and vegetables. A portion of the required quality seeds 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 and organizations engaged in the seed sector will be provided opportunities for getting institutional loans on special advantageous terms;
- Support will be provided for the balanced development of the quality of the seed by giving opportunities to the public and private sector seed industries from the stage of breeding to marketing; and
- Any individual or company can be involved in seed development, registration, and marketing-related activities subject to prior approval of the government.

6.2 Improvement and Distribution of Seed:

- Supply of breeder and foundation seeds will be facilitated for easy access to public and private agencies and farmers;
- The government will maintain security stock of seeds to cope with emergency situations or in the aftermath of a natural disaster; and
- Government and private sectors will be encouraged to build necessary facilities for seed production, processing, preservation, quality control and marketing.

6.3 Support to Public and Private Sector Seed Industries:

- The competency of the contractual farmers will be developed in the public and the private sectors to produce quality seeds; and
- Both the public and private sectors will initiate programs to create awareness among the farmers for adoption of new varieties and new technologies at the level of 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
- Steps will be taken to assure quality of seeds at all stages of seed system from production to marketing including seed imports and exports.

7. Fertilizer

Fertilizer is one of the essential agricultural raw material for crop production. The expansion of modern agricultural practices together with intensified cultivation has led to an increase in demand for fertilizers. It is, therefore, necessary to ensure the timely supply of fertilizers to meet this increasing demand. Imbalanced use of chemical fertilizers is causing land degradation and excessive extraction of plant nutrients results in the decline of soil fertility on one hand, and reduction in the potential yield of the crops on the other. In this situation, it is important to adopt effective measures to encourage the farmers for balanced application of 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/sub-district levels.

7.2 Quality Control:

- The government will ensure availability of quality fertilizers at the farmer's level;
- Production, import, marketing, distribution and use of any kind of fertilizer harmful or detrimental to the soil, flora and fauna will be prohibited; 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 the farmer's level;
- Awareness will be created to follow suitable cropping patterns for maintaining the natural balance of soil nutrients;
- Necessary support will be provided to farmers to encourage the use of balanced, cheap and organic fertilizers; and
- Program on the production and use of Urea Super Granule (USG) will be intensified/strengthened.

7.4 Fertilizer Monitoring

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

8. 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 irrigational facilities during dry seasons due to climate change and unplanned extraction of groundwater. Moreover, river management of the upper riparian country is likely to further aggravate the situation. Therefore, a well-planned irrigation management system is essential for the gradual increase of cropping intensity as well as crop yields. The government has laid special emphasis on reducing use of groundwater by enhancing use of surface water in irrigation for protection of the ecological balance and reduction of irrigation expenses. Hence, the National Agriculture Policy has given special emphasis on the judicious use of water resources. The government will prepare an Integrated Minor Irrigation Policy elaborating thereby necessary guidelines for increasing the use of surface water in irrigation and reducing the dependence on groundwater. Although minor irrigation is largely the domain of the private sector, public sector has the responsibility for building an efficient water management system by which low-cost sustainable irrigation facilities can be extended. 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 extending irrigation coverage in difficult and disadvantaged areas including riverine (char) lands, hills, Barendra tracts, arid tract, drought-prone, marshy and saline areas;
- Distance among tube wells will be maintained in such a way that it will ensure the safe extraction of groundwater, protection from salinity and increase in irrigation efficiency; and
- The use of surface water for irrigation will be emphasized and therefore, appropriate measures will be taken for extensive 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 the plan and update the groundwater zoning map for effective use of groundwater resources. Consequences of variable groundwater table on minor irrigation will be monitored; and
- The monitoring data of groundwater fluctuation, seawater level and saline water intrusion into water tables will be updated and forecasted after analysis regularly.

8.3 Conservation and Utilization:

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

8.4 Power for Irrigation:

- Preferential access will be given to power-sources used for irrigation purposes through intensive inter-agency collaboration:
- Efforts will be undertaken for maintaining a balance between the costs of irrigation works done by using electricity and diesel; and
- The use of solar energy along with other renewable energies will be encouraged.

9. Mechanization of Agriculture

Mechanization is an important tool for profitable and competitive agriculture. The need for mechanization is increasing fast with decreasing availability of animal power. Without mechanization, it will not be possible to maintain multiple cropping patterns, because it is associated with rapid land preparation, planting, weeding, harvesting, processing, etc. The usages of agricultural machinery primarily in tilling, seeding, weeding and in threshing of crops have increased remarkably. This trend needs to be extended further so that efficiency in production can be achieved by way of increasing production and reducing production cost. Mechanization should include all post-harvest activities including processing and preservation.

9.1 Manufacturing of Agricultural machineries:

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

9.2 Support and Incentives:

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

10. Agricultural Cooperatives

In the context of declining arable land and the socio-economic condition of farmers, cooperative-based agricultural production and marketing will facilitate improvement of the farmers' fortunes.

10.1 Cooperative-based Agricultural Production:

- Self-motivated cooperative or 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 modern agricultural production activities based on cooperatives while retaining individual land ownership;
- Collection of agricultural implements like seeds, fertilizers, pesticides, fuel and farm machineries on a cooperative basis will be encouraged and supported; and
- Self-motivated group cultivation on a cooperative basis will be encouraged retaining individual land ownership.

10.2 Cooperative-based Marketing:

- The government will encourage and support marketing through cooperatives or groups to ensure fair prices for the marginal, small and medium-sized agricultural producers and entrepreneurs;
- Introduction of cooperative-based modern marketing system: and
- Access of cooperative-based agricultural products to high-price markets will be facilitated.

11. Agricultural Marketing

The agricultural marketing system establishes links between farm products and the consumers of food and agricultural products. A strong marketing infrastructure needs to be built for bringing efficiency in the marketing 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 Development of Marketing Infrastructure:

- The government will facilitate the smooth flow of agricultural products from the producer level to the consumer level by setting up village markets and improving distribution system of agro-products at the wholesale markets;
- Measures will be taken to develop an effective value chain between producers and consumers;
- Both public and private sector endeavours for promotion of marketing of agricultural products will be encouraged;
- Agricultural marketing institutions will be rejuvenated and reconstructed;
- The government will encourage private sector investment along with public sector endeavours to establish warehouses and cold storage facilities for agricultural products for the purpose of preserving and storing agricultural goods; and
- Investment of public-private partnership will be encouraged for establishment of laboratories and testing centres with necessary facilities of 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 ingredients to farmers, producers, 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 researches for marketing of agricultural products with fair prices and standard quality 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 to developing a value chain of agricultural products; and
- The government will take special initiative for incentivise agro-based industries.

11.4 Export and Market Promotion:

- The government will encourage export of agricultural products to both the ethnic Bangladeshi markets and the mainstream markets abroad;
- The government will take steps to diversify agricultural products and to explore new and potential markets abroad;
- Initiatives will be taken for expansion of the local and international markets for eco-friendly /organic agricultural 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

- Rules and regulations related to markets will be strengthened and updated in order to increase the 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 prices for farmers and affordable prices for the consumers in order to strengthen our position as a nation self-reliant in food and ensure food security.

11.6 Agri-business Prospects in Private Sector

- The government will provide technological support to agriculture-based business initiatives by farmers and entrepreneurs; and
- An appropriate environment will be created for enhancing opportunities for agricultural business activities in national and international markets.

12. Women in Agriculture

About half of the population of the country are women. Hence, women in larger numbers should be present in official positions, in farming and in the agricultural labour force. As the women have the necessary potential to contribute to agricultural growth, it is obligatory for the government to ensure their meaningful participation and to develop them as 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;
- Greater women's participation in the decision-making process of agricultural management will be encouraged; and
- Special efforts will be made to ensure women's equal access to procuring and managing agricultural implements.

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 agro business activities, so that they can improve their economic conditions.
- Women's empowerment by accessing agricultural technologies will be facilitated;
- Women's participation in the agricultural production system will be facilitated by establishing their rights in accessing agricultural technology; and
- The government will take steps to encourage women's participation in various extension programs like training, farmer's meetings and workshops.

12.3 Income Generation

- The government will provide credit support to women participating in activities like homestead gardening, post-harvest activities, seed production and preservation, nursery, beekeeping, 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. Natural Resource Management

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

- The government will take steps to control the declining trend of agricultural land. To this end, 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 the recovery of submerged agricultural land and seashore land;
- Action will be taken to conserve soil, water, and life system of the plants, animals and atmosphere for their effective utilization; and
- The government will strengthen the collection, conservation and utilization of genetic resources.

14. Human Resources Development

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

14.1 Training Coverage:

- Personnel associated with research and development in agriculture will be brought under training; and
- National Agricultural Training Academy 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 sector will be arranged to meet the national and global competitive standards;
- Higher training opportunities will be created in the field of advanced sciences and technology, and agricultural research management;
- Emphasis will be given to research and use of human resources in development planning; and
- Guidelines for continual training will be designed and implemented to enhance the scientific, technical and managerial ability of individuals and capacity building of organizations associated with 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 of technology and its transfers and innovation and development planning. Farmers and officials at all levels will be trained in the skill of professional ability, professionalism and upholding morality and ethics.

14.4 Training on Seeds:

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

14.5 Training on Fertilizers:

- Appropriate training will be provided to farmers on the use of balanced fertilizers; 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 will be enhanced for people with knowledge of farming and technology on farm water management techniques with a view to reduce the knowledge-gaps and yield-gaps.

14.7 Training on Farm Mechanization

- Farm mechanization beneficiaries like the drivers, farmers, youth and manufacturers will be provided training in repairing and maintenance of agricultural machinery.

14.8 Facilities and Programme Development

- Human Resource Development activities in agriculture will be initiated to improve the standard of short, medium and long-term training;
- The government will facilitate and strengthen training facilities in various research and extension activities for demand-based agricultural areas; and
- Training facilities will be strengthened in such a way that it becomes competitive nationally 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
- Posts of the Visiting scientist, Sabbaticals, and National fellows will be introduced to promote excellence in agricultural science, extension and research management.

14.10 Partnership

- The government will encourage establishment of strategic partnerships with agriculture-based Human Resource Development institutions of both developed and developing countries to enrich knowledge base and to enhance the use of technology in the agricultural sector; and
- Efforts will be made to enrich the mutual sharing and implementation of ideas by establishing strong and powerful connections with various organizations at the national and international level.

15. Labour in Agriculture

- The welfare of farm labourers will be incorporated in the development plans; and
- Child labour will be increasingly reduced in risky farm activities (e.g. insecticide spraying, operating heavy, sharp and rotating farm machineries).

16. Non-farm Activities

- Steps will be taken for poverty alleviation of poor and disadvantaged farmers through increasing employment opportunities in non-farm sectors; and
- Necessary support will be provided to poor and disadvantaged farmers in their earnings from non-farm activities.

17. 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 or imbalance arises between the English and Bengali version.

18. Conclusion

The provisions as detailed above in the policy have been formulated basing on practical knowledge of researchers, practitioners and experts. Proper implementation of the National Agriculture Policy will expedite the crop production system, as a result of which agriculture will be transformed into a dynamic sector that will hopefully bring positive changes in the economy of the county with passage of time. It is expected that farmers, researchers, scientists, extension providers/personnel, agricultural businessmen, civil servants and politicians will make their respective contributions to the implementation of the present National Agriculture Policy and through this process, the objectives of the 6th Five Year Plan, Millennium Development Goals, SAARC Development Goals and Perspective Plan will be achieved.