

RESEARCH STUDY

Economic Challenges for Pakistan. How can it be overcome through sustainable agriculture Development?

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EXECUTIVE SUMMARY

The sustainable agricultural farming system refers to the production of food, fiber or the plant or animal products using farming techniques that protect the environment, public health, human communities, and animal welfare.

It is developed in response to concerns about impacts of agriculture such as soil degradation, depletion of non-renewable resources, food quality, decreasing number and increasing size of farms, environmental effects of chemicals, and inequity. Sustainable agriculture involves organic farming, ecological agriculture, alternative farming, biological agriculture, and regenerative agriculture.

The main target of this farming system is to achieve environmental health, economic profitability and social and economic equity. It helps farmers employ recycling methods in sustainable farming. For example, recycling in the sustainable agricultural farming system would be the crop waste or animal manure.

In Pakistan, there exist huge gaps between current yields and what can be economically achieved with better support services, especially in high-potential areas. This provides an opportunity to achieve the growth targets envisaged to ensure agri sustainability. Improved productivity and competitiveness of the crop sector requires accelerated adoption of resource conservation technologies to grow more with less investment in agricultural research and extension systems, improved access to agriculture credit, targeted subsidies to stimulate the use of new technologies, better mechanisms for risk mitigation and improved post-harvest management and marketing facilities.

Bridging the yield gap of smallholders requires greater emphasis on enhancing coverage of certified seed of improved varieties, efficient use of available water and fertilizer by adopting resource conservation technologies (that is, laser levelling, furrow irrigation, drill seeding, band placement of fertilizer, minimum tillage, integrated pest management, etc.), recycling rather than burning of crop residues and increased use of organic matter.

The investments in agricultural research system should be enhanced to upgrade capacity for development and adaptation of appropriate resource conservation technologies. Immediate attention is needed for strengthening the Provincial Agricultural Research System through significant increase in the financial allocations for rehabilitation and up-gradation of research infrastructure (including scientific equipment, laboratories and green houses), and improvement of the service structure of scientists in line with the PARC and the agriculture universities. In addition, national and international cooperation in agricultural research will be promoted. The private sector-led inputs delivery and other agricultural services will be encouraged in linking farmers with markets and processing industry to ensure fair returns to farmers by enhancing their capacity to invest in the modernisation of agriculture production systems.

INTRODUCTION

Sustainable development refers to development which meets the needs of the present without compromising the ability of future generations to meet their own needs. The UN Millennium Summit in 2000 passed the following 8 Millennium Development Goals (MDGs), including target dates to achieve these:

- To eradicate extreme poverty and hunger
- To achieve universal primary education
- To promote gender equality and empower women
- To reduce child mortality
- To improve maternal health
- To combat HIV/AIDS, malaria, and other diseases
- To ensure environmental sustainability
- To develop a global partnership for development

Although all member countries at that time were committed to achieve the goals by 2015, there was mixed progress where some countries were able to achieve all the goals while other (including Pakistan) remained largely off-track.

In 2015, the United Nations adopted the 2030 agenda for sustainable development. As a responsible nation, Pakistan is also committed to the UN Sustainable Development Goals (SDGs). Of the 17 indicators/goals, at least 12 are directly dependent on sustainable agriculture and its outcome. The National Assembly of Pakistan has adopted the UN SDGs. The Planning Commission of Pakistan and the Provincial Planning and Development Departments are mandated to ensure that all development spending is targeted towards achieving the SDGs by 2030. Hence, agricultural planning and policy formulation must conform to the SDGs.

Achieving the SDGs means transition to higher productivity and strengthening of rural livelihood. This requires conservation of natural resources (the ecosystem) and building resilience towards climate change. Adoption of emerging technologies (biotechnology and site-specific precision agriculture) and decision-support systems offer new solutions to old problems. The desired transition to sustainable agriculture can only happen under a revamped policy and governance structure which can promote public and private investment in this sector

Agriculture in Pakistan consists of a vast spread of crops, livestock, fisheries, rangelands, and forestry supported by irrigation network and markets. It ensures food security in the country and contributes 19.8% of the GDP, employs 44% of the workforce, and it provides a livelihood to 66% of the population (>5 million households). The industrial output in the country is dependent on the raw materials and consumption capacity of agriculture-led activities. Exports

are also largely dependent on agriculture (65% agro-based). Characteristically, agriculture in Pakistan is dominated by small farmers growing mainly have crops, and a large population (>70 million each of large and small ruminants) of underperforming livestock. The yields of crops and livestock heads are stagnant. Water scarcity has become evident.

Despite stagnation, Pakistan has an excess of essential commodities and our farmers are losing money. Furthermore, the surplus of commodities has failed to provide nutritional security for the vulnerable, as a large segment of the population is suffering from nutritional deficiency. Farmers are facing high costs of production, which makes Pakistan uncompetitive in export markets. Current food imports are worth over \$5.3 billion. Sustaining agricultural growth remains an important policy and governance challenge, which would, in turn, determine our ability to comply with the UN's SDGs.

Overcoming stagnation requires continuous development and delivery of technology. Achieving economies of scale and value addition are the other options to make agriculture profitable. Among technologies GMOs, precision focused mechanization, and use of ICTs offer current solutions/applications.

The technology development requires long-term commitment (policy) and investment in agricultural research. Pakistan has a large infrastructure and diversified human resource competencies to undertake research challenges, provided we set our priorities right. It also requires international networking, linkages, and a liberal knowledge environment to promote critical thinking and enquiry. Pakistan has all the requisites of being a major economic player in the region and Asia. Its economic potential is immense. According to a recent World Bank report, with sound economic policies, Pakistani economy could reach US\$ 2 trillion by 2047. What is required is formulating and implementing these policies. Policies which liberates the economy from the clutches of vested interest groups and self-serving politicians, and which are for the good of the country and its people.

There are several pertinent points to ponder including aggressive growth agenda, enhancement of rural economy, global trends in commodity prices, stagnant yields, coupling agricultural growth with research and technology transfer, increasing input use efficiency, market connectivity, backward and forward value chain linkages, land records management, and international linkages.

It could only happen with a strategic plan for sustainable land and water use. The Punjab government's agriculture commission created a policy committee, which launched a multipronged review and consultation process. A series of consultative meetings were organized at the farmer's level as a bottom up exercise. This book includes contributions based on the messages gathered during this consultation process. Similar exercises are being carried

out in the other provinces of Pakistan, led by the FAO. The FAO is also working with the provincial governments to redefine Agro Ecological Zones (AEZs).

While the world prepares to feed 9 billion people by 2050, we may be expected to feed twice the number of people we have today. The review and consultation exercise has revealed there is no shortage of information but a serious lack of implementation. An analysis of the Agriculture Commission report of Sartaj Aziz (1988) indicated that most of the proposals made then are still valid today but failed to produce results due to inconsistent implementation.

Hence, it is high time we undertake a SWOT (strength, weakness, opportunity and threat) analysis of our agriculture sector and develop a strategic plan to guide public policy for sustainable agriculture.

SITUATIONAL ANALYSIS (LAST 10 YEARS)

Growth

The agriculture sector, including livestock, grew at a low rate of about 2.03 per cent during the last ten years. The performance of the crop sector was over 0.05 per cent of the total growth. The rate of growth fluctuated widely during last two years in the crop sector ranging from 4.7 in 2017-18 to -4.4 in 2018-19. Livestock performed consistently and supported the overall growth of the sector. The growth in fisheries was also nominal i.e. 0.43 and other smaller sectors, such as forestry, also performed below par (Table 1). The low growth rates in agriculture are attributed to underinvestment, particularly in agricultural research and marketing infrastructure, absence of an effective strategy for improved seed, water management and credit disbursement.

Table 1: Agricultural growth (per cent)

Year	Crop	Livestock	Fisheries	Forestry	Agriculture
2009-10	-4.2	3.8	1.4	-0.1	0.2
2010-11	1	3.4	-15.2	4.8	2
2011-12	3.2	4	3.8	1.8	3.6
2012-13	1.5	3.5	0.7	6.6	2.7
2013-14	2.6	2.5	1.0	1.9	2.5
2014-15	0.2	4.0	5.8	-12.5	2.1
2015-16	-5.3	3.4	3.3	14.3	0.2
2016-17	1.2	3.0	1.2	-2.3	2.2
2017-18	4.7	3.6	1.6	2.6	3.9
2018-19(p)	-4.4	4.0	0.8	6.5	0.9
Average	0.05	3.51	0.43	2.36	2.03

Source: Pakistan Economic Survey

Production

The production of major crops showed a mixed trend during 2008-13.

- Average wheat production during the last ten years remained approximately 25 million tones. The country was thus self-sufficient in its staple diet and also generated surplus for export.
- Rice production showed increasing trend and maintained the momentum.
- Cotton production never exceeded 14 million bales, mainly because of pest attacks caused by the resurgence of the Cotton Leaf Curl Virus (CLCV), whitefly, and mealy bug. Cotton crop faces significant challenges vis-à-vis competing crops especially sugarcane. Most important factor is unfavorable international prices. Resultantly, the annual cotton production remained below the domestic demand, necessitating the import of raw cotton to meet the requirement of the local textile industry.
- The production of sugarcane, after a double dip in 2008-09 & 2009-10, was able to surpass 55 million tones in 2010-11 and kept increasing each year.

The performance of minor crops also remained low. The underinvestment in agriculture (water, seed, and technology) and deterioration of agriculture terms of trade coupled with markets failures were the major reasons for less than historical production trend.

Table 2: Production achievements (2009-19)

Crop	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Average
Wheat	23.3	25.2	23.5	24.2	25.9	25.1	25.6	26.6	25.1	25.2	24.97
Rice	6.9	4.8	6.2	5.5	6.7	7.0	6.8	6.8	7.4	7.2	6.5
Maize	3.3	3.7	4.3	4.2	4.9	4.9	5.3	6.1	5.9	6.3	4.89
Cotton*	12.9	11.5	13.6	13	12.7	14	9.9	10.6	11.9	9.8	11.99
Sugarcane	49.4	55.3	58.4	63.7	67.5	62.8	65.5	75.5	83.3	67.2	64.86

AGRICULTURE SUSTAINABILITY AND FOOD SECURITY

Agriculture has always evolved through complex interactions between weathering processes of geological material (upper surface of earth or soil, alluvial deposits, mixing organic matter), adaptations to climate, domestication of plants and animals, and anthropological phenomenon. Markets and technological revolutions have become driving forces, which include cultural factors. Intensive agriculture has its toll. The deteriorating soil conditions—as well as the environmental implications of technology and human expectations—demand we examine the challenges and forecast the sustainability of our current agricultural production systems.

The world economic community looks at sustainability as a challenge of global competitiveness which includes productivity of our agricultural and industrial outputs and markets. The global

trade of agricultural produce directly affects the income of our farm households, hence their human development index. Our standing on various sustainability indicators is currently dismal.

STRATEGY FOR AGRICULTURE DEVELOPMENT

Objectives:

The main objectives of the strategy are to:

- (i) accelerate agriculture growth and reduce rural poverty,
- (ii) achieve self-reliance in essential food commodities,
- (iii) expand exports and galvanise agro business potential,
- (iv) achieve an average growth rate of four to five per cent per annum to support overall growth strategy of the government, and
- (v) improve quality of growth by adopting a strategy which is pro-poor, pro-small farmer and pro-environment.

Strategy to Achieve Objectives:

Achieving these objectives requires success in the following strategic areas based on energy and water efficient high-yielding production technologies and market-oriented public policy interventions:

- Ensuring food security and safety for all (that is, availability and access to quality food at affordable prices) and setting up institutional framework within the Ministry of National Food Security and Research (MoNFS&R) to implement the strategy
- Improving total factor productivity and competitiveness of the agriculture production systems through technology-based interventions with emphasis on small and medium size farmers and landless tenants
- Improving export of agri products in compliance to the international food standards for accessing regional and high-end markets
- Policy and institutional reforms for moving towards market economy and involving private sector in the agricultural business
- Paradigm shift from resource-intensive to resource-conservation technologies for more productive, competitive and sustainable farming systems (grow more with less and increased use of bio energy, etc.)
- Managing natural resources in a sustainable manner by adopting Good Agricultural Production Practices (Global GAP) with emphasis on sustainable use of land and water resources (aquifer recharge in arid and semi-arid regions)
- Strengthening and integration of improved coordination of the National Agricultural Research System to enhance the process of innovation and commercialization
- Market-led approach to diversification of agriculture into high-value crops, value addition and supply chain infrastructure development

- Improving post-harvest management, marketing infrastructure and policies based on the public-private partnership
- Improving sector governance, particularly the delivery and quality of agriculture support services (research, extension, agriculture credit, marketing, inputs supply) and computer-based land record management system)
- Ensuring fair price to producers and consumers by improving the procurement and distribution system for essential food items through developing adaptation and mitigation strategies for climate change in different agro climatic zones of the country and reclamation of lands

A balanced approach to the agriculture development should be persuaded for achieving equitable productivity growth both at small and large farms. Pre-requisites to success are macroeconomic stability and sustained efforts to consolidate and deepen the agriculture policy reforms to achieve improved productivity, food security and better living conditions of the rural people.

CHALLENGES & PROPOSED INITIATIVES

1) Diversification into high-value agriculture

Given the diversity of the agriculture sector and export competitiveness in high-value crops, the agri development strategy needs to balance food crops and higher-value horticultural crops. Fundamentally, the growth must come from farmers' enhanced capacity to modernize their production systems based on optimal utilization of land and water resources and commercial approach to agriculture production and value chain. This requires economies of scale at the farm individual, corporate or cooperative level, adoption of modern production and post-harvest technologies, and investment in the supply chain infrastructure.

Accelerated growth in high-value agriculture can be achieved on sustained basis, only if the markets work better, ensure fair price to farmers, and mop up marketable surpluses for processing and packaging into value-added products for local and export markets. This requires necessary market reforms and establishment of supply and cold chain infrastructure through innovative public-private partnerships to realize full market potential. Experiences of other developing countries indicates that given the large size and technical complexity, these investments can best come through the private sector-led joint ventures with the government providing an enabling environment in terms of incentive policies. In addition, better functioning of markets requires addressing the public sector infrastructure – deficit in farm to market roads – to facilitate small farmers' entry to market, especially in areas of good agricultural potential.

Treating production and marketing operations holistically, using the policy support tools for precision agriculture, offer substantially higher financial and economic returns by minimizing expenditures on capital inputs, such as fertilizers, pesticides, energy and by reducing risks of crop failure. The corporate or cooperative approach is the best suited for diversification into high-value agriculture on commercial scale where production, processing and marketing operations are integrated and managed as an agro-

industry. Such initiatives should be encouraged in the private sector through appropriate public policy interventions and provision of incentives.

2) Improving sector governance

The poor state of governance is common in the management of agriculture, both by the public and private sectors. It has adverse impact on the agriculture productivity resulting from litigations over land and water disputes, rent-seeking by the revenue functionaries, tempering of water course outlets (mogaaz) by influential farmers upstream of distributaries and market failures, etc.

To improve governance in agriculture, it is imperative to revisit the role of public institutions and modify control-oriented and supply-driven system to the decentralised and demand-driven. At the same time, appropriate regulatory mechanism must be put in place to prevent exploitation of the small producers. Devolution at the local level is important, including improvement in their administrative capacity and accountability, and strengthening of the participatory process. Measures that improve governance and accountability – stricter enforcement of laws, legal reforms and wider dissemination of information on spending and effectiveness of public sector projects and programmes – can help spur both greater efficiency of government, as well as growth and investment in the rural areas.

Improving governance is also crucial for reducing poverty through improved growth in the rural sector. Governance issues, including litigation over land, water disputes, and corrupt practices in land transactions involving transfer, sale or purchase are a major bar to investments and growth in agriculture.

To address these issues, following measure may be adopted:

- (i) improving financial management and accountability at the project and institutional levels,
- (ii) transparent and authentic land records and water entitlements by modern IT-based system,
- (iii) increased transparency and information of the government activities to facilitate public oversight,
- (iv) capacity-building of the local government institutions, and
- (v) safeguards against market failures.

3) Improving water-use efficiency

Inefficient use of water is one of the serious issues of the agri sector. The irrigated area in Pakistan has increased over a period of time due increase in water availability. Yet the water resources available for agriculture continue to shrink due to increased demand from the urban and industrial sectors.

To overcome these problems, the Planning Commission's 11th five year Plan recommends a strategy of 'More Crop per Drop' by increasing crop productivity per unit of water through promotion of water saving technologies. These include the lining of watercourses, drip and sprinkler irrigation system, land levelling, permanent raised-beds, and substitution of high delta water crops (sugarcane, rice) with low delta crops (maize, oil seeds, pulses, etc.). A multi-pronged strategy be adopted for improved water use efficiency to sustain food and water security.

- Reducing water losses (both at system and farm level) and improving conservation of

available resource to enhance water productivity

- Minimising system losses by improving operational management of canal system for wet, average, and dry season scenarios and by monitoring of water discharges at mogaaz
- Increasing the water storage capacity through development of on-farm storage tanks, small dams, check dams, and spate irrigation (rod kahi) in rain fed, sailaba and mountainous areas
- Strengthening on-farm water management research on crop water requirements, water pricing, water losses and use efficiency, water productivity, cost recovery, and equity issues under the demand-driven versus supply-driven irrigation management
- Build consensus among provinces, like the 1991 Water Accord, to initiate new water projects and extension of the existing irrigation facilities to additional areas
- Increase irrigation intensity through fuller utilisation of available water resources by expanding the on-farm water management programmes
- Launching of major programme of aquifer recharge in arid and semi-arid areas of Cholistan, Thar and Balochistan to ensure that water flows from tube-wells can be sustained

The Prime Minister's taskforce on agriculture has taken a holistic view of the issues faced by the agriculture sector and has made some sound recommendations for improving productivity of agriculture sector. Under this Program a number of projects have been developed and initiated. For improving water usage efficiency and to overcome water shortage problems, following projects have been launched.

1) Project "Conserving water through lining of Watercourses" developed under Prime Minister's Agriculture Emergency Program for lining up to 50% of total length of 73,078 watercourses (reconstruction & new) inclusive of 13,875 Water Storage Tanks. This also includes Laser Land Levelers, on 50% cost sharing basis government's share to be capped at Rs.250,000 per beneficiary. The total project cost is Rs.179,705 million over a period of 05 years. The key interventions identified are:

- Social mobilization through capacity building of Water User's Associations/ Fos
- Minimization of conveyance and field application losses
- Reduction in water logging and salinity
- Equity in water distribution
- Reduction in water disputes/thefts/litigation
- Motivation/participation of farmers
- Poverty reduction through employment generation
- Increase in crops yield/sufficiency in food

2) Project "Enhancing Command Area of Small & Mini Dams in Barani Areas" developed under Prime Minister's Agriculture Emergency Program. Project cost is Rs.27,700 million over a period of 05 years. The key interventions identified are:

- Development of command area of small and mini dams
- Improved land and water productivity
- Poverty reduction through employment generation
- Increase area under crops and sufficiency in food
- Improved economic condition of barani area farmers

3) Project “Water Conservation in Barani Areas of Khyber Pakhtunkhwa” developed under Prime Minister’s Agriculture Emergency Program. Project cost is Rs.13,020 million over a period of 05 years. The key interventions identified are:

- Construction of Water Ponds
- Construction of Check Dams
- Inlet Outlet Spillway
- Water Retaining Facility/Reservoir
- Terracing
- Pipe lining/open channel flow watercourses
- High efficiency-Drip& Sprinkler irrigation System
- Solarisation of water reservoirs/pond and High efficiency irrigation systems

4) Improving land resources

Pakistan faces serious issues of land degradation from water-logging, salinity, nutrient mining and soil erosion. Inefficient irrigation and drainage systems, secondary salinisation, sea water intrusion and lack of awareness are the major causes of land degradation. Rapid urbanisation is eroding arable land. About 3.2 million hectare of canal command area are severely affected by water-logging (water table less than 150 cm) and salinity. In spite of the huge investment for reclaiming land fertility, the menace of water logging and salinity still persists. In addition, soil fertility has badly affected by water and wind erosion and inefficient application of fertilizers. For this purpose, strategies encompassing mitigation, rehabilitation and better land-use planning should be adopted in order to protect land resources. Following measures are suggested for improving land resources;

- Establishment of groundwater regulation system to monitor and regulate water and salt balance of aquifers
- Reduction in drainage surplus through precision irrigation
- Strengthening and expansion of soil testing labs for issuance of soil health cards to farmers to provide updated information on nutrients balance
- Improved watershed and rangelands management, soil conservation programme through technical, biological, chemical, and social measures
- Promotion of Remote Sensing and Geographic Information System tools for identification, assessment and monitoring of degraded lands, and improved coordination and capacity-building of the stakeholders concerned.

- Under the land reform programme, additional land should be reclaimed and irrigated for allotment to landless, agri graduates, women heirs and tenants.

5) Agricultural biodiversity & Crop diversification

Pakistan is rich in indigenous crop diversity with an estimated 3000 taxonomy of the cultivated plants. There are around 500 wild relatives of the cultivated crops, mostly found in the Northern Areas. Introduction of high-yielding varieties, expansion of land, deforestation and dam constructions have threatened wild landraces of the crops, as agro ecological diversity of the region is in danger due to modern agriculture. Pakistan has preserved 15,600 germplasm accessions from more than 40 crops at the Pakistan Genetic Research Institute. Around 50 per cent of the germplasm has been evaluated and catalogued. Preservation of plant genetic resources should further be improved.

Traditionally, agricultural diversification referred to a subsistence kind of farming wherein farmers were cultivating varieties of crops on a piece of land and undertaking several enterprises on their farm portfolio. Household food and income security were the basic objectives of agricultural diversification. Diversification at the farm level is supposed to increase the farm income; the utility of diversification as risk management practices however, remains. At the country level, diversification is supposed to increase the extent of selfsufficiency for the country. At the regional level, diversification is being promoted to mitigate negative externalities associated with mono-cropping.

Diversification of agriculture is advocated as one of the important strategies to stabilize and enhance farm income, increase employment opportunities and conserve natural resources. However, the returns from diversification depend on the availability of such infrastructural facilities as irrigation, electricity, transportation, storage, markets, etc. Agricultural diversification encompasses change in production portfolio from low-value to more remunerative and high-value commodities like fruits, vegetables, milk, meat, eggs and fish that expand farm and non-farm sources of income. It not only involves production processes but also new marketing and agri-business-based industrial activities that expand the income sources of rural households and stimulate the overall rural economy. Changes in the share of different commodities in the value of agriculture are used as a proxy of agricultural diversification. Diversification reflects a change in business activities based on the flexible and differentiated response to changing opportunities created by new production technology or markets signals. Market infrastructure development and certain other price related supports also induce crop diversification. Often low volume high-value crops like spices, vegetables, oilseeds and fruits also aid in crop diversification, higher profitability and stability in production also induce crop diversification.

Pakistani agriculture is diversifying towards High Value Commodities (HVCs) in response to rising per capita income, changing food consumption, increasing urbanization, unfolding globalization, improving infrastructure and reforming policies. HVCs yield higher, more regular and earlier returns compared to food grains. Employment generation and conservation of water resources are additional advantages of agricultural diversification. Smallholders and women are participating more in production of HVCs. But

the speed of agricultural diversification towards HVCs has not met expectations mainly due to lack of appropriate markets, institutions and infrastructure as well as lukewarm policy response.

Factors responsible for crop diversification:

With the introduction of scientific and modern agricultural technologies there is a continuous surge for diversified agriculture. The changes in crop pattern, however, are the outcome of the interactive effect of many factors such as (a) Resource related factors mainly irrigation, rainfall and soil health (b) Technology related factors mainly seed, fertilizer, water use, marketing, storage and post harvest processing (c) Household related factors mainly food and fodder self-sufficiency requirement as well as investment capacity of the farmers (d) Price related factors covering output and input prices, trade and other economic policies that affect these prices (e) Institutional and infrastructure related factors covering farm size and tenancy issues, research, extension and regulatory policies of the government. These factors are highly inter-related. The economic liberalization policies as well as the globalization process are also exerting strong pressures on the area allocation decision of farmers, essentially through their impact on the relative prices of inputs and outputs. While factors such as food and fodder self-sufficiency, farm size, and investment constraints are important in influencing the area allocation pattern among smaller farms, larger farmers with an ability to circumvent resources constraints usually go more by economic considerations based on relative crop prices than by other non-economic considerations

Similarly, economic factors play a relatively stronger role in influencing the crop pattern in areas with a better irrigation and infrastructure potential. In such areas, commercialization and market networks co-evolve to make the farmers more dynamic and highly responsive to economic impulses.

Constraints in crop diversification:

The major problems and constraints in crop diversification are primarily due to the following reasons with varied degrees of influence:

- Sub-optimal and over-use of resources like land and water resources, causing a negative impact on the environment and sustainability of agriculture
- Inadequate supply of improved and quality seeds and planting material of improved cultivars
- Fragmentation of land holdings and lack of mechanization of agriculture due investment constraints and land holding sizes
- Poor basic infrastructure like rural roads, power, transport, communications etc
- Inadequate post-harvest technologies and inadequate infrastructure for post-harvest handling of perishable horticultural produce
- Very weak agro-based industry
- Inadequate research - extension - farmer linkages
- Inadequately trained human resources and large scale illiteracy amongst farmers

- Emerging species of diseases and pests affecting most crop plants
- Poor database for horticultural crops and insufficient investments in the agricultural sector.

6) Mitigating impact of climate change

Manifestations of the climate change are already evident by changes in rainfall patterns, occurrence of droughts and floods, extreme temperature, etc. It is predicted to have significant negative impacts on agriculture production systems in different parts of the country, particularly in the arid and semi-arid regions.

Although the impact of climate change is not yet fully understood and may not always be negative, there is a need to initiate research on adaptation and mitigation strategies. There should be focus on measures to minimize the impact of climate change on crop production and water resources, including:

- (i) Development of crop varieties resistant to pests, diseases and drought and also tolerant to extreme variations in temperature
- (ii) Changes in cropping patterns and sowing dates based on more accurate weather forecast for the cropping season
- (iii) Changes in planting methods and water management practices for high delta crops such as rice, sugarcane and maize (for example, from flat to bed planting and from flood irrigation to furrow or drip or sprinkler irrigation, etc.)
- (iv) Water resource conservation and demand management through expansion of small scale water storage capacity and rain water harvesting at the farm level
- (v) Equitable water pricing based on delta of water for different crops
- (vi) Development of water markets at the farm level where the farmers could buy and sell water through mutual agreements as is presently done in case of the tube-well water.

7) Agricultural inputs and support services

I. Seed:

Quality seed is a prerequisite to realizing the full benefit of good crop husbandry practices. Any weakness in terms of genetic purity or physical health may damage all investments and efforts made during the course of crop life. The seed sector is grossly underdeveloped due to extended delay in legislations though number of private domestic seed companies is around 700, which are dealing in all field and horticultural crops. Several initiatives such as establishment of facilitation units and testing labs were taken.

Along with insistent legislation issues, wide spread spurious seed, especially GMOs, non- availability of certified seed and planting material, no system of seed commercialisation in the National Agricultural Research System and lagging seed registration process have been identified as potential obstacles to the seed sector. Enactment of laws regarding seeds has been considered a fundamental step to resolve this major issue. Certified nurseries of planting material in production areas with mother plant banks are needed to meet the fruit orchard needs along with backup support. High-tech seeds, such as Hybrid and GM, should be given high priority and must be developed indigenously by technology acquisition,

strengthening of the public sector R&D and enhancing role of the private sector for seed development and commercialisation. A comprehensive but convenient registration procedure for new entrants is also deemed necessary. Projected seed requirements for major crops, along with fruit nursery plants, are given in Table 3.

Table 3: Requirements and targets of improved seed and fruit nursery plants distribution

('000' Tonnes)

Crop	Total Req.	2013-14		2014-15		2015-16		2016-17		2017-18	
		Target	%	Target	%	Target	%	Target	%	Target	%
Wheat	1,085	217.1	20	227.9	21	233.4	21.50	238.8	22	244.2	22.5
Cotton	40	40	100	40	100	40	100	40	100	40	100
Paddy	42.5	12.7	30	13.6	32	14.4	34	15.3	36	16.1	38
Maize	31.9	9.6	30	10.2	32	10.8	34	11.3	36	12.1	38
Fodders	40.1	12.0	30	12.4	31	12.8	32	13.3	33	13.7	34
Oil seeds	10.6	2.1	20	2.2	21	2.2	21	2.3	22	2.3	22
Pulses	47.5	9.5	20	9.9	21	10.5	22	10.3	23	11.4	24
Vegetables	5.1	5.1	100	5.1	100	5.1	100	5.1	100	5.1	100
Potato	372.7	37.3	10	41	11	48.5	13	52.2	14	55.9	15
Fruit Nursery (000 No.)	1,000	40	4	60	6	65	6.5	70	7	85	8.5

Source: Federal Seed Certification & Registration Department (FSC&RD)

II. Fertilizer

Since the advent of the Green Revolution, the use of fertilizers in Pakistan has been growing at a fairly good pace. However, the imbalance application of nitrogen and phosphate has been a recurring issue to affect fertilizer use efficiency, and subsequently the crop productivity in the prevailing intensive cultivation systems. Consequently, essential plant nutrients are depleting, lowering the average productivity of crops. The imbalanced nutrient application during 2012-13 recorded in terms of the NP ratio was at 4.15:1 against desirable 2:1. The decrease in use of P and K is attributed to their high prices and less overall farm profitability due to deteriorating terms of trade.

The use of fertilizers up to 2017-18 grew by three per cent per annum (Table 4). The growth rate for the nitrogen was 2.5 per cent, while phosphate and potash at five per cent each. In quantitative terms, by 2017-18, nitrogen, phosphate and potash use increased by 3,499.9, 9,45.3 and 29.5 thousand tonnes respectively. The overall fertilizers consumption was 4,474.7 thousand nutrient tonnes. Other fertilizer products to meet micronutrient deficiencies such as Zinc, Boron, Iron and Copper will also be needed for specific crops in order to enhance productivity and improve quality. Pakistan has the potential to fulfil its entire urea fertilizer requirements through indigenous production, but has to rely on imports due to prevailing energy crisis, particularly reduction of natural gas to the fertilizer sector.

Table 4: Fertilizer off-take projections

Nutrient	Benchmark	('000' Nutrient tonnes)					
		2013-14	2014-15	2015-16	2016-17	2017-18	Growth (%)
Nitrogen	3,170.7	3,184.4	3,222	3,331.2	3,414.5	3,499.9	2.5
Phosphate	777.7	880.9	912	857.4	900.3	945.3	5
Potash	24.3	23.6	28	26.8	28.1	29.5	5
Total	3,972.7	4,088.9	4,162	4,215.4	4,342.9	4,474.7	3

Note: Benchmark is average of the last five years.

Source: National Fertilizer Development Centre (NFDC)

In terms of fertilizer marketing, Pakistan has been experiencing problems of timely availability of fertilizer to farmers due to heavy dependence on imports, delays in imports, and weak regulatory mechanisms. The public sector control over urea imports, owing to subsidy element, also sometimes poses problem of supply. Fertilizer use development has now been strongly established by the governmental support during the previous years. It is a right time to loosen the governmental control over this business and let the market forces prevail. Urea imports must be deregulated completely and do away with direct and indirect subsidies in a phased manner. The Fertilizer policy 2001 needs review to undertake such decision. To guarantee continuous supply, strategic reserves of major fertilizers, such as DAP and urea, need to be maintained by the private sector under a predefined mechanism, to assure fertilizer availability during peak seasons.

III. Plant protection

To sustain higher yields, it is imperative to protect crops from insects and pests and keep fields clear from weeds by judicious use of pesticides and herbicides. Indiscriminate use of pesticides and other chemicals is harmful as residual levels in the food chain can exceed permissible limits. In 2004-05, pesticide use was 129,000 tonnes which is now around 40 thousand tonnes. Pesticide consumption has been declining in Pakistan largely because of more cultivation of Bt cotton requiring comparatively less sprays. Previously, schemes involving IPM, biological control, pesticide quality control labs, and plant quarantine services were taken up. To provide healthy food, the Integrated Pest Management along with monitoring of pesticide residues in agriculture produce need to be promoted.

IV. Farm mechanization

Accelerated farm mechanization is an important ingredient of the strategy to step up agriculture growth. Range of current power and implements are insufficient to support the need of the sector. Before de-functioning of the MINFA, developmental schemes were initiated for high efficiency irrigation system, provision of the subsidized tractors and farm implements such as laser land leveller, zero or minimum tillage machine, seed-fertilizer drill, raised bed technology, combine harvesters, threshers, etc. Most of such schemes could not get high success, except the tractor scheme, which remained continued by the federal as well as provincial governments. Due to this, the level of farm mechanisation is basically confined to tractor cultivation. To improve the situation, availability of tractors along with modern farm

implements for zero and deep tillage, fertilizer band placement and laser land levelling will be provided on credit. This will enhance integrated use of inputs and farm machinery to improve productivity. Better enabling environment for agriculture machinery manufacturers may improve their production capacity to help reduce the lag period. The role of service providers should be enhanced for rental of farm machinery and adoption of corporate or cooperative farming. Strengthening of the R&D involved in farm mechanisation will help accelerate the pace of farm mechanisation through acquisition or development of appropriate farm machinery.

V. Agricultural research

Traditionally, the National Agricultural Research System (NARS) has contributed well to the agri development. However, since the 1990s, Pakistan has grossly underinvested in the agri research. According to the IFPRI study (2008), the level of investment in research declined by 23 per cent between 1991 to 2002, while in India and China it increased by 81 and 118 per cent respectively. This adversely affected the national capacity for research. Many of the research programmes, pursued by the agri research institutions, have not kept pace with the needs of the farmers and economy. There was more emphasis on knowledge generation than on moving from research to innovations and technology development. The Provincial Agriculture Research System, which is the backbone of the Pakistan's National Agricultural Research System (NARS), suffered from budgetary constraint, brain-drain, outdated research infrastructure and a service structure providing little incentive for creative research and innovations.

To address these issues, revamping and strengthening of the whole research system along with improvement in the incentive structure, enhanced budget allocations be taken up. At the same time, an effective monitoring and evaluation system should be put in place to measure the impact of research and technology generation on sustainable agriculture development. The role of the PARC as an apex research organisation should be enhanced in resource mobilisation, acquisition, adaptation, and generation of cutting edge technologies, and sustainable management of natural resources. Research will be intensified to reduce the energy intensity of the agri sector to bring down the cost of production, which has gone up due to high energy prices.

VI. Agricultural extension and training

Extension is a vital link between a researcher and farmer. The yield difference between small farmer and progressive farmers shows gaps in resource and knowledge. An effective extension service can play an important role in adding to the resource and knowledge to increase productivity by adopting cost-effective production technologies. However, the quality of agriculture extension service has deteriorated overtime since the extension methodologies and tools are outdated, while the crop production systems have become more complex and diversified. There is need to promote the use of more modern and effective extension service based on electronic and extension technologies and on provision of specialized extension service staffed by subject matter specialists for precision agriculture and high value crops, such as horticulture and floriculture. The service may also include information dissemination on weather forecasts for agriculture, Global GAP or good agriculture practices, latest

innovations in conservation agriculture, post-harvest management, and market information on crop prices, etc. It should also upgrade the training programmes, along the lines of technical and vocational training needed for commercial farming. Greater involvement of the private sector (fertilizer, pesticides and seed industry) in specialized extension services to address specific production problems at the field level and provide services such as soil testing, integrated nutrient and pest management, drip and sprinkler irrigation system, and production of hybrid and GM (Genetically Modified) crops should be encouraged.

8) Agricultural credit

Inadequate financial resources and lack of access to financial institutions are major constraints on the adoption of modern agricultural practices by small farmers. One-window operation, revolving credit scheme, microcredit scheme, inclusion of more banks and institutions in agricultural credit and issuance of smart card for small farmers were some of the major interventions to increase credit out-reach. By such actions and active monitoring by the State Bank of Pakistan, the target of agricultural credit disbursement was achieved most of the time. Total credit disbursement was Rs232 billion in 2008-09, which has added up Rs100 billion in five years by 2012-13. Generally agricultural credit accounts for only four to five per cent of banks credit portfolio. Banks are not enthusiastic about agri credit due to the significant number of widely dispersed clients they are supposed to cover, while farmers shy away from banks because of the cumbersome procedure involved.

Demand Supply Gap analysis:

The overall disbursement target of Rs. 1,250 billion has been assigned to banks for the FY 2018-2019. However during the 11 months, total disbursement against the target allocated is Rs. 1,018 billion, with existing gap for agriculture credit target market of Rs. 232 billion.

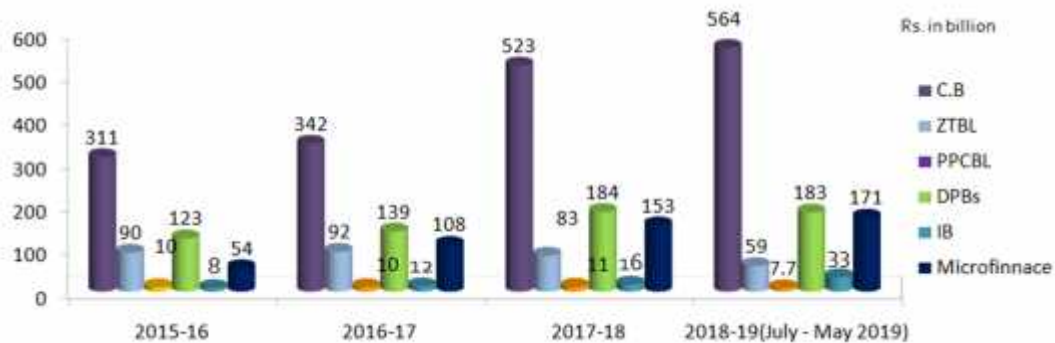


Agri – Credit Disbursement by Banks

During the fiscal year 2017-2018 the Banks disbursed Rs. 972.6 billion, which was over 97% of the assigned target and 38% higher than the fiscal year 2016-2017. In terms of agri credit demand, banks met 72% of total agri credit requirement as compared to 57% last year. The overall outstanding portfolio of agri. Credit also increased to Rs. 469 billion while serving 3.72 million borrowers at the end of June 2018. The province wise agri credit disbursement witnessed double digit growth in all provinces and regions, however banks struggled to achieve their assigned regional targets in the underserved provinces / regions.

The analysis of agri credit disbursement during the FY 2017-2018 reveals that five major banks collectively disbursed agri loans of Rs. 523.9 billion or 101.5% of their annual target of Rs. 516 billion which is higher by 52.9% from Rs. 342.6 billion disbursed during last year. Under specialized banks category, ZTBL disbursed Rs. 83.2 billion or 66.6 % of its annual target of Rs.125 billion while PPCBL disbursed Rs. 10.7 billion by achieving 71.5% against its target of Rs. 15 billion during FY 2017-2018.

Fifteen domestic private banks as a group achieved 92.4% against the target of Rs. 200 billion and five Islamic Banks have achieved 82% of their total target of Rs. 20 billion. Further the performance of micro finance institutions and Micro Finance Banks remains encouraging and collectively these institutions surpassed their annual targets by disbursing Rs. 124.8 billion and Rs. 28.7 billion respectively to small farmers during FY 2017-2018.



In view of the potential role of agriculture in the poverty alleviation and promoting rural employment, the banks having agri lending operations are being encouraged to be more innovative and promote group loaning, inducting agricultural graduates as their Mobile Credit Officers, and increasing branch network in rural areas. To enhance outreach, number of branches in rural areas are significantly being increased.

Agricultural credit system should be reformed so as to ensure that at least 50 per cent of the total is provided to small farmers, and that landowners are able to obtain credit on the basis of the market-value of the land rather than on the outdated produce index units. Measures may be sought to substantially increase the amounts being provided to small farmers. A high priority to women borrowers in microcredit programmes should be given.

9) Agri Trade

Current exports of Pakistan comprise of a variety of products. The most prominent category in Pakistan's exports is textile and clothing, which make up more than half of Pakistan's exports. The second largest export category is vegetables, accounting for 14% of Pakistan's exports. Food products are the fourth important item in Pakistan's exports, constituting almost 4% of total exports. Therefore, Pakistan's bulk of export basket is reliant on agriculture. Even the food products alone form two of the major export categories of Pakistan, accounting for a cumulative of 18% of Pakistan's exports.

Pakistan mainly export raw material and intermediate goods and failed to add value and export value added goods. Pakistan not only has to focus on value addition which includes investment in packaging meeting international standards, marketing and branding of goods but also has to increase the export base. Over taxation of inputs, exchange rate and currency value are also critical factors causing fall in exports. Other factors including the availability of infrastructure, human skills and investment can play strong role to earn from this opportunity.

Pakistan exports more to boarder countries than non-boarder, increasing the export market to boarder and non-boarder countries and extending trade with also union countries like NAFTA, ASEAN, and SARRC can enlarge exports and limit imports improving in general trade position of Pakistan. The empirics show that Pakistan has the maximum trade potential with allies in boarder and non-boarder. The maximum trade potential exists for china, UAE, Iran, Indonesia, Bangladesh.

Pakistan has huge potential in dairy for being 5th largest milk producer, also in copper, rice, fruits and cotton where we can increase our export base through value addition and innovation. Other consumer goods like beverages, bread and bakery needed to be streamline for export.

Comparative Exports of Selected Commodities:

Value in Million US\$
Unit Value in \$ per Unit

Groups/ Commodities	Unit	July- April 2017-18			July- April 2018-19*			%age Change 2018-18/2017-18		
		Quantity	Value	Unit value	Quantity	Value	Unit value	Quantity	Value	Unit value
FOOD GROUP										
Rice	M.T	3,457,545	1,680	486	3,394,782	1,704	502	-1.82	1.42	3.30
Fish & fruit preparations	M.T	163,632	372	2,271	153,061	348	2277	-6.46	-6.21	0.27
Fruits	M.T	651,758	358	549	721,146	381	528	10.65	6.37	-3.86
Vegetables	M.T	739,940	203	275	870,298	201	231	18	-1.2	-16
Leguminous Vegetables	M.T	0	0	0	0	0	0	0	0	0
Tobacco	M.T	6,873	25	3,593	8,310	19	2,311	21	-22	-36
Wheat	M.T	794,172	156	197	604,097	134	221	-24	-14.5	12
Spices	M.T	17,707	68	3,813	19,939	76	3,808	13	12	-0.14
Oil seeds,nuts & Kernals	M.T	27,274	34	1,250	49,382	71	1,447	81	110	16
Sugar	M.T	11,887,40	420	353	46,3912	144	311	-61	-66	-12
Meat & Meat preparations	M.T	51,787	189	3,651	50,754	184	3,633	-2	-2.1	-0.47
All other food items	M.T		467			544			17	
Total	M.T		3,971			3,807			-4.1	
%age Share	M.T		20.69			19.68				
TEXTILE GROUP										
Raw Cotton	M.T	34,284	56.57	1,650	11400	18.55	1,627	-66.75	-67.20	-1.36
Cotton Yarn	M.T	428,541	1118	2,608	361,610	941	2,603	-15.62	-15.78	-0.19
Cotton Cloth	M.T	1,882,557	1,824	1	2,237	1,774	0.8	18.85	-2.70	-18.13
Cotton carded or combed	000S QM	13	0.01	0	191	0.16	0.0	1369	3060	0
Yarn other than cotton yarn	M.T	9,224	26	2,861	8,967	26	2,934	-2.79	-0.29	2.57
Knitwear	000 dozen	87,033	2,203	25	100,793	2,396	24	16	9	-6
Bedwear	M.T	310,062	1,856	5,984	341,402	1,900	5,565	10.11	2.40	-7
Towels	M.T	170,998	668	3,906	153,662	658,62	4286.2	-10.14	-1.39	9.73
Tents,canvas & Tarpaulin	M.T	25,063	72	2,874	26,286	73	2,779	4.88	1.41	-3.31
Readymade garments	M.T	32,628	2,120	65	42,094	2,188	52	29	3.21	-20
Art silk & synthetic textile	M.T	249,227	254	1	292,670	249	0.9	17.43	-1.90	-16.46
Madeup articles (Including other tex.)	M.T		571			578			1.15	
Other textile materials	M.T		363			325			-10.46	
Total	M.T		11,132			11,129			-0.02	
%age share	M.T		58			58.06				
Fertilizer manufactured	M.T	233,145	51	220	0	0	0	-100	-100	-100

Comparative Imports of Selected Commodities:

Value in Million US\$
Unit Value in \$ per Unit

Groups/ Commodities	Unit	July- April 2017-18			July- April 2018-19*			%age Change 2018-18/2017-18		
		Quantity	Value	Unit value	Quantity	Value	Unit value	Quantity	Value	Unit value
FOOD GROUP										
Milk cream incl. milk for infants	M.T	78,162	221	2,830	78,933	199	2,522	0.99	-10	-10.91
Wheat unmilled	M.T	0	0		0	-	0	0	0	0
Dry Fruit	M.T	68,631	97	1415	22,237	38	1,703	-67.6	-61	20
Tea	M.T	161,789	493	3047	191497	496	2,590	18	0.6	-15
Spices	M.T	109,982	137	1244	115,430	129	1,120	5	-5	-10
Soybean oil	M.T	137,394	120	876	110,387	79	716	-20	-34	-18
Palm oil	M.T	2,387,284	1,729	724	2,596,477	1,539	593	9	-11	-18
Sugar	M.T	7,406	4.35	587	6,206	3.24	522	-16	-25	-11
Pulses	M.T	617,954	443	716	801,843	432	539	30	-2.3	-24
All other food items	M.T	2,895,496	1972	-	-	1.786	-	-	-9.41	-
Total	M.T		5,216			4702			-9.85	
%age Share	M.T		10.57			10.34				
TEXTILE GROUP										
Raw Cotton	M.T	415,711	748	1,800	306,429	573	1,869	-26	-24	3.78
Synthetic Fibre	M.T	207,681	443	2134	241861	475	1965	16	7	-7.9
Synthetic & artificial silk yarn	M.T	258,735	539	2,083	246,716	549	2,226	-4.65	1.88	6.84
Worn clothing	M.T	360,958	132	368	381,873	146	383	5.79	10.6	4.6
Other textile materials	M.T		1031			853			-17	
Total	M.T		2894			2596			-10.28	
%age share	M.T		5.86			5.71				
CHEMICAL GROUP										
Fertilizer manufactured	M.T	1643940	621	378	1793794	747	416	9	20	10
Insecticides	M.T	22110	135	6099	23975	151	6291	8	12	3.15
MACHINERY GROUP										
Textile Machinery	M.T		470			435			-7.46	
Agri machinery & implements	M.T		106			118			11	

Import Substitution

- **Palm Oil**

Pakistan's import bill is not just marred by crude oil, but also by Palm Oil, imposing severe pressure on the current account deficit. Palm Oil is used to produce a host of consumables such as bread, chocolates, shampoo, margarine, detergent etc. With such a wide variety of use across the consumer space, the demand for Palm Oil will keep on growing, as incomes and purchasing power increases in the country.

To manage the import of Palm oil in the longer run, the government may start plantation of Palm trees along the coastal belt of Sindh and Baluchistan. A special cell needs to be created to incentivize and promote Palm tree farming. Five-year grants may be given with bare minimum cost to farmers, as it takes about four years for oil to be extracted from the fruit of these trees.

It is to be noted that about 40 percent of the Palm oil import is the refined product, while the rest is crude palm oil. Pakistan has an idle domestic capacity which can be used to produce refined palm oil. The government needs to incentivise local refineries by increasing duty on the refined product, creating a duty structure which incentivizes local production, rather than import of finished product. Additional tax benefits can also be given to those operating full capacity while maintaining quality standards. Through tactful imposition of tariffs and encouraging local production, it is possible to reduce import bill associated with Palm oil.

- **Pulses & Peas**

More than USD 1 billion of various pulses and peas are imported in Pakistan. Agriculturalists do not have an incentive to grow pulses but instead are heavily incentivized to grow wheat at an ever-increasing support price which also makes it expensive for the consumer.

The government may incentivize cultivation of pulses, such that Pakistan becomes self-sufficient in the production of pulses & peas (which it once was earlier as well). Subsidy driven wheat production often always results in a bumper crop, resulting in more wastage, and expensive wheat for everyone else. An allocation of such subsidies to the production of pulses may not only reduce the price of wheat but also reduce imports of pulses. The foreign exchange saved and the saving of potential interest paid on such borrowing may outweigh any subsidies that are provided to encourage production of pulses in the short term.

A comprehensive agricultural policy which balances food security, affordability and vulnerability to imports is essential for long-term sustenance and growth of the sector.

Oil Seed

In Pakistan, soybean was introduced as an oilseed crop in 1960s and promoted in 1970s. Area under soybean increased with very slow pace with frequent variations 833 (1975-76) to 6613 ha in 1993-4. Currently area under soybean and production in Pakistan is negligible therefore, no contribution in edible oil and soya meal production. However, under present scenario, rapid soybean expansion took place at global level due to by-product (soybean cake) after oil extraction, which is used as a high-protein animal feed in many countries. The same realization raised in Pakistan due to rapid growth in poultry sector @ 10 percent growth rate annually. Soybean is a short duration (90-100 days) and profitable crop. It also improves soil fertility by adding nitrogen from the atmosphere. This is a major benefit in different farming systems, where soils have become exhausted due to intensive cultivation to produce more food for increasing populations. It has been well studied that climatic conditions of Pakistan are suitable for soybean cultivation.

Keeping in view the importance of soybean crop and huge import bill of soya meal and oil, Oilseeds Research Program of PARC has planted seed multiplication blocks of soybean promising varieties on 200 acres at NARC farm and also distributed seed to different Government Departments and farmers. Objective of the activity is to revive and promote an important crop in the country and save foreign exchange on the import of soybean oil and meal.

Project “National Oilseeds Enhancement Program” developed under Prime Minister’s Agriculture Emergency Program. Project cost is Rs.10,176 million over a period of 05 years. The key interventions identified for enhancing productivity and increasing profitability are:

- Registration of oilseed growers for grant of subsidy
- Subsidy of Rs. 5,000 per acre, maximum up to 20 acres
- Fifty percent subsidy on purchase of oilseed Machinery
- Ensure hybrid seed availability through national and multi-national seed companies
- Establishment of Procurement Centre in collaboration with All Pakistan Solvent Extractors
- Association (APSEA) under the monitoring of government representative
- Arrangement of demonstration plots in oilseed growing areas

RECOMMENDATIONS

In order to achieve agriculture sustainable development, the Bank may take following initiatives;

- Motivating farmers to diversify farming activities for enhancing income.
- Promoting solar powered water pumping system, through financing package for ultimate reduction in energy cost.
- Introduction of affordable, cost effective technologies/machinery as a means to reduce harvesting costs and obtaining higher yields.
- Enhancing per acre yields by creating awareness to adopt best agriculture practices and application of better technologies.
- Promotion of Olive Oil Farming, Soybean Cultivation, Grape Cultivation, Citrus (polishing, grading and packing).
- Financing for Aquaculture and inland Fisheries Value Chain.
- Value Chain Financing.
- Financing against Digitalized/E-Pass Book.
- Establishment of Demonstration Plot for introduction of high yield seeds and irrigation.
- Enhancing the warehousing, building of storage facilities and establishment of distribution networks with the focus on grains, vegetables and fruits, through financing packages.
- Facilitating Establishment of Fruits and Vegetables processing plants by providing finance
- The Bank may create awareness among farming community regarding agricultural best practices and latest technology. For this purpose, village level seminars and meetings can be organized, details be released in all local print media, regular and frequent advertisements can be given on electronic media, leaflets can be distributed, success stories be featured on a regular basis.
- Geographic discrepancies in agri credit disbursement may be minimized as major agri credit lending remains skewed towards big provinces.
- Loans should be extended to promote women entrepreneurs who are involved in cottage industries related to agriculture and allied activities
- Paradigm shift is required to move towards cash flow based lending instead of asset based lending.
- New and innovative credit lending products such as green banking products should be offered to the farming community
- Group lending may be encouraged.
- In order to protect the outlay of banks in agricultural loans, it is proposed that the bank in collaboration with National Insurance Corporation should prepare and introduce a scheme i.e. crop insurance for other crops like gram, oilseed crops, potato etc. besides five major crops of cotton, wheat, rice, sugarcane and maize. The average portfolio size of the Bank for minor crops is Rs.500 million per annum.