



PAKISTAN JOURNAL OF AGRICULTURAL ECONOMICS (PJAE)

Vol 7

May, 2011



Mission Statement of API

To Provide with professional inputs to Agriculture Policy and recommendations relating to major and minor Crops for meeting long term objectives leading towards enhancing production.



**Minister for Food and Agriculture
Mir Israrullah Khan Zehri**

I appreciate the quality papers produced in vol. 7 of PJAE of
Agriculture Policy Institute, (API) May, 2011



**Secretary,
Ministry of Food and Agriculture
Mr. Shafqat Hussain Naghmi**

A long awaited outcome for the
revival of the Journal of Agricultural
Economics is congratulated.



**Chairman,
Agriculture Policy Institute
Mr. Mussadaq Muhammad Khan**

It is just a humble effort on
behalf of API, and its
professional staff.

areal

Pakistan Journal of Agricultural Economics

PREFACE

The Agricultural Prices Commission was established in 1981. Its main function was to carry out needed analyses and recommend support prices for a number of agricultural commodities to the Government. The Commission has done a commendable job and has prepared 9 voluminous support price policy reports year after year and submitted its recommendations both on price and non-price measures to the Government.



**Mussadaq Muhammad Khan
Chairman, API**

2. Under the changed domestic and international scenario, there was a need to redefine and re-adjust the national agricultural policies.

- Analyze domestic and international sectoral/commodity-specific policies;
- Conduct studies on emerging policy issues in crop and livestock stocks (production; consumption; processing, prices, input/output costs, surplus, stock, trade);
- Recommend measures to improve export competitiveness of agri. commodities;
- Advise on policy adjustments needed for greater efficiency and equity;
- Promote coordination/collaboration between national research organization/institutes and international centers.
- Analyze the impact of important agri. policies on producers, consumers, processors and exporters;

3. API is sending its recommendation to MINFA according to its new mandate. Publication of Pakistan Journal of Agricultural Economics (PJAE) is also included in the mandate of API. I take this opportunity to

place on record the commendable job done by the technical officers and staff to have brought this publication on a very short notice. At the end, comments and proposals for improvement are most cordially invited. The API has endeavored to come up with Pakistan Journal of Agriculture Economics, after a gap of three year. It would be the first step to towards formulating up of the agriculture policy and the goals set up at para 2 above.

4. I extend my appreciation for the contribution made by the professional and their personal staff, for such quality papers at a very short time.

May 2011

Mussadaq Muhammad Khan
Chairman API

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of Agricultural Economics (PJAЕ),
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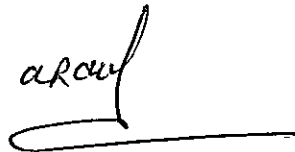


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I. KEY CHALLENGES FACING PAKISTAN AGRICULTURE: HOW BEST THE POLICY MAKERS RESPOND?

Introduction

The recent unprecedented increase in global food and commodity prices has focused attention, both domestic and international, on how best to cope with the immediate impact of these increases on the poor and the vulnerable households who spend nearly four-fifth of their incomes on food.



Dr. Rashid Amjad
Vice-Chancellor, PIDE

While the immediate focus of attention has rightly been on cushioning this impact on poverty and hunger, the agriculture sector as a whole is now being examined in its entirety not only on how best it can ensure food security and combat hunger but also the agro economic measures to compete in the globe.

For, if this increase in food and commodity prices signals a secular change in the international terms of trade in favour of agriculture, and there is reason to believe this is so given the global upward shift in demand for food grains, then the agriculture sector can become the major engine of economic growth and development especially for developing countries like Pakistan. Also the traditional argument that increasing economies of scale are found only in industry because innovation and technical change drive productivity growth mainly in this sector, is also not increasingly true. Agriculture is also witnessing large and sustained increases in productivity due to the introduction of hybrid seeds, new forms of cultivation and other technical and scientific advancements.

In Pakistan the government is giving the highest priority to developing agriculture as well as assigning it a leading role in the development strategy being formulated for the forthcoming 10th Five Year Plan (2010-15). This paper identifies some of these critical challenges that policy makers face in assigning agriculture this leading role as well as examines how applied agricultural economic research and learning from other countries experiences can help to provide guidance.

B. Key Issues and Challenges

1. Agriculture pricing: should the government be in the business of administering prices?

Neo-classical (now neo-liberal) economics is fairly clear that prices of agricultural commodities should be determined by market forces and no restrictions should be placed on their movement both in the domestic market as well as on their exports and imports. Such a free market regime would ensure that prices closely reflect world prices and result in the optimal utilization of resources. Reality, however, is very different.

In Pakistan in its formative years after independence in 1947 the process of industrialisation (or "primitive accumulation of capital") was financed indirectly through an import-substitution and pricing regime which changed the terms of trade in favour of manufacturing and against the agriculture sector (Amjad,1982). This resulted in rapid industrialisation and a country with hardly any industries at independence saw by the end of the 1950s the emergence of a significant consumer good industrial base.

Even though in subsequent decades the situation faced by the agriculture sector somewhat improved as the economy opened up and price controls were gradually reduced including the abolition of the food rationing system in the 1980s, agricultural prices remained on average less than 30 per cent of world prices. A recent study (Salam, 2009) has calculated that as a result of price controls and trade restrictions the resulting distortions led to an annual reduction in earnings of the major crops by almost \$1.7 billion on average during 2001-08 (see Table 1 and 2). This would be almost 15-20 per cent of the value of these major crops.

Table 1: Average Annual Transfers from Selected Crops

Period	Wheat	Basmati paddy	Coarse paddy	Seed Cotton	Sugarcane
US \$ / metric ton					
2001-05	96.95	47.47	0.17	70.46	1.40
2006-08	139.39	49.64	19.26	38.66	1.21
2001-08	112.87	48.28	7.33	58.54	1.33

Source: Salam, Abdul (2009)

Table 2: Annual Resource Transfers from Selected Crops (\$ million)

Period	Wheat	Basmati paddy	Coarse paddy	Seed Cotton	Sugarcane	Total
Million US dollars						
2001-05	951	103	1	365	59	1478
2006-08	1599	143	66	233	53	2093
2001-08	1194	118	25	315	56	1709

Source: Salam, Abdul (2009).

Wheat is the staple food of the people of Pakistan and accounts for nearly 40 per cent of value added in the crop sector.

In a decisive move the new democratic government that took over in March 2008 decided to raise procurement prices² of wheat for the incoming wheat harvest in spring 2008 at Rs. 625 per

² The procurement price fixed by the government is the price it would buy wheat though farmers are free to sell to the government or private traders.

maund³ from the price of Rs.425 per maund fixed by the last government to ensure better returns to farmers. This was also partly a reaction to the fiasco that had resulted from the policies adopted by the last government which had fixed the price well below world prices for the Spring 2007 wheat crop. Believing it had a bumper crop the then government had first allowed the export of wheat, but since it had fixed the price of wheat well below world prices a large part of the wheat crop was smuggled into neighbouring countries resulting in acute shortages. The government eventually was forced to import wheat at much higher prices than it had exported.

In fixing the higher price of wheat for the Spring 2009 crop the government relied amongst others on the recommendations of a Task Force of eminent experts that recommended fixing prices as near as world prices and announcing them well before the wheat sowing season. ⁴A wheat price of Rs. 950 announced by the government in September 2008 was almost 52 percent higher than its previous price. This resulted in a bumper crop, as farmers shifted land to wheat production as well as used more inputs, forcing the government to buy large quantities of wheat to maintain prices it had fixed. This led to a large build up in government reserves for which it had neither the godowns to store nor had allocated sufficient funds to pay for their storage. Also prices in neighbouring countries were lower so no wheat was smuggled out. Also world prices of wheat had begun to fall so that the government could only export wheat at a loss which it was not prepared to do.

Key Issues

This review of government interference in fixing the price of wheat in recent years to bring them in line with world prices as well as ensuring better returns to farmers is an illustration of the challenges a government can face when it intervenes in agricultural markets. The

³ A metric ton (1000 kg) is equivalent to 25 maunds with 1 maund =40 kg.

⁴ See Report of the Task Force on Food Security, Planning Commission, Government of Pakistan, 2008.

government also fixes minimum prices of rice in the last two years with limited procurement targets and faced similar challenges. In a related move the Supreme Court of Pakistan upheld an order of the High Court that fixed sugar prices at Rs. 40 per kilogram (Kg) which was well below the prevailing world price. The result was that sugar disappeared from the market and was available in limited quantities at nearer Rs. 60-70 per Kg although the government sold its sugar stocks through Public Utility Stores at Rs. 40 per Kg. Once the Supreme Court order receded sugar is now available in the market at around Rs. 70/-per Kg.

Some of the key questions that arise from the Pakistan's experience can be posed as follows:

Should the government intervene in agriculture markets or leave them completely to market forces?

- If it does intervene what should be the basis on which prices should be fixed?
- If it does fix prices in terms of world prices how should it deal with problems arising from large fluctuations in world prices?
- How do you reconcile incentives to farmers through higher prices with affordable protection to the poor and vulnerable households who spend around 80 per cent of their incomes on food?
- If farmers are paid world prices for their products should they not also pay income tax (from which they are currently exempted in Pakistan) as do other income earners in the country? How is this done in other countries?
- What are the possibilities of opening up trade in food grains in South Asia and the experience so far including the setting up of a Food Security Bank?

2. Research and sharing of country experiences

The issues outlined have been much researched but in the current global milieu there is need for serious re-examination. At a minimal research can help policy makers realise the costs and benefits of the decisions they take. Also how other developing countries are deciding on these issues would help policy makers learn from each others experiences. The problem at the moment is that the IFT's, namely the World Bank and in Asia the ADB, have very rigid views on these issues (i.e. leave it completely to market forces with no trade restrictions) which are for most developing countries neither politically feasible nor necessarily economically the most efficient. Also equity issues do not lend themselves to easy solutions when such policy regimes are adopted. The search should focus on second best solutions which come as close as possible to ensuring efficient outcomes as well as meeting needs of the poor and vulnerable.

3. Reducing rural poverty: empowering the poor

Pakistan's agriculture economy is characterized by an extremely skewed ownership of productive assets, particularly land and water. There are a large number of small, resource poor and subsistence farmers (86 per cent of 6.6 million farm households) who own less than 50 per cent of the land and water resources and a small number of large farmers (14 per cent of the total) owning more than 50 per cent of the resources. About a third of the rural labour force consists of landless labour which together with very small farmers (2 hectares or less), especially tenant farmers tend to be the poorest in the country.

The challenge is to devise policies which make agriculture more equitable for small farmers and landless labour.

This is again a much researched area but there are two major initiatives by the newly elected democratic government on which sharing of country experiences would be particularly helpful. These relate to distributing state lands amongst the landless and the second is poverty alleviation through small holders livestock and diary development.

4. Distributing land among the landless and small tenant farmer⁵

This school argues that poverty in Pakistan is not simply the result of adverse resource endowments but because the poor are locked "into a nexus of power which deprives the poor of their actual and potential income."⁶ This power structure which includes state institutions and local powerful elite discriminates against the poor in gaining access over productive assets, finance, public services and governance decisions which makes it almost impossible for them to break out of poverty.

For them to break out of poverty requires first providing access to land for the landless labour as well as tenant households to buy land and then providing them through institutions over which they have control key inputs such as credit, seed, fertilizer, water extension services and access to markets.

In Pakistan' s case it is suggested transferring the estimated 2.6 million acres of state land to the landless together with the provision of credit to tenant farmers to enable them to buy land. This would make a major dent on improving conditions of landless and tenant farmers.

However the system should be very simple and transparent for transfer of land by the provinces and Gilgit Baltistan, AJK Government and Tribal Areas.

Pakistan has experience of distributing state land to retiring senior government functionaries both civilian and military. However only in recent years has this transfer been made as a direct intervention for reducing poverty.

The Punjab government in recent years distributed over 1 million acres to landless labour in the province in holdings of 12.5 acres under a number of schemes and provided vital inputs to these farmers to ensure

⁵This section draws on the Report of the Sub-group on "Growth Strategies and Development Priorities" (2009) of Panel of Economists set-up by the Planning Commission, Government of Pakistan and is led by Dr. Akmal Hussain.

⁶ Planning Commission, Approach Paper to 10th Five Year Plan (2010-15), June, 2009 (p.30).

good returns from the land. While no detailed study on these schemes have been published the general impression has been that they have been successful in terms of significant improvements in living standards and human development indicators of households who gained ownership rights to this land.

More recently the provincial government of Sindh has also put in place a scheme to distribute state land to poor women (under the *Benazir Behan Basti Programme*) who are receiving direct income support under the Benazir Income Support Programme). No evaluation has yet been done of this scheme which was launched in 2009.

The author is not aware of any current or past schemes that assist tenant farmers in gaining access to lands they currently cultivate though this proposal is contained in the Approach Paper to the 10th Five Year Plan (2010-15) (see Planning Commission, June 2009).

Key Issues

The issues related to land distribution through land reforms or resettlement programmes in new lands brought under cultivation has been extensively analysed. However, there are a number of key issues which need in-depth research from which policy makers could benefit including through other country experiences. These relate to:

- Understanding the working of rural agriculture land markets and how such land could be made accessible to the poor landless and tenant farmers.
- Successful support programmes for providing key inputs to settle farm households who have been given land rights and especially those programmes in the running of which they are directly involved.
- Programmes which distribute state land to poor women for cultivation and housing.

5. Poverty alleviation through smallholders livestock and dairy development

Only when it dawned on economic planners that livestock accounts for 52 per cent of agriculture sector GDP (Pakistan is the 5th largest milk producer in the world) that serious attention has been given to encourage its development. The private sector has, however, been active in the setting up of cool chains including foreign companies (eg. Nestle) which collect milk from designated points in rural areas and then sell as packed milk in urban areas.

Again what is not sufficiently recognized is that landless labour which account for almost one-third of agricultural households depend on livestock as an important source of income, which provides a regular flow of cash income on daily basis and livestock keeping which is mainly done by unpaid female household members is crucial for meeting their nutritional needs. Available evidence also indicates that extent of reliance of farm households on livestock is inversely related with farm size. The Government in Pakistan thus sees small holder dairy development particularly for landless as providing considerable potential for poverty alleviation.

Given acute scarcity of available village land and high prices for land the landless find it extremely difficult in finding appropriate space for their milch animals. Other constraints faced by them include inadequate nutrition, veterinary health and artificial insemination coverage. They are also exploited by "dhodies" (milk sellers) and also by foreign companies who offer low milk prices to them. Given that land is not available many landless labour keep their milch animals at "deras" (enlarged living quarters) of large landowners and in return they have to work for them with little or no wages.

To alleviate poverty amongst landless labour the government has therefore decided to launch a Smallholder's Dairy Development Project which will assist them in increasing milk productivity as well as free them from exploitation by "dhodies" and big landowners. Important elements of the scheme include provision of land and infrastructure for community farms, setting up of farmer's organizations, technology/input support especially provision of credit, support for improvement in

health and breed of animals as well as support in processing and marketing of milk.

Key issues

While analyzing growth and development of the agriculture sector economists as well as policy makers have not given sufficient attention to the development of the livestock sector which as we have seen can also be an important means of alleviating rural poverty. Policy makers could learn from other countries experiences especially in devising targeted programmes for small farmers and landless livestock holders. Some of the issues that need investigation are:

Analysis of the role of the livestock sector in alleviating poverty especially female poverty in rural areas. Analysis of local, national and regional markets for milk and milk products and how livestock owners especially small farmers and landless can tap these markets and get better prices for the milk they sell. Livestock ownership as a means of providing economic support for poor rural households especially in meeting their nutritional needs and how these may be adversely affected by increasingly selling their milk for generating cash income.

6. Corporate farming: Should it be encouraged in labour surplus economies?

With a highly skewed land distribution and labour force growth at near 3 per cent, amongst the highest in the world, the issue of encouraging corporate farming and more recently leasing out of large tracts of land to foreign companies or governments has become a highly emotive issue in Pakistan.

The economic case for not encouraging large scale corporate farming in Pakistan has been mainly based on the premise that this would lead to an ejection of existing farmers especially tenant farmers and at the same time reduce labour absorption in agriculture. With job generation in the formal sector being very low these ejected farmers and landless labour would only be absorbed in the urban informal economy which

already suffers from low productivity, low incomes and extremely poor and hazardous working conditions.

The debate on corporate farming has been intensified in recent months when with the recent increases in food and commodity prices led many countries exploring possibilities of meeting their food grain needs by buying or leasing out of land in neighbouring countries and thus ensuring food security for themselves . In Pakistan such interest has been seemingly expressed by neighbouring Middle-East countries.

It is also claimed that South Korea and India have leased land in African countries for the production of the so-called miracle crop Jatropha which has not quite lived up to its expectations.

Key Issues

Issues related to corporate farming and even leasing out of large tracts of land to foreign companies or countries needs some dispassionate analysis because the answers to these questions may well not be in black and white but be conditional on land location, its physical characteristics and local labour market conditions. If for example Pakistan was to lease out semi-arid land and those wishing to lease it are prepared to make sufficient investment to make the land cultivable then this would increase labour absorption and benefit the local economy. Also the conditions of the lease could be such that the land would after some time revert to national ownership. These conditions may also include limits on the use of surface and underground water as well as transferring of technology etc. Also in Pakistan some local large land owners have gone in for large scale corporate farming but rather than just eject those who were already farming the land they have absorbed them in activities both farm and non-farm which they run.

Some of the issues that therefore need to be researched could focus on:

Advantages and disadvantages of large scale corporate farming and identifying conditions under which it should be encouraged or discouraged. Under what conditions should countries allow leasing of land to foreign companies or foreign governments without compromising on national economic interest and sovereignty?

7. Encouraging world class economic research on key agriculture (and trade related issues)

Policy makers in Pakistan are starved of information and analysis on key economic issues some of which have been highlighted in this note.

The Government is therefore seriously considering setting up of a very high quality research policy unit in the Ministry of Agriculture.

However, past experience suggests that such government based research units are rarely successful and get mired in bureaucracy and fail to attract good researchers even if they are paid market based salaries.

Pakistan has a number of Agriculture Universities and a very large Pakistan Agriculture Research Council but these bodies are much better at doing scientific research rather than research on key economic issues.

This raises some fundamental questions on how research should be organized that concentrates on key economic issues such as terms of trade, agriculture pricing and other such important issues. Currently advice on these issues is given by the World Bank and the Asian Development Bank including under programme loans with conditionalities that their economic viewpoint on these issues is strictly implemented.

Key Issues

Governments can learn from each others experiences in conducting and drawing on policy relevant research in taking agriculture related decisions. Some key issues are:

How best can research on key agriculture issues be organized which is both timely and relevant to needs of policy makers?

Should research be conducted in bodies working in government or should these be done in independent research organizations and if the latter how should the government support the setting up and growth of such organizations. Role of international organizations (eg. GDN) in providing support to building up of such research capacity both at the national level as well as through pooling of global knowledge.

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Annexure-I

Average Farm Size in Pakistan (in hectares)

Year	Punjab	Sindh	NWFP	Balochistan	Pakistan
1960	3.55	5.94	3.28	9.96	4.07
1972	5.29	5.12	3.69	10.16	5.28
1980	4.75	4.69	3.14	7.80	4.68
1990	3.71	4.34	2.21	9.63	3.78
2000	2.91	4.04	1.67	7.83	3.10

Source: Economic Wing, Ministry of Food, Agriculture and Livestock (MINFAL) Agricultural Statistics of Pakistan (various issues).

Annexure-II**Percentage of Farm Numbers and Farm Area by
Farm Categories in 1999-2000**

Census year	2 hectares or less		2 to <5 hectares		5 to <10 hectares		Above 10 hectares	
	% farms	% area	% farms	% area	% farms	% area	% farms	% area
1980	34	7	40	27	17	25	9	41
1990	47	12	34	28	12	22	7	40
2000	58	16	28	28	9	19	5	37

Source: Economic Wing, Ministry of Food, Agriculture and Livestock (MINFAL) Agricultural Statistics of Pakistan (various issues).

II. PRICING MECHANISM FOR AGRICULTURAL COMMODITIES

Background The agriculture commodity markets are not only imperfect but also fragmented in Pakistan. During the post-harvest period, the price of farm commodities in the open market generally tend to crash to the disadvantage of growers. In order to safeguard the interest of growers, the government announces the support price of important crops. The support price acts as minimum guaranteed price especially during the post-harvest period when the market prices tend to crash particularly in years of bumper harvest.



**Abdul Rauf Chaudhry,
Deputy Chief, API**

B. Objective of the Paper

The paper aims at providing a primary definition pricing policy and introducing the reader with fundamental building blocks of agricultural pricing mechanism.

C. Discussion

The pricing policy for the agricultural commodities is constructed on the basis of following major factors:

1. Why support price?

The support price of the agricultural crops serves the following purposes:

1. A Minimum Guaranteed Price as a safeguard
2. Essential for food security of staple diet in every country
3. Prices generally tend to crash in post-harvest, if no state intervention
4. Small farmers at the mercy of middlemen, otherwise
5. Seasonal nature of agricultural production
6. Price stability and sustainable production
7. In-built incentive for productive farmers
8. Poverty alleviation

2. Crops covered under the programme

In the past, the Support Price Policy Programme covered Wheat, Sugarcane, Cotton, Rice, Gram, Onion, Potatoes, Sunflower, Soyabean, Safflower and Canola. In May 2001, it was decided by the Chief Executive to continue Support Price Policy Programme for Wheat, Sugarcane, Rice and Cotton crops only. Later on it was decided in the meeting of ECC held on 23-9-2002 that the Support Price Policy of Wheat, Rice Paddy and Seed Cotton will be determined by the Federal Government while Provincial Governments will consider fixing the Support Price of Sugarcane.

D. Steps Taken by API in Price Policy Formulation

In the formulation of pricing policies for the agricultural commodities, the Agriculture Policy Institute adopts a number of steps including but not limited to the following:

1. Annual field surveys

The API annually conducts a field survey in major producing areas of a particular crop in order to review the last crop situation. The major objective of this field survey is to review the input situation,

availability and quality of inputs, input prices, cost of farm operations, production and marketing problems faced by the growers and seek their viewpoints as remedial measures.

2. Consultative mechanism

The API has developed a Consultative Mechanism in the form of standing committees on crops in order to solicit the viewpoints of all the stakeholders. These committees constitute growers, grower associations, traders, industry, research and planning departments and procurement agencies both Federal and Provincial. The meeting of the standing committee on a particular crop is convened before the price policy formulation. The issues relating to input situation, production and marketing are debated at length in a full-day meeting. The viewpoints of the committee members are duly considered in the process of price policy formulation by API.

3. Determinants of support price

The API performs indepth analysis of following parameters before formulating the price policy proposals for the respective crop;

- i. Short term and long-term changes in area, yield and production of respective crops
- ii. Domestic and World demand, supply, stock and price situation
- iii. International prices
- iv. Export or import parity prices
- v. Cost of production
- vi. Comparative economics of competing crops
- vii. Nominal and real support and market prices
- viii. Profitability in the use of fertilizer
- ix. Parity between input and output prices
- x. Impact of proposed prices on other sectors of economy
- xi. Economic efficiency in domestic production
- xii. Improving productivity and marketing.

The API submits detailed commodity-specific reports providing background analysis and recommendations on the support prices. In addition to provide recommendations on the level of support prices, these reports also include proposals for improving the production and marketing systems of the respective crops. The policy reports prepared by the API provide detailed analysis on the above price determinants for the respective commodities.

E. Transition in Price Policy Analysis

In view of trade liberalization under WTO regime, a transition in the price policy system has taken place during the last decade. Currently the Support Price policy is only announced for wheat crop. The API performs indepth analysis in the light of above parameters well before the sowing season of a crop. The MINFA finalises the summary in the light of technical analysis provided by the API on the subject. The summary is reviewed by the Task Force on Food and Agriculture and Cabinet committee on Agriculture. Then the final summary is put up for approval of the ECC/Cabinet. As it is approved by the ECC or Cabinet, it is conveyed to the Federal Procurement agencies and Provincial Governments for implementation. The support price is announced only for wheat price mainly for the sake of food security. The procurement of wheat is made to meet the target fixed by the Government.

For seed cotton and rice paddy crops, major role of marketing is played by the private sector. The Government mainly monitors and regulates the marketing system. Only in case of urgent need, the Government Announce Intervention Price to intervene as a alternate buyer to cushion the market at a reasonable level if the price is likely to crash below the break even level.

In sugarcane, the Federal Government through API/MINFA provide indepth analysis on price policy and the provinces announce the Indicative Price which is implemented through the sugarmills in the private sector.

III. PROSPECTS AND POTENTIAL OF TEXTILE INDUSTRY IN PAKISTAN

Abstract Cotton is the second largest crop of Pakistan. It provides raw material to Textile Industry. Our textile based exports have more than 50% share in foreign exchange earnings. The share is on the increase. If the policy options and recommendation as proposed in this paper are implemented then our textile based exports may touch \$ 40 billion mark in the near future.



Mussadaq Muhammad Khan
Chairman, API

The geo-political situation of Pakistan calls for building a very sound economy. Manufacturing and agriculture are the two leading sectors of the economy. Harmonic and balanced growth of these sectors can help achieve the objective of stable economy. The aim of this paper is if properly planned how the textile sector alone will serve as the main engine of growth of national economy.

Cotton is considered to be a very important component in the economy of Pakistan. Fluctuation in cotton crop affects the size of agriculture sector and GDP. In the last decade, the production and area under cultivation of cotton has increased @ 1.5 and 0.2 percent per annum. In 2009 -10, 12.9 million bales of cotton were produced by Pakistan. The country is ranked number four in the world, after China, U.S.A. and India (**Annex-I**) in production and third in consumption after China and India. It will be, in 2010-11, finally around 12 million bales. This aspect has to be seen in terms of meeting the domestic requirement, for the import of cotton during 2011, and also focusing more on the production of Man Made Fibers (MMF).

Cotton requires an intensive use of pesticides under heavy cover to chemical insecticides for getting an optimum yield. Over the past forty years many pests have developed resistance to pesticides. So far, the only successful approach for insect tolerance have been the addition of **Biotech (Bt) Cotton**. Bt gives protection against bollworm but not protection against sucking pest like white fly. Pakistan has entered into a contract with MONSANTO for the provision of Bt. Cotton within the same bio-technology the resistance to cotton leaf curl virus (clcv) would be available.

According to the All Pakistan Textiles Mills Association (APTMA) Pakistan is mostly producing low valued course yarn, rather than producing yarn of higher counts. In the areas of dyeing finishing, processing and printing also there is much to be done, by adopting new technologies. **It is therefore evident that without producing high quality yarn, through improved ginning practices; it will not be possible to make advances in the textile sector.**

Since textiles have a major share in Pakistan's exports, it can not operate in isolation. Interestingly the global consumption is less than the production. So, **what is happening? How countries like Japan, the ASEAN block and European Union meeting their requirements of domestic consumption and exports?** The answer lies in the growing use of Man-Made Fibre (MMF). It is popularly known as Polyester and Viscose fibre. It carries strength, is light in weight and environmentally friendly.

In Pakistan, the foremost activity is in the **Spinning and weaving sector**. The production, export and domestic requirements of yarn and cloth has shown an upward trend, trend is likely to continue in future. Following this, it is seen that since the Textile Industry of Pakistan is making a gradual shift from coarse to medium Yarn; from Grey (un-bleached), Bleached, Dyed & Printed to Blended Cloth. This means value addition. The description of various processes is given at **Annex-II** and related flow chart is given at **Annex-III**. The value addition as

worked out by the Textile Commissioner's Organization is presented in Table-1.

Table-1: Value Addition in Textile
One Bale of 170 Kgs of Cotton is worth

<u>Products</u>	<u>US \$</u>
Raw Cotton	119
Cotton Yarn	253
Towels	434
Cotton Fabric (Grey)	579
Finished Fabric	603
Bed Wear	618
Knit Wear	1,401
<u>Woven Garments</u>	<u>1,561</u>

Source: Textile Commissioner's Organization.

Competitive Edge. Pakistan is likely to produce between 13 to 14 million bales during 2011-2012.

P.S "This is a clear cut advantage for all Pakistani textile mills over their competitors in the international market. **This competitive edge is not being trapped** since the Cloth weaved from this type of yarn results in producing dusters, grey cloth, bed sheets etc. but for the cloth or fabric used for garments, higher count of yarn is required." Production of yarn and cloth is given in **Annex-IV**

A. Impact of Textiles on Economy

The Textile and Clothing Industry has been the main driver of the economy for the last 50 years in terms of foreign currency earnings and jobs creation. The Textile and Clothing Industry will continue to be an important engine for future growth of the economy; there is no alternative industry or service sector that has the potential to benefit the economy with foreign currency earnings and new job creation, especially if synergy is developed amongst different sub-sectors and efforts are made to aggressively grow the Ready-Made Clothing Sector. Pakistan's Textile Industry had proved its strength in global market during the last four decades. Structure of textile industry is given in **Annex-V**

B. Exports

The exports showed positive signs which are evident from the significant growth in all the commodities. It is also encouraging that export of bed wear during 2010-11 has increased in term of value, and this category has overcome the impact of the anti-dumping duty imposed by the EU. Pakistan has emerged as the major supply source of cotton textile in the world market confirming its competitive strength. Therefore the Textile Industry has an inbuilt potential for performing better, both in production, as well as, in export by virtue of its inherent competitiveness. Export performance of textile sector is given in **Annex VI to VIII**.

C. Prospects and Potential of Textiles

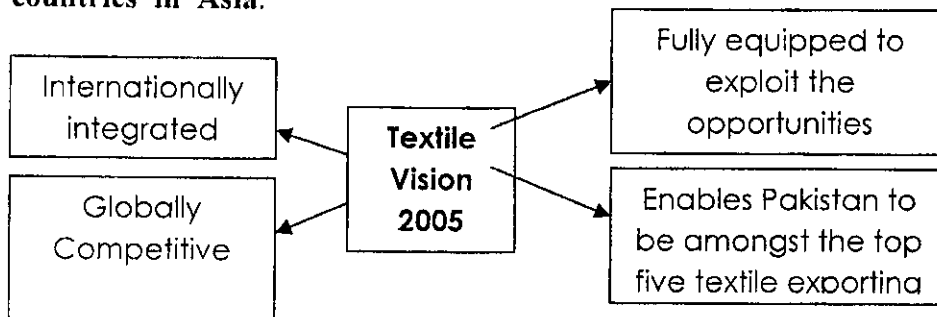
The textile sector in Pakistan has all the possibility to improve and provide with substantial foreign exchange earnings, employment generation, increase in the GDP growth, with sound and consistent policies. It has therefore a sound potential for making Pakistan economically very stable. During the last four years, the government in collaboration with the private sector has embarked upon a plan to combat the challenges of opening up to foreign competition, after the removal to quotas. Pakistan has been seeking the removal of these quota barriers for some time and its vertically integrated textile sector is all set to capitalize on this imminent change in quota regime.

D. Textile Vision – 2005 & Government Initiatives

In order to formulate a long-term textile strategy and recommend policy interventions, it was vital to conduct a through analysis across the textile value chain. In year 2002, it was felt that Pakistan should tap its entire potential to avail opportunities, and face the challenges, after the elimination of quotas from January 2005. Mr. Razzak Dowood the former Minister of Industries and Commerce, assigned the task of formulating a Textile Vision to Mr. Tariq Saeed Saigol and Small and Medium Enterprise Development Authority (SMEDA). A long term strategy was formulated that started upfront, by giving the main aim contained in the Vision Statement.

Vision Statement:

An Open, Market Driven, Innovative & Dynamic Textile Sector; which is globally competitive; fully equipped to exploit the opportunities created by the phasing out of quota, and which enables Pakistan to be amongst the top five textile exporting countries in Asia.



The Textile vision laid down the following three scenarios: **(a) Low Road:** Exports will grow at historic patterns, **(b) do-able:** (i) Export growth rate will match the growth rate of import markets. (ii) Market share will grow in ignored markets. (iii) Unit price will improve. (iv) Cotton production will increase. (v) Share of Man-Made Fiber will increase. **(c) High Road:** Value Added Products (Garments and Made-ups) will be the (i) Engine of export growth. (ii) Product and Market mix will be diversified. (iii) 50% of the total fabric will be imported.

Critical Country Perceptions include (i) Supportive external factors (ii) Investor friendly business environment (iii) Positive country

image (iv) Elimination of procedural & regulatory barriers and (v) Political stability

Shifting Focus to Value Added Products. (i) Eliminating Procedural & Human level impediments. (ii) Development of international standards of cotton. (iii) No positive or negative Producer Subsidy. (iv) Emphasis on Man-Made Fibers.

E. Key Policy Decisions of Textile Vision 2005

Following were the key decisions to Textile Vision 2005: (i) Formulation of a Textile Board with representation from private and public sector. (ii) Removal of all regulatory controls. (iii) Campaign to produce contamination free cotton (iv) To initiate a programme for technology up-gradation of cotton ginning. (v) Promulgate Anti Dumping Ordinance. (vi) Ensure duty free availability of inputs (vii) Address compliance issues faced by Textile Industry in the Labour, Social, Health and Environment areas. (viii) To initiate Local Machinery Manufacturing Programme.

F. Government Initiatives

In addition to above, the government has provided duty draw back on processed fabric (1%) of the fob value, home textiles and garments (2%). Support of 0.5 per cent has been provided in the support finance scheme in order to reduce the working capital cost of textile sector. There is duty free import on textile machinery. In order to promote the domestic Fiber industry, 7.5 per cent support to the users of both domestically manufactured and imported PTA, for two years i.e. 2008-2009 and 2009-2011 is required. Capacity building in terms of physical infrastructure polyfibre faculty has been funded by the government of Pakistan in Synthetic Fiber Development & Application Centre (SFDAC), Karachi. On the decision of Textile Skill Development Board (TSDB) the programme "Stitching Machine Operator Training (SMOT) Scheme-II" was launched in the last quarter of 2008 which continued to operate during 2009 in 19 textile units in Karachi, Lahore, Faisalabad & Rawalpindi. Under this phase 1242 persons have been trained out of which 1187 have been appointed by the units concerned. The Korea International Cooperation Agency (KOICA), Republic of

Korea has agreed to provide assistance for the establishment of Garment Technology Training Center (GTTC) in Karachi in 2008. KOICA has agreed to provide an assistance of US\$ 1.5 million.

The government has also decided to setup a **textile city at Karachi**, and garment cities at Lahore and Faisalabad. These projects are based on public private partnership. The Pakistan textile city, Karachi has a total cost of Rs. 3.6 billion excluding costs relating to self generated power project and water treatment plant. The Government has an equity of 50% while the remaining is being financed by the private sector / banks. This project will result in horizontal integration of spinning and weaving and finishing, whereas; a Garment city is a cluster of sewing and stitching units grouped together to produce specialized garments for export and provide an opportunity to small and medium entrepreneurs to develop value-added clothing and accessories. The stitching units may operate under one roof, or in one locality, sharing common facilities such as a training centre, import-ware house, water treatment plants, transportation and logistical services, etc. The manufacturer can facilitate one another in production and can set common ends to meet.

G. Challenges

There would certainly be challenges such as (a) **Anti-Dumping Duties** In a post quota scenario beginning from January 01; 2005; the global trade to textiles is being governed by ATC. The Agreement on Textiles and Clothing (ATC) includes a dispute settlement system; in case of subsidized exports; that may cause "material injury" to the textile industry of importing country; allowing it to impose anti-dumping duties, if it has a proof that the product is being dumped, below the cost to production, and its share in the market is more than the diminimus level (0.17%). The Pakistani products are likely to be effected by anti-dumping duties (b) **Labour Issues**. The carpet and garment industry of Pakistan will continue to face threats on account of non-tariff measures, such as relating to labour laws and their lack to enforcement.

(c) **Environmental Issues**. The international market or buyers are now raising questions and can issue instructions, not to buy products from factories which are not complying with health and safety and

environmental standards. (d) **Price Competitiveness** With regard to The Agreement on Textiles and Clothing especially with reference to the dismantling of the quota regime, price competitiveness would be the only determining factor for commanding a market.

During the budget 2005-06 the Government announced the following relief package to the textile industry which inter alia, included

- i. Removal of sales tax at import stage;
- ii. No duty, no draw back policy for textile machinery and raw materials.
- iii. 6% subsidy to the garment manufacturers for research and development.
- iv. The Government has recently decided to provide a credit limit of Rs.1.18 billion to Trading Corporation of Pakistan for buying customized cotton through a premium to the growers and ginners.

The **Garment City Projects** are totally different than the Textile city projects, for the reason that they are being funded by the Export Development Fund. All the projects have been incorporated with SECP and land has been procured at Port Qasim, Karachi; Sundar Industrial Estates at Lahore and Faisalabad.

(e) **Other Challenges include :** (i) For cotton crop many applications of pesticides and insecticides are involved, that eventually degrade the soil. Steps are required for introducing Biotech (Bt) cotton and increasing the area under cultivation. (ii) Production for PTA and MEG; which are raw materials for making man made Fibre is required. This is a capital intensive industry. (iii) Cotton picking and ginning process have to be improved for contamination free cotton. (iv) Sharp focus and investment is required in the weaving sector; by replacing the use to power looms to that of shuttle less, Air jet and water jet looms; (v) High quality blended cloth and textile made ups quality processing in hosiery, knitwear and home textiles are going to gain more market share. (vi) Therefore, development of local brands and introduction of foreign brands is required to avoid sanctions on account of Intellectual Property Rights (IPR). (vii) To diversify markets; by shifting focus South East Asia and

East Asian economies including China; since these economies have opened up under the WTO regime and (viii) The textile sector needs to be safe guarded from cheap imports and requires anti-dumping laws and their proper enforcement mechanism to check smuggling.

H. Opportunities

The opportunities for the textile sector would be (a) To gain more share in the world market (b) To make investment in the textile sector and double its production in the next five years (c) To benefit from the likely increase of price in future, keeping in view the given trend. (d) With improved ginning and grading; Pakistan tends to have more value for its cotton; yarn and cloth. (e) Keeping in view the world demand of blended fabric there is a great opportunity cost for Pakistan to benefit by investment in the Art Silk and Synthetic Sector. (f) Pakistan's policy of war against terrorism has been appreciated and both the United States and the EU have negotiated with Pakistan to provide additional preferential market access for certain Pakistani textiles and apparel exports into the two markets. Opportunity exists to get more non tariff concessions and preferential treatment from these Allies and (g) To abide by the Environmental and Intellectual Property Rights principles under the WTO Regime, as it will benefit in the long run.

I. Conclusions

It can be safely concluded that **Pakistan is a major producer of cotton and textiles**, and is relatively more labor intensive, which confers **Price advantage** upon its exports. But, to get maximum benefits, Pakistan needs to prepare its industry to avail this future opportunity by providing appropriate management system. If **Pakistan realigns its textile industry** and provides the missing links, the inherent comparative advantage; can be realized, since Pakistan has a competitive edge in the world market.

It is estimated that by only **containing contamination of cotton**, Pakistan would gain at-least 1 to 2 billion dollars every year at ginning level. The production of clean cotton would enhance the value addition of

cotton yarn by at-least 50% and of cloth by 100%, fetching another 3 to 4 billion dollars. It is, therefore, **safe to presume** that textile alone in the next ten years will be in a position **to earn more than US\$ 40 billion** foreign exchange for Pakistan.

The increase in the textile manufacturing will **also positively effect in the GDP growth** of the country. **The aim to earn from textile sector** is surely to be realized since in Pakistan both the **private and public sector are moving in harmony**, and following a gradual and steep approach, that would result in a sustainable growth rate. Factually, **the brighter future outlook** of Textiles is attributed to **(a) investment** trend in the past five years by the private sector, by improving state of art machinery, and preparing themselves to compete in a quota free environment. **(b) adopting Policies based on empirical studies**, culminating in form of the recommendations of Textile Vision: and **(c) timely government incentives**, in reducing duties on the import of machinery and raw material, under the schemes of Balancing, Modernization, Replacement and Expansion (BMRE).

J. Recommendations

a. Provide incentives for giving premium to the growers for introducing Bt. Cotton in accordance with the bio-safety requirements **(b)** Bring more areas under cultivation in D.I.Khan (NWFP) and Nasirabad (Balochistan) and Mekran coast; since these areas are very well suited for cotton crop. **(c)** Provide incentives to the ginners to upgrade their ginning factories; by installing modern press machines and quality saws. They may be given a premium for grading the cotton bales; as per International specifications and standards; rather than selling the cotton on the basis of varieties. **(d)** To develop strategic partnerships with selected countries such as China and Turkey for the manufacturing of textile machinery in Pakistan. **(e)** Concessionary credit for leasing of blending machinery should be provided to the existing units and new entrants **(f)** Foreign direct investment (FDI) for the creation of new capacity and up-gradation of the existing production base, by encouraging joint ventures in the textile & garment cities at Karachi, Lahore and Faisalabad. **(g)** The Government should launch an

international media Campaign to build image of Pakistan. **(h)** Garment, Hosiery, knitwear and other textile made-ups should be given priority as they result in value addition and employment generation. **(i)** Government should provide subsidized credit to textile manufacturers to upgrade their technology and capacity building. **(j)** Upgrade smaller units of power loom. **(k)** The Textile Board should establish a separate training wing, as a Center of Human Resource Development for improving **the skills and capacity building** of the textile workers; in Vocational Institutions; enabling them to work on the recently imported state of the art machinery. **(l)** Accrediting and Certification of textile products, for the fast approaching era of Free Trade Regimes, which requires standardization, in compliance with WTO regulations. At present due to non-availability of testing laboratories, Pakistani exporters have to spend huge money to get certification from abroad. WTO recommended Labs should be established in Pakistan so that the small and medium size enterprises, also get an opportunity to obtain certification. **(m)** Reduce the cost of doing Business in Pakistan. At present the cost of doing business in Pakistan is higher, as compared to, the regional countries, which has resulted in bitter competitiveness for Pakistani Products in Foreign Markets. Therefore, there is an urgent need to bring all the utility charges and levies down to the minimum level. **(n)** To support textile sector to enter the market by producing value added fashion clothing and garment sector. **(o)** Product diversification **(p)** Promotion of brand names and **(q)** To minimize time of transportation on goods through supply chain management.

K. Concluding Remarks.

“It is well within the reach of the Policy makers and all the major stake holders to achieve the target of a US\$ 40 billion export of Textiles in future time frame; as it is not difficult to exploit the potential and work upon the recommendations”.

Annex-I**Cotton Production and Consumption in Major Cotton Growing Countries During Last 5 Years****(Million tons)**

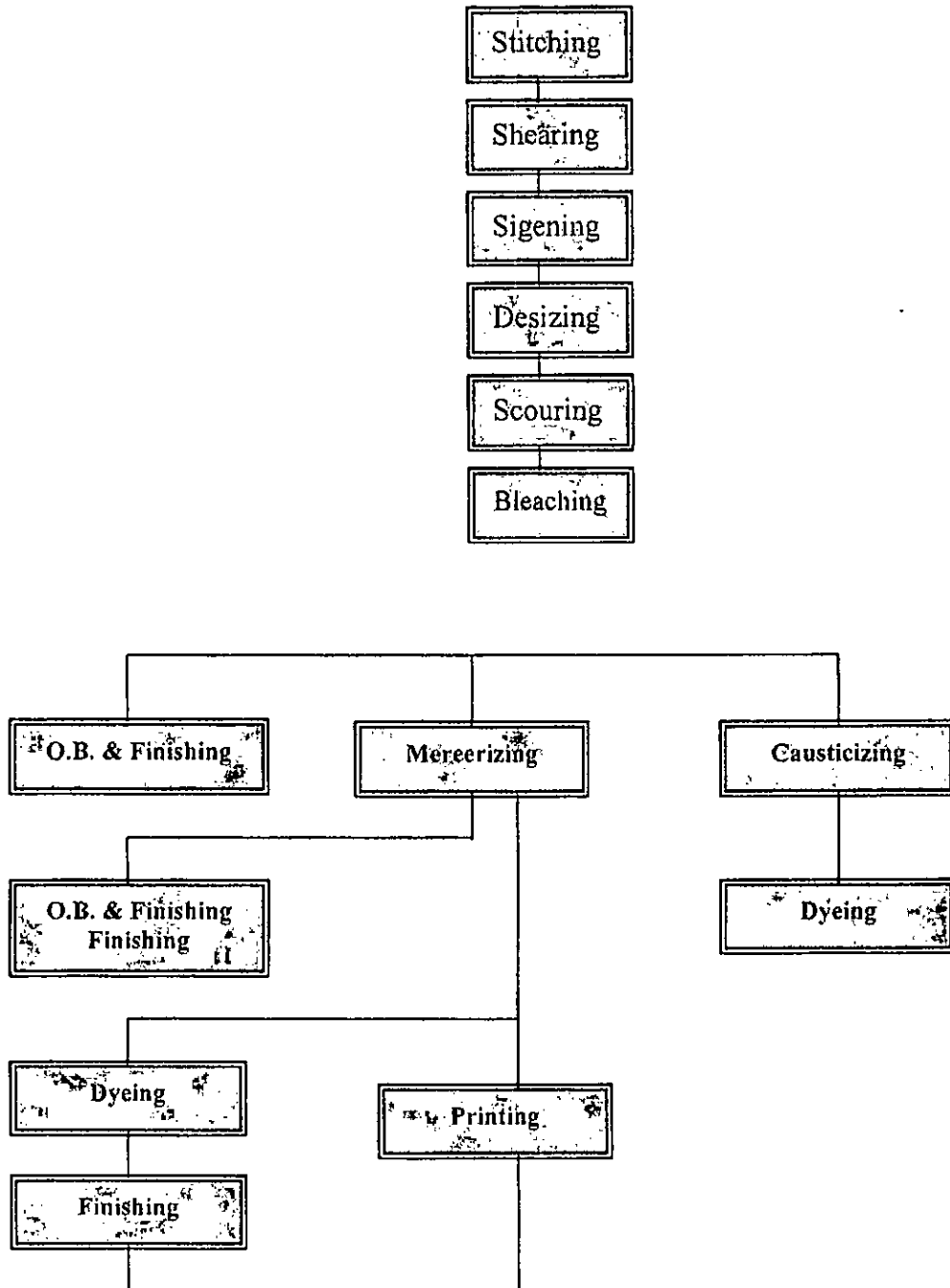
Production	2006-07	2007-08	2008-9	2009-10	2010-11
China	7.97	8.07	8.02	6.92	6.40
India	4.76	5.22	4.93	5.05	5.30
USA	4.70	4.18	2.79	2.65	3.94
Pakistan	2.12	1.87	1.89	2.02	1.76
Brazil	1.52	1.60	1.21	1.19	1.95
Consumption					
China	10.60	10.90	9.26	10.10	1.00
India	3.94	4.05	3.87	4.23	4.61
Pakistan	2.63	2.65	2.43	2.31	2.10
East Asia/ Australia	1.86	1.84	1.68	1.83	1.76
Europe & Turkey	2.08	1.74	1.41	1.55	1.48
Brazil	0.99	1.00	0.99	1.00	1.04
USA	1.07	0.99	0.78	0.75	0.78

Source: Cotton Outlook, March 01, 2011.

Description of Various Processes

- i. Checking of grey cloth:- the material is checked for various weaving and other faults e.g. oil stains, reed marks etc.
- ii. Stitching:- Small pieces of the material are stitched together in order to make it workable for the subsequent process.
- iii. Shearing:- Protruding threads and fibres are mechanically removed from the surface of the fabric.
- iv. Singeing:- It consists of destroying by burning all the tufts at surface hairs from yarn and fabric to improve their appearance.
- v. De-sizing:- Purpose of this process is to remove the sizing material which has been applied before weaving on warp threads.
- vi. Scouring:- Treatment of Textile materials in aqueous or other solutions in order to remove natural fats, waxes, proteins and other constituents as well as dirt, oil and other impurities.
- vii. Bleaching:- Colouring matter is oxidized to the colourless form achieve a high degree of whiteness.
- viii. Causticizing:- The material is treated with caustic soda solution (25-30 TW) in the tensionless state. The affinity for dyes for cotton improved.
- ix. Mercerization:- Treatment of material (cotton and polyester/cotton with caustic soda 28-32 Bc, By this process luster, dye affine strength and dimensional stability is improved.
- x. Optical brightening:- Fluorescent products are fixed on the material which convert the invisible ultra violet rays of the incident light visible blue of violet light.
- xi. Dyeing:- The material is colored into different shades using various dyes for different fibres.
- xii. Printing:- It is localized dying effect in which coloured patterns are produced on cloth. It can be carried out by suing screen printing, rotary printing, roller printing, transfer printing, block printing etc.
- xiii. Finishing:- Material whether it is dyed, printed or in white form finished according to its end use. E.g. For shirting, soft and Wash and wear, finishes are applied, tent cloth should be water proof and industrial fabric should be fire proof.

FLOW PROCESS CHART
Checking of Grey Material



Production of Yarn & Cloth

Year	Yarn Production 000 kgs			Cloth Production 000 kg Metre		
	Cotton	Blended	Total	Mill Sector	Non- mill sector	Total
2000-01	1335629	393501	1729130	490164	3960100	4450264
2001-02	1384898	433442	1818340	576840	4320150	4896990
2002-03	1469053	455883	1924936	382145	4895000	5477145
2003-04	1473240	465668	1938908	683392	5315000	5998392
2004-05	1770340	520000	2290340	924672	6192000	7116672
2005-06	2006299	550001	2556300	915256	7069500	7984756
2006-07	2039056	588500	2627556	1012919	7582738	8595657
2007-08	2113759	695614	2809373	1016390	7989048	9005438
2008-09	2011411	851000	2862411	1019683	7995574	9015257
2009-10	2006566	791539	2798105	1009450	7569193	8578643
2010-11 (Jul-Nov)	734552	325798	1060350	412772	2756350	3169122

STRUCTURE OF TEXTILE INDUSTRY**A. LARGE MILL SECTOR**
SUB-SECTOR

S.No.	SUB-SECTOR	NO. OF UNITS	SIZE
1	Spinning Units	466 (Reported)	a) 11.78 M. Spindles
2	Composite Units	50 (Reported)	b) 195098 Rotors 7170 Looms
3	Independent Weaving Units	70 (Reported)	
4	Independent Weaving Units	150 (Unreported)	28500 (shuttle less Looms
5.	Finishing Units	115 (Unreported)	
6	Garments Units	800 (Unreported)	

B. SMALL & MEDIUM – SCALE SECTOR

S.No.	SUB-SECTOR	NO. OF UNITS	SIZE
1	Independent Weaving Units	425	50000 Looms
2	Power Looms		245442 Looms
		Total:	295442 Looms (Conventional Looms)
2	Fishing	635	

S.No.	SUB-SECTOR	NO. OF UNITS	SIZE
4	Terry Towels	800	10000 Looms 700 Shutless
5	Canvas		2000 Looms
6	Garments	5000	450000 (Domestic) (Sewing Machine)
7	Knitwear	1200	18000 (Knitting Machine)

Textile Industry – Export Performance

S.No.	Products	2009-10 Jul-Jun	2008-09 Jul-Jun	%age Change
1	Raw Cotton			
	Qty (M Kg)	160.110	78.241	104.64
	Value (M\$)	195.638	124.03	87.328
2	Cotton Yarn			
	Qty (M Kg)	632.561	523.733	20.78
	Value (M\$)	1417.218	1114.821	27.13
3	Yarn Other Than Cotton Yarn			
	Qty (M Kg)	17.060	8.694	96.23
	Value (M\$)	45.713	22.970	99.01
4	Cotton Cloth			
	Qty (M. Sq. Mtrs)	1753.116	1898.540	-7.66
	Value (M\$)	1818.618	1955.289	-6.99
5	Knitted Crocheted Fabrics			
	Value (M\$)			
6	Bed Wear			
	Qty (M Kg)	325.269	326.203	-0.29
	Value (M\$)	1723.978	1735.015	-0.64
7	Other Made-Ups			
	Value (M\$)	540.348	480.139	12.54
8	Towels			
	Qty (M Kg)	204.938	171.795	19.29
	Value (M\$)	676.128	642.889	5.17
9	Tents/Canvas			
	Qty (M Kg)	20.673	19.947	3.64
	Value (M\$)	61.519	56.241	9.38
10	Hosiery & Knitwear			
	Qty (M Doz)	105.584	108.677	-2.86
	Value (M\$)	1761.003	1740.753	1.16
11	Ready Made Garments			
	Qty (M Doz)	27.311	28.643	-4.65
	Value (M\$)	1283.238	1230.019	4.33
12	Synthetic Fabrics			
	Qty (Th. Sq.Mtrs)	434.315	321.980	34.89
	Value (M\$)	446.584	278.049	60.61
13	Other Textile Products			
	Value (M \$)	268.340	208.265	24.04
14	Carpet & Carpeting			
	Qty (Th. Sq.Mtrs)	2.576	2.729	-5.61
	Value (M\$)	136.938	145.766	-6.06

Source: F.B.S. Advance Release.

Composition in Exports

	2010-11	2009-10	
	M.US.Dollars	M.US.Dollars	%age Change
Cotton textile	9586.099	9186.401	4.35
Raw Cotton	195.638	87.328	124.03
Synthetic Textile	446.584	278.049	60.61
Sub total	10228.321	9551.778	7.08
Wool & Woolen Textiles	138.838	145.768	-6.06
Total	10365.259	9697.544	6.89
Total Export (All)	19382.552	17688.007	9.58
Textile as %age of Total Exports	53.48	54.83	

**World Overview of Textile & Clothing Export
(Comparison)**

Textile															
Year	2005			2006			2007			2008			2009		
Countries	Value US \$	Growth %	Share %	Value US \$	Growth %	Countries	Value US \$	Growth %	Share %	Value US \$	Growth %	Countries	Value US \$	Growth %	Share %
China	41.05	23	20	48.70	19	22.3	56.00	15.0	23.5	65.30	16.6	25.7	60.00	-8.0	28.4
India	7.65	12	3.9	8.83	7	4.3	9.50	7.0	4.0	10.30	8.6	4.0	9.10	-12.4	4.3
Pakistan	7.08	16	3.5	7.42	5	4.0	7.40	-1.6	3.1	7.20	-1.4	2.8	6.50	-9.0	3.1
World	203	4	2.0	220.00	5.1	1.9	240.00	9.0	1.7	250.00	4.2	1.6	211.00	-17.0	1.7

Textile															
Year	2005			2006			2007			2008			2009		
Countries	Value US \$	Growth %	Share %	Value US \$	Growth %	Share %	Value US \$	Growth %	Share %	Value US \$	Growth %	Share %	Value US \$	Growth %	Share %
China	74.16	20	26.6	95.40	29.0	30.6	115.20	21.0	33.4	120.00	4.0	32	107.00	-11.0	34.0
India	8.23	26	3.0	9.40	10.0	4.3	9.70	2.0	2.8	10.90	12.4	3	11.00	10.0	3.6
Pakistan	3.60	19	1.3	3.90	8.0	1.3	3.80	-3.0	1.1	3.90	2.6	1	3.40	-13.0	1.1
World	276.00	6	2.7	309.00	12.0	2.6	345.30	12.0	2.5	364.00	5.0	2.3	316.00	-13.0	2.6

Textile															
Year	2005			2006			2007			2008			2009		
Countries	Value US \$	Growth %	Share %	Value US \$	Growth %	Countries	Value US \$	Growth %	Share %	Value US \$	Growth %	Countries	Value US \$	Growth %	Share %
China	115.21	20.0	24.0	144.1	25.0	2.7	171.17	18.8	29.4	185.2	8.2	3.0	167.00	-10.0	31.7
India	16.78	24.3	3.5	18.23	8.64	3.4	19.16	5.1	3.3	21.17	10.5	3.4	20.00	-6.0	3.8
Pakistan	10.68	16.7	2.2	11.32	4.9	2.1	11.10	-2.0	1.9	11.10	0.0	1.8	9.90	-11.0	1.9
World	483.00	6.6	4.7	530.00	9.7	4.5	583.40	10.0	4.2	618.00	5	3.9	527.00	-15.0	4.3

- Based on calendar year data
- World share is over all the merchandize Export
- Countries share in over all Textile & Clothing World Export

IV. POTENTIAL USES OF COTTON GIN WASTE

Abstract A cotton gin in the Mississippi Delta area produces from 100 to 150 pounds of gin waste for each 450 pound bale of lint cotton. This waste requires investment, time, and resources to be moved away from the gin site. Presently, one gin pays from \$ 1.50 to \$ 1.75 per bale depending on the number of bales ginned, to have cotton gin waste hauled away by contractors. This study explores the possibility of moving the waste with a least possible cost to a central place where it would be further processed and converted into a useful product such as ethanol.



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Agriculture produces a huge amount of waste each year that principally includes manure and crop residues. These wastes are largely organic, readily decomposable and need to be disposed of in a sanitary manner or converted into safe, useful products.

One form of crop residue is cotton gin waste, which is produced during the ginning process. When cotton is ginned, seed cotton cleaners separate the heavier and coarser portion of the foreign matter including leaves, burs (carpels), stems, sticks, and soil particles from the seed cotton. Lint is separated from the seed at the gin stand. Some burs, small trash, and motes (immature seeds) are also removed. The lint is subsequently cleaned by line cleaners which remove leaf particles, dust and other small trash, as well as motes and short fibre. The two types of wastes, i.e. fragments, sticks and other plant parts removed before

ginning and the linty material known as motes are considered as waste products and usually require investment, time, and resources for disposal. According to Thomasson (1990), the cost of gin waste disposal ranges from \$ 1.50 to \$ 1.75 per bale, depending on the number of bales ginned.

The ginners are required to seek other alternative, acceptable methods of gin waste disposal. It has been reported that gin waste could be used as livestock feed, gin dryer heat, activated charcoal, building material, power generation, or soil amendment. Additionally, due to its chemical composition, it could be further processed and converted into useful energy/fuel products such as ethanol. The conversion of gin waste into other products will not only help the ginners to dispose of this waste by acceptable methods but also generate additional revenue to producers and ginners.

Previous research into alternative cotton gin waste disposal methods has explored several possibilities: thermal conversion, amendment to soil, feeding to livestock, and several others. Thermal conversion research has examined incineration to regain waste heat, incinerator emission cleanup, pyrolytic combustion, pyrolytic gasification and cogeneration, and pyrolytic production of oils and activated carbon. Soil amendment research has examined erosion control, fertilization, and composting. Livestock feed research has involved nutritional analysis, chemical residue analysis, and physical and chemical processing. Other areas of research have included mushroom production, production of building materials, hydrolysis for methanol and ethanol and production, and biogasification to produce methane.

A. Thermal Conversion

Incineration is the simplest disposal method because it takes very little time and effort away from the ginning operation. Research has been conducted on the simultaneous incineration of cotton gin waste for disposal purposes and heat recovery for drying purposes. To provide the necessary heat for drying under all situations, 30 to 35 percent heat recovery should be attained for cotton gin waste from spindle-picked

cotton. Another approach to thermal conversion of cotton gin waste has been the use of pyrolytic reactors for purposes of combustion, gasification, cogeneration, char production, and pyrolytic oil production. Production of electricity with the gas produced from cotton gin waste has been studied and proven to be technically feasible.

B. Char Production

Char is also produced in the pyrolytic process. Recent research has attempted to assess the value of activated carbon in the char as an absorbent for waste water treatment. It has shown the ability to remove small molecule contaminants in solution. The iodine number, which is associated with the property, increases with mild chemical or steam activation. This type of char is also of a suitable quality for use in the manufacture of charcoal briquettes.

C. Ethanol and Furfural Production

One form of biochemical conversion to energy is fermentation to produce ethanol. Back and Clements (1982) reported that 37.8 gallons of pure ethanol can be produced per ton of cotton gin waste. If the ethanol were sold at \$ 2/gallon, the ethanol value of one ton of cotton gin waste would be about \$ 75. The production of furfural from cotton gin waste has been investigated, but the only chemical which can be economically manufactured from cotton gin waste is ethanol. Furfural is used as an intermediate chemical in the manufacture of other products, and as a solvent in refining lubricating oils. Back and Clements (1982) stated that if the hemicellulose fraction of cotton gin waste was converted to furfural by conventional acid hydrolysis, the market value at a reasonable yield would be over \$ 100 per ton of cotton gin waste. They claimed that the production of ethanol combined with the production of furfural would yield a reasonable product value of \$ 175 per ton of cotton gin waste.

D. Pyrolytic Oil Production

Organic liquid products can also be produced in the pyrolytic reaction. When pyrolyzing cotton gin waste at 1300 Fahrenheit and less

than 1-second residence time, Jerger et. Al. (1982) obtained 46.2 percent gas, 31.3 percent char, and 22.5 percent pyrolytic oil. He reported that the energy content of these oils was over 13,000 BTU/lb.

E. Burning in Coal-Fired Power Plant

Cotton gin waste is the most promising biomass for use in a coal-burning power plant (Parnell, 1981). This is mainly because it is available in large quantities at gins and requires no harvesting cost. For a 10 percent thermal input to a 550 Megawatt (1 MW = 948 BTU/s) power plant, 30 tons/hr of cotton gin waste would be consumed (Parnell, 1981). In a system's simulation, Williams et. Al. (1982B) found that at \$ 5/ton, ginners would be able to deliver cotton gin waste to a power plant up to 37.5 miles away; at \$ 10/ton, they could transport the material 50 miles at a profit. Parnell (1981) reported that if all the gins within a 75-miles radius of Muleshoe, Texas delivered cotton gin waste to a 550 MW power plant, the price at which all the ginners could profit would be \$ 15/ton.

F. Use as a Soil Amendment or Growth Medium

Cotton gin waste is often spread on the fields with manure spreader or similar device. Research have shown that adding cotton gin waste to the soil improves cotton yields. Probably the main contributor to increased yields is the increased water holding capacity of the soil. Previous research have shown that soil water storage increased from 31 to 50 percent when it is applied at the rate of 4.1 tons/acre. In addition to improving the water holding capacity and physical structure of the soil, cotton gin waste fertilizer the soil and enhances its nutrient retention capacity. The levels of phosphorus and potassium in the soil generally increase when cotton gin waste is added. Another benefit of spreading cotton gin waste on the soil is reduction in wind erosion. Spreading cotton gin waste on highly erodible soils can significantly reduce wind erosion even at a low application rate. At Big Spring, Texas, one ton/acre of cotton gin waste spread on the soil reduced wind erosion by 43 percent and 3 tons/acre reduced wind erosion by 69 percent (Fryrear and Armbrust, 1969).

G. Use as a Livestock Feed

Feeding cotton gin waste to cattle is in common use in certain areas of the cotton belt. Cotton gin trash is a good roughage and has moderate protein and energy value. Kenneth B. Young and Mesbah U. Ahmed (1978) evaluated the economic use of alternative supplemental feeds for a 2,024-ha cow-calf ranch operation in the Texas Rolling Plains. Interest was focused particularly on the use of gin trash as a supplemental feed. The estimated value of gin trash compared with alternative supplemental feeds ranged up to \$ 23.75 per ton. Potential ranch carrying capacity and annual net income were expanded with a supplemental feeding program including gin trash. The estimated net income obtained per cow-producing unit, excluding costs of rangeland use and supplemental feed, was \$ 116.26. For a feeding loss of 1.5 kg of gin waste for each kg consumed, a price of \$ 7.00 per ton for gin trash could be paid whereas with 100 percent feeding efficiency, up to \$ 17.50 could be paid per ton for gin trash. A disadvantage of feeding cotton gin waste lies in the limited availability of its protein. The digestibility of cotton gin waste can be improved by chemical treatment. Recent work in this area has attempted to minimize the cost of chemical treatment. Screening cotton gin waste improves feed intake, feed conversion, and rate of gain. Adding molasses can increase the acceptability of cotton gin waste. Ensiling cotton gin waste which has been rehydrated with fluid cottage cheese whey can result in a feed with characteristics similar to excellent quality crop silage.

H. Other Uses

The use of cotton gin waste in the manufacture of building materials has been considered. Several researchers have proven the technical feasibility of making wall board, shingles, cinder blocks, etc. out of cotton gin waste. A minor drawback was the presence of sand in the cotton gin waste which abraded saw blades. Demovich and Priz (1987) stated that plants in the Soviet Union called for 60,000 tons of cotton gin waste for production of particle board. Biblis (1976) experimented with the fabrication of insulation boards from various mixtures of cotton gin waste, wood particles, and wood fibres, by blending with urea-formaldehyde resin and hot pressing to a thickness of 0.5 inches. His results indicated that mixtures using 40 to 50 percent

cotton gin waste, with the remainder wood particles, met the requirements of commercial insulation board. A mixture of 60 percent cotton gin waste, 30 percent wood particles, and 10 percent wood fibres was 80 percent stronger and 60 percent stiffer than commercial insulation board. Cotton gin waste has also been used in tests as material for the manufacture of three-dimensional molded composite boards for use as decorative doors, furniture pieces, cabinets, etc.

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V. IMPACT OF IMPOSITION OF REFORMED GENERAL SALES TAX (RGST) ON COST OF PRODUCTION AND PRODUCTION OF CROPS: AN ANALYSIS

Abstract This paper attempts to estimate the effect of RGST on fertilizer and other inputs on the cost of production of major crops like wheat, rice, cotton and sugarcane. The rise in fertilizer price through RGST would affect the production of crops to be sown in 2011-12. Empirically it has been estimated that a 1 percent rise in the fertilizer price would reduce crop production by 0.127 percent. Meaning, thereby that the production of wheat, rice, cotton and sugarcane would be reduced by 0.518, 0.133, 0.045 and 1.098 million tonnes. Their respective value at current international prices is estimated at \$ 168, 80, 32 and 47 million. Total production loss in these crops would be \$ 326 million. The reduction in production would cause imports which would be burden on national exchequer. The reduction estimation does not include vegetables, fruit other important crops like maize. Inclusion of these crops would further expand the value of crop losses due to imposition of RGST.



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Agriculture inputs and implements are concessionary items on which GST was not applicable. Due to widening budgetary deficit Federal Government imposed RGST of 17 percent on fertilizers, seed, pesticides, insecticides, tractors and its implements etc. in an attempt to reduce the budgetary deficit. Imposition of RGST has variable impact on different crops.

A. Impact on Agriculture Machinery, POL and Electricity

Process of producing crops includes land preparation, seed and sowing operations, irrigation, weeding, interculture and plant protection, application of fertilizers and manures. All these operations require specific inputs. Land is prepared through tractor operations using specific implements. Tractors and its implements have been withdrawn from the concessionary facility (GST exemption). Tractors are operated on diesel. POL prices are revised every fortnight. Generally they are on the rise in sympathy with rising international prices. Moreover, from 1st July 2009 onwards diesel prices are being set above the petrol prices quite contrary to the existing price trend. It is, therefore, a continuous source of rise in COP of crops. Seed is an other major input in crop production. Other inputs used in crop husbandry are for the growth, sustenance and improvement of crop. Now seed has been placed under RGST. In irrigated agriculture, canal and tubewell are the major sources of irrigation. Tubewells are operated on diesel as well as on electricity. Most tubewells are diesel operated. Their operating cost is rising due to rise in diesel prices. Electricity driven tubewells, although lesser in number are also on the rise due to frequent rise in electricity charges. Now every unit of electricity consumed is subject to 2 percent excise duty. Weeding, interculture and plant protection are done manually, with tractor and through application of chemicals and sprays. Wages are rising due to inflation, tractor operation charges are dependent upon diesel price and pesticides, weedicides, insecticides are now covered under the net of RGST. Fertilizer is the key input in irrigated agriculture. Its prices are on the rise in sympathy with rise in its international prices. Now it has been subject to 17 percent RGST. This paper attempts to capture the impact of RGST on prices of fertilizer and weedicides/insecticides etc. in the COP of major crops i.e. wheat, rice (paddy) cotton and sugarcane*. The analyses of the impact of RGST is given in Table-1.

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- API's policy analysis papers workout complete changes in the COP of specific crops at the time of its submission to MINFA.

Table-1: Impact of Imposition of RGST on Cost of Production of Major Crops

Crop	Share of Inputs*	RGST**	Impact on COP
1	3	4	5=(3x4)/100
----- Per cent -----			
Cotton	26.16		
Punjab	26.62	18.36	4.89
Sindh	24.35	18.36	4.47
Punjab	16.73		
Basmati	14.96	18.02	2.7
Irri	21.6	18.02	3.89
Sindh			
Irri	20.32	18.02	3.66
Sugarcane	10.87		
Punjab	10.13	19.21	1.95
Sindh	13.03	19.72	2.57
KPK	10.07	19.55	1.97
Wheat	21.18		
Punjab	20.89	18.02	3.76
Sindh	23.07	18.02	4.15
Total	20.44		

Notes: * Inputs include seed, fertilizers and pesticides, insecticides etc.

** Markup on investment has been applied on RGST and Excise Duty according to the duration of the specific crop

Source: Policy Analysis Papers for specific crops

B. Cotton

Cotton is planted on about 3 million hectares. Its share in cropped area is 12.5 percent. About three-fourth of the cotton crop is planted in the Punjab and one fourth in Sindh. However, some cotton area is also planted in Balochistan and KPK. In the Punjab share of specific inputs in the total COP is about 27 percent. The impact of RGST on these inputs on the total COP is about 4.9 percent (Table-1). About 4.5 percent impact has been worked out for the cotton crop of Sindh. Therefore, collective impact on total crop is assessed at 4.8 percent. In

2010-11 cotton growers reaped wind fall profits as market prices sky rocketed due to short crop size and there was yawning gap of more than 3 million bales between the domestic production and demand of the textile industry.

C. Paddy (Rice)

Rice is sown on 2.8 million hectares. Its share in total cropped area is 11.7 percent. About 92 percent area is shared by Punjab and Sindh (Punjab 68 + Sindh 24) and KPK and Balochistan account for 2 and 6 percent, respectively. Rice (paddy) is our cash crop. Major rice crops of the country are basmati and IRRI. Both are exported in the world market. In 2009-10 country earned about US \$ 3.5 billion from rice exports out of total exports of US \$ 19.3 billion, an export share of 18.3 percent. In the Punjab on basmati crop share of inputs, on which RGST has been imposed, in the total COP is 15 percent. The Impact of which on total COP is worked out at 2.7 percent. The share of inputs on IRRI crops in the Punjab and Sindh is estimated at 20 to 22 percent. Its impact on COP is assessed at 3.9 to 3.7 percent (Table-1). The over all impact on the total crop is assessed at 3.4 percent. The growers can only bear the rising COP if the gains obtained at export front are shared with him. Other wise rising costs of inputs would affect the production and productivity of both basmati and IRRI crops which would ultimately affect our exports.

D. Sugarcane

Sugarcane is grown on about one million hectares occupying 4.5 percent cropped area. It is grown in the Punjab, Sindh and KPK. These provinces contribute 68, 21 and 11 percent in area and 68, 23 and 9 percent in production. It is the basic raw material of the sugar industry which consumes about 75 percent of the crop. The rest of the crop is used for seed, feed and Gur making. Fluctuations, in crop production, share in cane crushed by the mills and sucrose levels due to weather conditions affect sugar production levels in the country resulting in un-affordable prices by the consumers. The share of inputs on which RGST has been imposed in the total COP of sugarcane is calculated at 10.1, 13.0 and 10.1 percent for the Punjab, Sindh and KPK. The impact on their COP's is worked out at 2.0, 2.6 and 2.0 percent. Overall impact at country level

crop is assessed at 2.2 percent. The impact of RGST and excise duty would work as a double edge weapon for sugar sector as on the one hand cost of production of sugarcane will go up and on the other hand concessionary excise duty on sugar has been withdrawn. As a result price of sugar would bear two fold increase. PSMA has proposed cost of production of sugar at Rs 55 per Kg for the imposition of RGST.

E. Wheat

Wheat is grown on about 9 million hectares, occupying about 37 percent of cropped area. Punjab and Sindh share 75 and 12 percent in area and 76 and 15 percent in production. Wheat is the major staple food and pillar of food security of the country. Government procured 9.2 and 6.7 million tonnes from 2008-09 and 2009-10 crops at support price of Rs 950/40 kg. Imposition of RGST on fertilizer would disturb wheat and fertilizer parity. Now 17 percent more wheat units would be required to buy one unit of fertilizer. The share of inputs on which taxation measures have been imposed in the total COP of wheat is 21 and 23 percent for the Punjab and Sindh (Table-1). The impact of taxes is worked out at 3.8 and 4.2 percent while the over all impact is assessed at 4.0 percent. It has been empirically estimated that increase in support price of wheat fuels inflation in the economy. A 10 percent rise in support price would result in 2 percent inflation in the CPI therefore, government should try other options instead increasing support price. One option may be to exercise focused and well targetted supply of subsidized fertilizer to marginal and small farmers. Subsidy on fertilizer should not be free for all like air and water large farmers can absorb the price hike in inputs while small/marginal farmers are in vulnerable position they can not.

F. Impact on Production due to RGST on Fertilizer

It has been empirically estimated that 1 percent change in fertilizer price in real terms causes 0.1266 per cent change in production of food grain. This estimate can be used to prepare impact on crop production after the imposition of RGST on fertilizer. RGST on fertilizer is imposed at the rate of 17 percent. If fertilizer price is raised by 17

percent then its impact on production is worked out at 2.15 percent. The impact on 4 major crops is given in Table-2.

Table-2: Impact of Imposition of RGST on Crop Production

Crop	Production* (million tonnes)	Impact ** (million tonnes)	International price \$/Tonne	Value of Impact (\$ in million)
Wheat	24.115	0.518	325	168.35
Rice (Total)	6.178	0.133	600	79.60
Cotton				
Lint	2.072	0.045	400	16.00
Cotton oil	0.539	0.012	1300	15.60
Sugarcane	51.052	1.098		
Mill Usage	38.285	0.823		
Sugar	3.637	0.078	600	46.60
Total				326.15

* 2008-09 to 2010-11 average.

** Reduction in production.

*** The above analysis holds of other things remaining the same. The impact would change with changes in the dependent factors.

G. Overall Impact

The impact of RGST on fertilizer would be highest on wheat, valued at \$ 168.35 million, followed by rice at \$ 79.6 million, sugar at \$ 46.6 million and cotton at \$ 31.6 million. The impact on four major crops to be produced in 2011-12 is estimated at \$ 326.15 million which works

out to about Rs 28 billion. At the time of imposition of RGST on fertilizer it was assessed to generate revenue of Rs 25 billion. The simple analysis brings to fore that losses would be more than gains. Due to short crop production increased imports of cotton, oil and sugar would further add to the losses. However, so far RGST has not been imposed, and adhere options, such as indirect taxation on agriculture inputs are being explored.

H. Conclusions

1. Revenue is estimated at Rs 25 billion.
2. Production losses due to RGST on fertilizer are assessed at Rs 28 billion.
3. Increased imports due to loss in production would add to losses.
4. Losses on vegetables, fruits, and maize crop would be additional
5. Relationship on increased use of fertilizer on food grain production be made.
6. Relationship on increase in real price of fertilizer on fertilizer use be established.
7. Government should introduce focused subsidy on fertilizer to small and marginal farmers.

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VI. GUR PRODUCTION IN PAKISTAN: AN ANALYSIS

Abstract The study was aimed at assessing the production, consumption and trade of gur in the country. Gur making is a seasonal business and provides employment opportunity to the rural population. Gur is a close substitute of white sugar and has many uses. High return, early vocation of land, cash payment, interest free loans by gur dealers and self employment promoted sugarcane growers towards gur making. However, systematic data is not available which will be helpful for researchers, planners and policy makers



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B. Introduction

Gur is a close substitute of white sugar. It is traditionally used in rural areas of the Khyber Pakhtunkhwa, Balochistan and the adjoining tribal territory. Its manufacturing for domestic consumption is almost a century old practice in Peshawar, Charsadda, Mardan and Swabi districts, the major sugarcane producing areas of the Khyber Pakhtunkhwa. Sugarcane growers of the region were used to supply their produce to sugarmills. However, they started switching over to gur making on commercial basis in 1970's. They installed small manufacturing units locally called "Gani". It is reported that the malpractices like issuing indents, under-weightment, delayed payments etc. at the mill level and better returns from gur forced the growers to shift towards gur making

In 1980's, the demand for gur increased manifold with the influx of Afghan Refugees in Pakistan. As the Afghans were used to consume gur for their sugar needs, the middlemen started its supply to Afghan Refugees Camps which increased demand for gur. As a result, sugarmills in the area faced a hardship in the supply of sugarcane. To regularize the gur manufacturing in the Khyber Pakhtunkhwa, the government promulgated an Ordinance under the name "The North West Frontier Province Power Crushers (Amendment) Ordinance, 2002". Under the Ordinance, all the gur manufacturing units were to be registered for the purpose of documentation on payment of Rs 500 as annual registration fee. However, cane crushers of 12.5 horse powers and above having cooking pot of 36 cubic feet with a capacity of 330 kilograms of gur are required to obtain licence on payment of Rs 50,000 per annum.

Sugarmills in the gur making areas of the province have been facing severe shortage of cane since last couple of years. On the other hand sugar prices also touched the maximum level resulting in high prices of gur.

In this paper an attempt has been made to study the situation regarding production, consumption and export of gur in the Khyber Pakhtunkhwa based on the available data and discussion with Government officers, gur manufacturers, gur traders/dealers and sugarcane growers. Following paragraphs explain the situation.

C. Gur Production

As stated earlier, gur is traditionally manufactured in Peshawar valley comprising of Peshawar, Charsadda, Mardan and Swabi districts. The gur produced in these districts called Peshawari Gur is very famous for its good taste. People especially low income population in the rural areas of Khyber Pakhtunkhwa, Balochistan and FATA prefer to fulfil their sugar requirements from Peshawari gur. It is reported that significant amount of gur in the country is also produced in the Punjab like Faisalabad, Jaranwala and Liaquat Pur districts. In Sindh, Sukkur, Khairpur and Nawabshah are famous for Gur Production. The gur produced in the Punjab and Sindh is of crunchy type and has saltish taste. It is also locally consumed while the surplus is exported to Afghanistan via Peshawar. On the other hand, Peshawari gur is generally consumed in the Khyber Pakhtunkhwa, Balochistan and the adjoining tribal areas. As per discussion with different stakeholders, about 60 per cent of the total gur production in the country is consumed in the Khyber Pakhtunkhwa and adjoining tribal areas, 30 per cent in Balochistan while 10 per cent gur which is produced in the Punjab and Sindh is exported to Afghanistan. However, after the ouster of Taliban Regime, gur export to Afghanistan has drastically decreased because of abundant and low priced US imported sugar in Afghanistan. Secondly, the majority of exporters are also reluctant due to the war-ravaged country.

Regarding gur production statistics, no regular estimates of gur production, consumption and trade (mostly through unauthorized channels) are available with any provincial/federal institution. However, the Federal Ministry of Food and Agriculture has indirectly estimated gur (equivalent) production in the country as shown in the following Table-1.

Table-1: Sugarcane and Gur Equivalent Production 2000-01 to 2009-10

Year	Cane production	Cane crushed by sugarmills	Gur Equivalent
	----- 000 tonnes -----		
2000-01	43620	29410	649.6
2001-02	48050	36700	354.3
2002-03	52050	41790	208.7
2003-04	53820	43660	174.1
2004-05	43540	32110	416.6
2005-06	44320	30090	642.4
2006-07	54900	40490	523.0
2007-08	63920	52750	132.0
2008-09	50040	33140	748.5
2009-10	49380	34650	620

Source: Agricultural Statistics of Pakistan 2009-10 MINFA (Economic Wing) Islamabad.

For the purpose of research and policy making, concerned Provincial and Federal Departments may collect statistics on gur production, consumption and trade on regular basis.

According to the discussions made with different stakeholders, it has been estimated that due to high prices of gur about 70 per cent cane has been used for gur making in Charsadda, 50 per cent in Peshawar, 40 per cent in Mardan and Swabi districts. Main factors responsible for more gur production during the current season seem to be:

- i) Higher return from gur making
- ii) Early vacation of land and timely sowing of wheat
- iii) Cash payment
- iv) Interest free loans to sugarcane growers by gur dealers
- v) Self-employment of the family labour
- vi) Higher prices of white sugar

D. Gur Consumption

There are three main types of gur consumption in the country.

- i) Human consumption
- ii) Animal consumption
- iii) Industrial use

1. Human consumption

Gur is traditionally consumed by the population in the rural areas of the country. It is used in tea, shakkar cola, biscuits, cakes, toffees, sweet dishes, mixed with dry fruits as snakes etc. It is a good substitute of white sugar and fulfil complete sugar requirements of the human beings. Its use increases in the summer season because people like to drink shakkar cola, in the rural population as well as in the big cities. It is preferred by the majority of people because the shakkar cola is a chemical free drink with low price as compared with other soft drinks.

2. Animal consumption

Gur is also fed to cows and buffaloes for increasing milk production especially in Karachi, Hyderabad and all coastal areas where underground water is not good for drinking. It is also fed to milch animals for health point of view in the country. In addition, gur is fed to animals like bullocks, horses and camels, etc. used in farming.

3. Industrial use

It is also reported that the cigarette industries were using a chemical imported from the US in cigarette manufacturing in the past. However, recently this chemical has been replaced with gur. Some cigarette industries were reported to have purchased gur in the current season for the purpose. Furthermore, it is also used in the tannery for processing of animal skins and hides. In the scenario of shortage of sugar, sugarmills also process Gur for production of white sugar.

E. Gur Export

Total gur produced in Peshawar valley is consumed in the Khyber Pakhtunkhwa, Balochistan and the adjoining tribal areas. However, about 10 per cent of the total gur production in the country is exported to Afghanistan via Peshawar. It may be noted that the gur which is exported to Afghanistan mainly comes from the Punjab. The small quantity of Peshawari gur is also exported through Afghan refugees temporarily settled in the Khyber Pakhtunkhwa since 1980. They are used to consume Peshawari gur and generally move across the border.

It has been reported that gur beoparies/commission agents both from the Punjab and Khyber Pakhtunkhwa purchase gur from Liaquatpur, Jaranwala and Faisalabad markets. This gur is brought to Peshawar

mandi for sale to Afghan gur dealers which is transported to Jalalabad. No exact statistics of total gur export by destination is recorded in the country. Therefore, various incidentals involved therein are not exactly known. However, during discussion with gur dealers in Peshawar market it was reported that total cost from Peshawar to Jalalabad is around Rs 2000 per tonne of gur.

Although gur export from Pakistan is very limited but for the sake of research and policy making it is the dire need of the time to collect information of various incidentals involved in gur export from Pakistan. This may also be helpful to analyze the potential of gur exports.

F. Cost of Gur Making

Gur making is very labour intensive business. It is made on small scale for domestic consumption by the small farmers mainly having 2 to 4 acres of sugarcane. However, in the recent past gur manufacturing on commercial basis has also been started. Based on the discussion and analyzing the available data, cost of gur making in Peshawar valley calculates to Rs 26312 per acre during 2010-11 crop.

G. Economics of Sugarcane 2010-11 Crop: Gur Making vs Supply to Sugarmills

In order to analyse the economics of sugarcane, the return of gur making vs cane supply to sugarmills have been calculated for 2010-11 crop in the Khyber Pakhtunkhwa. The detail of the analysis is presented in Table-2.

It may be seen from Table-2 that the net return from cane supply to sugarmills is estimated at Rs 56360 per acre. At the same yield level, net return from gur making works out as Rs 81793 per acre. Accordingly,

the extra return from gur making comes to Rs 25433 per acre. In addition, gur making is a labour intensive activity, providing employment opportunities at the farm level. However, the economics of sugarcane and gur making computed for the 2010-11 crop may not be considered as a benchmark because of exorbitant prices of gur and low production of sugarcane.

Table-2: Economics of Sugarcane 2010-11 Crop: Gur making Vs Supply to Sugarmills

A. Supply to Sugarmills		
i.)	Sugarcane yield per acre (40 kgs unit)	460
ii)	Total gross value per acre @ Rs 250 per 40 kgs	115000
iii)	Cost of production of sugarcane per acre at millgate (Rs)	58640
iv)	Net return from one acre (Rs)	56360
B. Gur making		
i)	Sugarcane yield per acre (40 kgs unit)	460
ii)	Total gur made per acre @ 11% recovery (40 kgs unit)	50.6
iii)	Total gross value of gur per acre @ Rs 3047 per 40 kgs (Rs)	154178
iv)	Cost of production of sugarcane per acre at farm level (Rs)	46073
v)	Processing and marketing cost of gur at mandi level @ Rs 520 per 40 kgs (Rs)	26312
vi)	Net return from one acre (item iii-iv-v)	81793
C. Return per acre in gur making Vs Sugarmills Supply		
i)	Net return from gur (Rs)	81793
ii)	Net return through sugarmill (Rs)	56360
iii)	Profit through gur making (Rs)	25433

Source: Price Policy for Sugarcane (Various issues, API, Islamabad).

H. Conclusion

1. Gur is made in Peshawar valley in the Khyber Pakhtunkhwa and in some parts of the Punjab and Sindh.
2. Gur making is a traditional business especially by the small farmers for domestic uses to fulfill sugar requirements.
3. It is consumed by the majority of rural population in the Khyber Pakhtunkhwa, Balochistan and the adjoining tribal areas.
4. Small quantity (approximately 10 per cent of the total production) of gur is exported to Afghanistan.
5. Gur makers are paying annual Registration fee, i.e. Rs500 for small manufacturing unit and Rs 50,000 for commercial unit.
6. Gur makers are charged commercial rates for the electricity consumed.
7. Gur making seems to be a profitable business.
8. It is a sort of seasonal cottage industry and provides employment opportunity to the rural population.
9. Gur dealers are advancing interest free loans to gur makers throughout the year.
10. Payment to gur makers is made on the same day.
11. No regular documentation to show number of cane crushers, quantity of gur production, consumption and export is available in the country.

I. Recommendations

1. Respective Provincial Agriculture Departments may collect gur production statistics on regular basis.
2. Information regarding number, size and capacity of cane crushers used in gur making need to be collected by the concerned Provincial Departments.
3. The gur making is a seasonal cottage industry in the rural areas, the imposition of any tax on gur will directly affect the majority of small and poor population in the country.

4. Export of gur to Afghanistan needs to be documented/regularized by the Government.
5. Sugarmills need to be bound to start in due crushing season.
6. Sugarmills in the gur producing areas should give due attention to the problems like:
 - i) Late payment to cane growers
 - ii) Under weighment
 - iii) Issuance of indents
 - iv) Non availability of transport
 - v) Illegal gratification to the middlemen/truck driver by the cane growers for transporting their produce to the sugar factory.
7. Sugarmills should advance loans to sugarcane growers as given by gur dealers.
8. Sugarmills should provide seed of improved varieties and technology package to the contract growers.

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VII. ECONOMIC EFFICIENCY OF RESOURCE USE IN RICE PRODUCTION IN PAKISTAN

Introduction Rice is the second major agricultural export of Pakistan. It helps earn considerable foreign exchange for the country.



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According to climatic conditions Pakistan is divided in rice, cotton and mixed zones. Wheat staple food of Pakistan, is the dominating crop of all zones. Traditionally cropping patterns of the rice, cotton and mixed zones remained dominated by rice, cotton and sugarcane crops. However, since a couple of years the referred cropping patterns are changing due to unstable prices of different crops. Area of rice is increasing in the cotton zone. Total area under rice in the cotton zone of Punjab (Pakpattan, Multan, Lodhran, Khanewal and Vehari districts) increased from 110 thousand hectares in 2006-07 to 113 thousand hectares in 2008-09 (Crop Area and Production by districts 2006-07 & 2007-08, Government of Pakistan). Likewise cotton is on increase in the mixed zone. There may be host of explanations for these changes. Among these, instability of agricultural inputs and crop prices may be a potential explanation as input/ output relationship determines economic efficiency of a crop. Some of the important economic parameters using input/ output prices to assess economic efficiency are Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost Coefficient (DRC).

Objective of this paper is to determine NPC, EPC and DRC coefficients to gauge economic viability of rice crop in Pakistan. The paper is divided in four sections. Section two after introduction describes

underlying concepts/ analytical parameters and their critical values. Section three presents the results and important discussion to access implications of the findings of the analyses. Section four brings forth important findings of the paper. And the last Section five presents the concluding statement.

B. Analytical framework

In Pakistan rice is produced in Punjab and Sindh provinces. Punjab produces fine rice (basmati) and in Sindh coarse rice (IRRI varieties) are cultivated. Both have export value. However, basmati rice has more export value for Pakistan.

Production costs of the two provinces for the mentioned varieties are used to generate economic and social prices to lead to NPC, EPC and DRC values. COP estimates are taken from annual policy papers of the Agriculture Policy Institute (API), Islamabad. For calculating Effective Protection Coefficients (EPCs) and Domestic Resource Cost Coefficients (DRCs), cost of production is segregated into traded input cost and domestic factor input cost (Annex - I). The analyses cover the period 2006-07 to 2009-10. Brief definitions of the referred concepts, their estimated values and economic implications are described relevantly in the following sections.

1. Underlying concepts

1.1. Economic price is the private price prevailing in the open market.

1.2. Social price is the price received by the grower and is estimated by subtracting transport expenses from the export parity price (Annex-I). NPC is determined by dividing open market price by the social price (Annex-I).

1.3. Traded input costs consist of cost of seed, fertilizer, plant protection and machinery (tube well and tractor)

1.4. Domestic factor costs include costs incurred in hired labor (pre/ post harvest), working capital (mark-up), farm yard manure, transportation, canal water, management charges, land rent, land revenue and land tax

2. Nominal, Effective and Domestic Resource Cost Coefficients

NPC is the ratio between the price of a commodity prevailing in the domestic private market and the respective social price. It measures the impact of output pricing policies without any consideration about policy intervention (distortion) in the input market.

As a decision rule if NPC is greater than one, it implies that producer is getting price higher than the economic price for his produce. When producer gets more than the economic price, he receives a protection that encourages domestic production. On the other hand if producer gets less than the economic price he is taxed, which transfers resources from agriculture to other sectors of the economy and poses a disincentive for development of a crop.

Effective Protection Coefficient (EPC) is the ratio of the difference between the revenue earned from a commodity and the tradable inputs' costs (value addition) at private prices to that at social prices. While NPC ignores distortions/ interventions in the input market, EPC takes into account the policy interventions made in the input and the output markets. Thus it measures protection/ taxation for a given commodity more accurately. So EPC is the indicator of the net incentive and disincentive effects of all policies affecting prices of tradable inputs and the output.

If EPC is greater than one it indicates that private profit will be higher if it would be without input/ output policy interventions. Inversely, if EPC is less than one, it means that producer profit is undermined by the respective input/ output policies. In the former case domestic production is encouraged while in the latter it is discouraged.

In the following section the above referred analysis is done for Basmati paddy grown in Punjab and IRRI paddy produced in Sindh.

3. Results and discussion

- Basmati (paddy), Punjab

It is evident from Table-1 that NPC and EPC coefficients for Basmati paddy remained less than one throughout the period under study which indicates that domestic growers did not receive economic prices for basmati rice. By economic price here we mean export parity price. This implies that basmati production in Pakistan is economical (profitable) but at the same time it indicates implicit taxation to the Basmati growers.

The result is also maintained for Effective Protection Coefficient (EPC) for Basmati. Throughout the study period EPC values are found less than one which indicate under pricing of Basmati paddy in the domestic market and ultimately capability to compete in the international market. However, it needs to be noted that EPC coefficients are smaller than the NPC values which are due to increased prices of tradable inputs i.e seed, fertilizer, pesticides, farm machinery and tube well water etc.

- IRRI (paddy) Punjab and Sindh

NPC and EPC coefficients for IRRI rice reflect different picture than Basmati. For IRRI (paddy) the coefficient values indicate a cyclical pattern.

Both, in Punjab and Sindh, NPC and EPC was less than one in 2006-07 but their values rose above one in the following year i.e 2007-08. And the same pattern was followed on alternate years during rest of the period i.e 2007-08 through 2009-10. This is well explained in terms of domestic rice market behavior in Pakistan. Domestic rice production

normally entails to open market price. If price is low during a particular year, rice cultivation recedes resulting in less production and the vice versa.

The NPC and EPC values determined for the IRRI paddy reflect that some kind of domestic protection has been there in IRRI rice.

Table-1: Nominal and Effective Protection Coefficients for Rice Crop: 2006-07 to 2009-10

Variety/ province	NPC	EPC	DRC
BASMATI (Punjab)			
2006-07	0.80	0.66	0.66
2007-08	0.52	0.43	0.32
2008-09	0.70	0.62	0.33
2009-10	0.72	0.63	0.55
IRRI (Punjab)			
2006-07	0.94	0.84	1.08
2007-08	1.42	1.82	1.08
2008-09	0.86	0.81	0.45
2009-10	1.01	1.02	1.00
IRRI (Sindh)			
2006-07	0.98	0.95	0.74
2007-08	1.48	1.71	0.74
2008-09	0.76	0.71	0.37
2009-10	1.11	1.16	0.73

Source: Annex-III

- Domestic Resource Cost (DRC) Coefficient

The domestic resource cost indicates the cost of non-tradable domestic resources used per unit of the value added in the production of a commodity, estimated at social prices. The numerator in this calculation is the opportunity cost of non-tradable factors used in the domestic production while denominator is the value added (calculated at social prices).

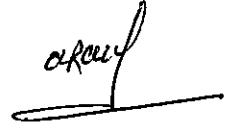
C. Basmati (paddy)

It is generally believed that Domestic Resource Cost analysis reveals level of comparative advantage in the production of a commodity. If value of the DRC coefficient is less than one, it means that the country has comparative advantage in producing that particular commodity and the vice versa.

The DRC coefficients for Basmati paddy given in Table-1 are all less than one ranging between 0.32 and 0.66. It indicates Pakistan's clear comparative advantage in the production of Basmati rice. Thus Basmati production turns out to be an economic proposition.

- IRRI paddy

Data in Table-1 indicate that IRRI rice production is not feasible in the Punjab province as respective DRCs are either close to one or higher than one. Whereas the DRC values for the Sindh province are less than one which is suggestive of comparative advantage of Sindh province in IRRI paddy. For Sindh, coefficient values were almost consistent (0.73 to 0.74) during the analysis period except for 2008-09.



D. Findings

- In Pakistan NPC and EPC coefficients for Basmati paddy are less than one which indicates domestic private market price less than the export parity price.
- Pakistan has comparative advantage in basmati rice as DRC coefficients are also less than one.
- Basmati growers in Punjab are implicitly taxed. However, despite this implicit taxation it is economical to employ resources in the cultivation of basmati paddy in Punjab.
- Pakistan has comparative advantage for IRRI rice in Sindh province.

E. Conclusion

Currently basmati growers of Pakistan get less than the corresponding export parity price which is discouraging for basmati rice in Pakistan. To ensure sustainability of this second largest agricultural export of Pakistan domestic price of basmati paddy needs to be brought to the level of the international market. Appropriate measures need to be taken for the promotion of IRRI rice in Sindh.

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Annex – II

**ECONOMIC EFFICIENCY OF RESOURCE USE IN BASMATI
(PADDY) PRODUCTION IN PUNJAB**

Based on export parity prices				
Description	Revenues	Traded cost	Domestic factors' cost	Profits

----- Rupees per acre -----

2006-07

Private Prices	13954	6990	6534	429
Social Prices	17169	6681	6889	3598
Transfers	-3215	309	-355	-3169

2007-08

Private Prices	21259	7251	10173	3836
Social Prices	40102	7162	10402	22538
Transfers	-18842	89	-229	-18702

2008-09

Private Prices	27214	9236	9277	8701
Social Prices	38251	9289	9543	19419
Transfers	-11037	-53	-266	-10718

2009-10

Private Prices	25249	9348	13504	2397
Social Prices	34499	9289	13772	11438
Transfers	-9250	60	-269	-9041

Annex-III

**ECONOMIC EFFICIENCY COEFFICIENTS FOR RICE IN
PAKISTAN**

Province/Year	NPC	EPC	DRC
BASMATI (Punjab)			
2006-07	0.80	0.66	0.66
2007-08	0.52	0.43	0.32
2008-09	0.70	0.62	0.33
2009-10	0.72	0.63	0.55
IRRI (Punjab)			
2006-07	0.94	0.84	1.08
2007-08	1.42	1.82	1.08
2008-09	0.86	0.81	0.45
2009-10	1.01	1.02	1.00
IRRI (Sindh)			
2006-07	0.98	0.95	0.74
2007-08	1.48	1.71	0.74
2008-09	0.76	0.71	0.37
2009-10	1.11	1.16	0.73

VIII. FARMERS' GAINS FROM MAJOR CROPS - AN ANALYSIS OF NOMINAL AND REAL PRICES OF WHEAT, SEED COTTON, RICE PADDY AND SUGARCANE

Background The purchasing power of a certain commodity is influenced by the fluctuation in its price in relation to general price level in the economy. Furthermore, such variations in the price also affect the welfare and real income of its producers. To ascertain overtime changes in the purchasing power of the commodity, the nominal prices of the commodity, both support and market, during a specific period are being deflated by the corresponding Consumer Price Index (CPI), the most common measure of inflation in the economy.



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B. Objective of Paper

This paper aims at identifying the price as one of the factors that determine the real returns to the farm producers for their commodities. Price of the agricultural commodity is one of the major returns which determine how the farmers respond to fluctuations in it. Further, the present attempt is also aimed to identify areas for research in the field of incomes from the crops sub-sector of the agriculture.

C. Methodology

For the analysis of nominal and real prices of the agricultural commodities, secondary data has been applied covering the period.

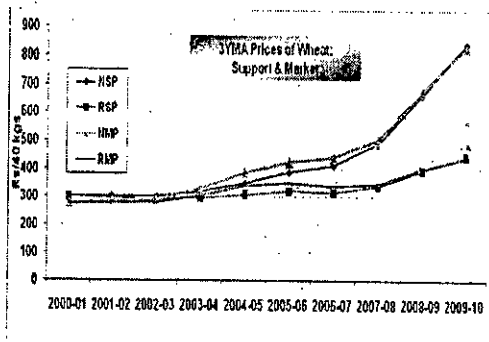
2000-01 to 2010-11. For wheat enterprise, the period covered is 2000-01 to 2009-10, mainly for lack of market prices for the year 2010-11, as the harvesting season is not yet complete. Prices for the year 2000-01 have been taken as the benchmarks (base year). To smooth out short term fluctuations, a simple three-year moving average has been constructed, which provides a fairly medium term trend in the prices.

D. Findings of the Discussion:

Generally a real variable, such as the real income, is one where the effects of inflation have been factored in, while a nominal variable is one where the effects of inflation have not been accounted for. In the following pages, prices of the agricultural commodities have been analyzed in terms of nominal and real value, which helps finding out how much farmers have been getting back for their agricultural produce.

1. Wheat

Being the largest crop of the country, wheat contributes 18 per cent to the value added in agriculture and about 4 per cent to GDP. During the decade ending 2009-10, wheat production has increased @ 2.1 per cent per annum. After 2008-09, Pakistan has become self sufficient in wheat. For its importance both for the country's economy at macro level and farmer's income at micro level and to reduce the uncertainty and price risk in wheat farming and to ensure food security in the country, the government annually reviews the support price of wheat. This intervention also sends signals for the price in the open market, thus influencing the returns to the producers from the crop.



1.1 Support price

The price of wheat in nominal terms, which remained constant in initial three years, has evidenced an increasing trend during the later years, thus giving a cumulative push of 217 per cent over the base year

2000-01. The variation in CPI during the period was evidenced at 112 per cent. Resultant change in the real value of crop has evidenced an upward surge of 49 percent over the base year. As a result of constant nominal price of wheat in early 3 years, the real value of wheat price fell short of base year in 2001-02 and 2002-03, adversely affecting the income of wheat growers. Otherwise, the real value of wheat produce mostly remained above the base year, thus paying lucrative prices to the growers.

The support price of wheat was enhanced from Rs 625 per 40 kgs in 2007-08 to Rs 950 in 2008-09; 52 per cent addition in the nominal value. The price remained unchanged for the year 2009-10 while the CPI evidenced a 21% change upward, thus forcing the real value of the crop to drop by 10 percent.

1.2 Market price

In an unlikely way, the market price of wheat in nominal terms was observed below the support price during initial two years, which indicates that support price was a step in right direction to ensure minimum returns to the farmer for this enterprise. For the remaining period till 2008-09, nominal market price remained above the nominal support price. For this period, the real market price also remained relatively above the real support price, thus inducing the farmers to stay with the commodity.

However, due to prevalence of a high inflationary trend, the real income did not match with the nominal in any of the years. In some of the years, rather it dropped over the previous year like, in 2005-06, 2006-07 and 2009-10.

2. Seed Cotton

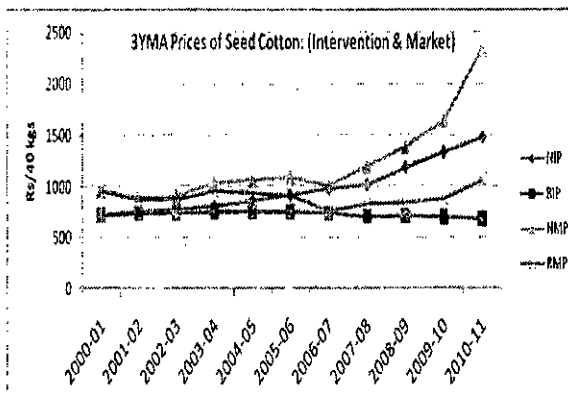
Intervention price of seed cotton is reviewed by the government well before sowing time, mainly with the purpose to regulate the market in the light of prevailing situation and the economic priorities.

2.1 Intervention price of seed cotton

Nominal intervention price of Seed Cotton during the period 2000-01 to 2010-11 indicates a cumulative increase of 102 per cent, from Rs 725 per 40 kgs in 2000-01 to Rs 1465 in 2008-09, which remained unchanged for the following two years.

During the same period, the cumulative CPI has spiraled by 145 per cent. Consequently, the real intervention price of Seed Cotton, which for 2008-09 was Rs 763 per 40 kgs, 5.2 per cent increase over the real price of Rs 725 per 40 kgs in the base year, started

a declining trend continuously to Rs. 690 and 598, respectively for 2009-10 and 2010-11. Hence, keeping the nominal intervention price stagnant for following two years caused losing more than one-fifth of real value of the commodity over that of 2008-09, while 17 percent against the base-year. To maintain the real price at 2008-09 level, the nominal price should have been at the level of Rs. 1869 per 40 kgs.



During the whole period, the real price of the commodity peaked at Rs 763 per 40 kgs during 2008-09. However, the price evidenced a sliding trend and dipped to the lowest ebb for the whole period under consideration, even below the base year level (Rs 598 per 40 kgs in 2010-11), mainly for keeping the intervention price unchanged for the last two years.

2.2. Market prices of seed cotton

In a similar fashion but with a relatively faster way, the nominal market price of seed cotton, averaging at Rs 957 per 40 kgs for 2000-01

crop, has risen to Rs 3552 per 40 kgs in 2010-11, indicating an overall surge of 271 per cent, in the main producing area markets of the Punjab. Deflating against the cumulative increase in CPI by 145 per cent, the real market price has increased over the base-year level by 52 per cent. In the meanwhile, the real market price has experienced fluctuations, touching the lowest level of Rs 726 per 40 kgs in 2004-05 and the highest of Rs 1451 per 40 kgs in 2010-11.

In all the crop years except 2004-05, the market prices of seed cotton have ruled higher than the intervention price fixed by the government. The year 2003-04 was a significant year for the growers in real terms as the real market price jumped to Rs 1227 per 40 kgs second highest after 2010-11. However, in the immediate next year of 2004-05, the market price declined to Rs 885 per 40 kgs, showing 35 per cent erosion over the last year and 4 per cent over the intervention price. After that the market prices of seed cotton showed a rising trend and remained above the fixed intervention price.

For 2010-11 crop, the nominal market price averaged at Rs 3552 per 40 kgs, the highest ever market price for the whole period under study. The real value of the crop improved over the last year by 15 per cent. It may be noted that the real value of seed cotton remained much lower against the base year during the period under review except 2003-04 and 2010-11. This indicates that over the years, cotton farmers have lost in terms of real economic returns from the crop. However, the comparative analysis of real value of both the intervention and market prices reveals that market forces have paid favourable returns to the farmers.

3. Rice Paddy

Indicative prices of Basmati and IRRI paddy are annually reviewed and announced by the government as a policy tool to help maintain a balance both for the producers' and consumers' interests.

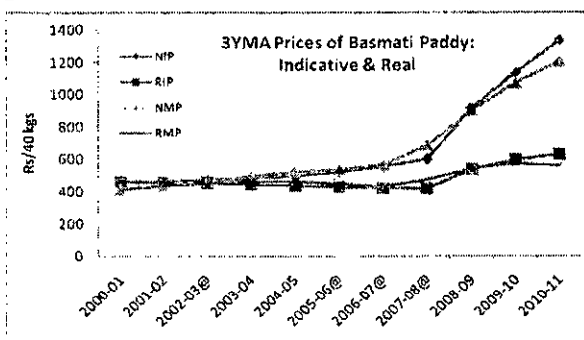
These prices are announced well before sowing time enabling the rice growers to opt for area for rice sowing.

To ascertain overtime changes in the purchasing power of basmati and IRR1 paddy, the nominal Indicative and market prices of these varieties during 2000-01 to 2010-11 crops were deflated by the Consumer Price Index (CPI), the most common measure of inflation.

3.1 Basmati paddy {Punjab}

3.1.1 Indicative price

During the decade of 2000-01 to 2010-11, the nominal Indicative price of Basmati paddy, reflects an overall increase of 172 percent i.e from Rs. 460 per 40 Kgs in base year to Rs. 1250 per 40 kgs in 2010-11. During the same period, the CPI has surged by 145 percent. Consequently, the real support price of Basmati paddy in 2010-11 crop year, estimated a Rs. 511 per 40 kgs in terms of base-year prices. However, the real support price has experienced unsteadiness, during the period under review touching the lowest level of Rs. 412 during 2006-07 while the highest level of Rs. 782 was recorded in 2008-09. Real value of Indicative price did not maintain the base year level for the period till 2007-08, which reflects that the increase in the nominal price was not recommended on the basis of inflationary trend, thus resulting into erosion of purchasing power of the crop during that period.



3.1.2. Market price

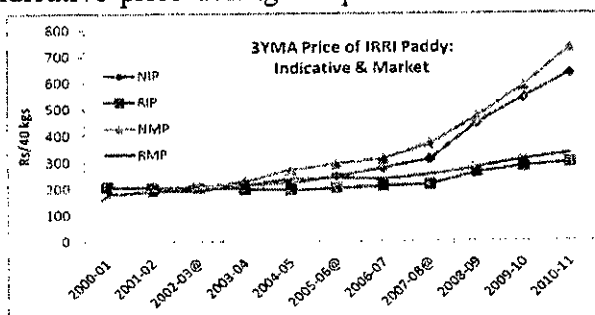
Market price of Basmati paddy has evidenced 223 % increase, in nominal terms, against the base year while its real value improved only by 32 %. The major reason for this slow increasing trend in the real purchasing power of the crop is the 145 % increase in general inflation observed during the same period.

For the entire period under review, the real market price remained above the base year level except in 2005-06, which indicates that market prices have been giving more benefits to the farmer against the indicative price. The year 2008-09 proved as the best crop season for the rice growers in terms of real market prices, as they fetched the highest real price of Rs. 616 per 40 kgs, in terms of 2000-01 prices.

3.2 IRRI-6 paddy {Sindh}

3.2.1 Indicative price

IRRI-6 paddy's Indicative price during the period under review, in nominal terms, reflects a cumulative surge of 193 per cent i.e from Rs. 205 per 40 kgs in base-year to Rs.600 per 40 kgs in 2010-11. With a 145 increase in CPI, the real Indicative price in 2010-11 crop year registered at Rs. 245 per 40 kgs in terms of 2010-11, showing an improvement of 20 percent over the corresponding price of Rs.205 for the 2000-01 crop. However, the real value of Indicative price has experienced many fluctuations, during the period under review. The



highest level of Rs. 365 was recorded in 2008-09 while lowest level of Rs. 189 observed in 2004-05.

3.2.2. Market prices

In Sindh, the nominal market price of IRRI-6 paddy, averaging at Rs. 180 per 40 kgs during the post harvest season of 2000-01, has spiraled to Rs 935 per 40 kgs in 2010-11 crop year, indicating overall increase of 419 percent. For the increase in CPI by 145 per cent, the consequent increase in the real market price of IRRI-6 paddy is observed at 112 % i.e from Rs. 180 in base year to 382 per 40 kgs in 2010-11.

For the major part of the period, the market prices of IRRI-6 paddy ruled higher than Indicative price fixed by the government, except 2000-01, 2005-06 and 2008-09.

4. Sugarcane

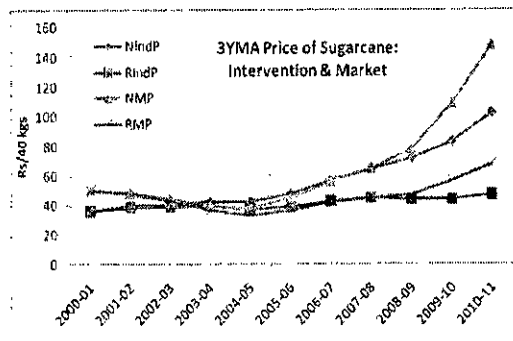
4.1 Indicative price of sugarcane (Punjab)

Value of sugarcane, in the Punjab, in terms of nominal indicative price, reflects a cumulative increase of 257 per cent from Rs 35 per 40 kgs in 2000-01 to Rs 125 in 2010-11. A 145 per cent cumulative enhancement in CPI has reduced the real value of sugarcane for 2010-11, worked at Rs 51.05 per 40 kgs, showing a merely 42 per cent increase over the real price of Rs 35 in 2000-01 crop. Real indicative price, during the whole period, has been experiencing fluctuations with lowest level of Rs 33 per 40 kgs in 2004-05 and the highest of Rs 51.05 per 40 kgs for 2010-11 crop.

4.2. Market price of sugarcane (Punjab)

Likewise, the nominal market price has also experienced a significant increase over the base year from Rs 45 per 40 kgs in 2000-01 crop to Rs 175 in 2010-11. For the 145 per cent escalation in cumulative CPI, the real average market price of the crop has worked out at Rs 71.48 in 2010-11, showing an improvement of 59 per cent over the base year.

Significant to note is that the market price fell short of indicative price announced by the Punjab Government in the years of 2001-02 to 2003-04, adversely affecting the purchasing power of the growers. For the year 2010-11, the nominal market price averaged at Rs 175 per 40 kgs, 17 per cent above the last year price which increased the real market price to improve @ 1 per cent over the 2009-10 crop season.

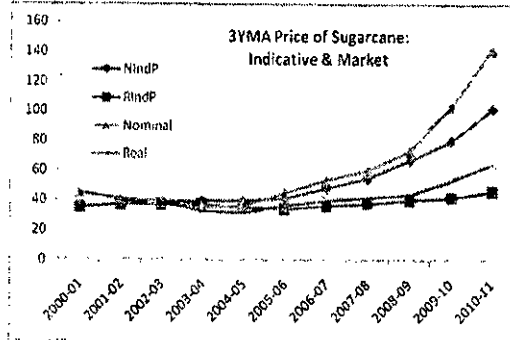


4.3. Indicative price of sugarcane (Sindh)

The nominal indicative price of sugarcane in Sindh during the period 2000-01 to 2009-10 has reflected a cumulative increase of 247 per cent from Rs 36 per 40 kgs in 2000-01 to Rs 125 per 40 kgs in 2010-11. During the same period, the cumulative CPI has risen by 145 per cent. Consequently, the real indicative price of sugarcane for 2010-11 at Rs 51.05 per 40 kgs showed a surge of 42 per cent over 2000-01 crop. The real indicative price of sugarcane during the period has experienced ups and downs, touching the lowest level of Rs 35 per 40 kgs in 2004-05 and the highest level of Rs 51.05 per 40 kgs in 2010-11 crop.

4.4. Market price of sugarcane (Sindh)

Sugarcane's nominal market price, averaging at Rs 50 per 40 kgs for 2000-01 crop, has risen to Rs 185 per 40 kgs in 2010-11, indicating an overall increase of 270 per cent in the main sugarcane producing districts of the province. During the same period, the cumulative CPI has spiraled by 145 per cent. Consequently, the real market price of sugarcane has stood at Rs 75.56 per 40 kgs in 2010-11, showing an improvement of 51 per cent over the base year. The real market prices of sugarcane have followed several ups and downs during the period but remained below the base year level, except during last three years 2008-11.



Market prices remained below the prices announced by the Government of Sindh during 2002-03 to 2004-05, which adversely affected the real income of the growers. For 2010-11 the nominal market prices of sugarcane have averaged at Rs 185 per 40 kgs, 48 per cent above the indicative price, and the highest market price during the period under review.


E. Conclusion:

In this paper an attempt has been made to examine how the prices of the major agricultural commodities reflect changes in real terms and tend to pay back to the producers for their investments.

In aggregate, market prices have ruled above the intervention/support/ indicative prices announced by the government(s), both Federal and Provincial. It is also observed that, while the nominal prices, both support and market, showed an encouraging trend, however, their real value did not give relative returns, thus eroding real benefits to

the farmers. Such a trend in long term may tend to increase negative terms of trade in agriculture, oftenly discussed by the economists.

Among other important factors, the prices are much more effective tool to influence farmers' decisions regarding allocation of resources. Keeping in view this critical important factor, governments and policy makers should pay much attention and regulate the prices of the commodities mainly to ensure benefits of the producers and the consumers alike. Although prices are usually announced, in some cases, traders and large farmers' bodies try to influence decisions of the government and thus prices are not announced regularly or well before the sowing time, which affects the whole crop and particularly the small farmers.

A handwritten signature in black ink, appearing to read 'Abdul Karim', with a long horizontal stroke extending to the right.

F. Annexes

Table- 1: Nominal and Real Prices of Wheat:

Crop Year	Consumer Price Index (CPI)	Support Prices of Wheat		Market Prices of Wheat	
		Nominal	Real	Nominal	Real
	2000-01=100	Rs/ per 40 Kgs			
1	2	3	$4=(3/2) \times 100$	5	$6=(5/2) \times 100$
2000-01	100.00	300	300.00	275	275.00
2001-02	103.54	300	289.74	292	282.02
2002-03	106.75	300	281.03	305	285.71
2003-04	111.63	350	313.54	388	347.58
2004-05	121.98	400	327.92	471	386.13
2005-06	131.64	415	315.25	420	319.05
2006-07	141.87	425	299.57	432	304.50
2007-08	158.90	625	393.33	659	414.73
2008-09	191.90	950	495.05	939	489.32
2009-10	212.44	950	447.19	902	424.59

Sources: a) PJAE, 2008, API.

b) Wheat Policy Analysis Reports (various issues), API.

c) For CPI, Economic Survey of Pakistan: 2009-10.

Table-2: Nominal and Real Prices of Seed Cotton (Phutti) at Intervention Price: 2000-01 to 2010-11

Crop year	Nominal Intervention Price	Consumer Price Index(CPI)	Real Intervention Price
	Rs per 40 kgs	2000-01=100	Rs per 40 kgs
1	2	3	4=(2/3)x100
2000-01	725	100.00	725
2001-02	780	103.54	753
2002-03	800	106.75	749
2003-04	850	111.63	761
2004-05	925	121.98	758
2005-06	975	131.18	741
2006-07	1025	141.87	722
2007-08	1050	158.90	661
2008-09	1465	191.90	763
2009-10	1465*	212.44	690
2010-11	1465*	244.84	598

Note: The Intervention Price of Seed Cotton relates to the group of most commonly grown varieties like, Niab-78, CIM-496, CIM-473, CIM-506, CIM-499, CRIS-9, CRIS-134, S-467, Shahbaz and Haridost, etc.

*: Recommended by API but not announced.

Sources: 1. For 2000-01 to 2009-10: Pakistan Economic Survey, 2009-10.

2. For 2010-11: Federal Bureau of Statistics, Islamabad.

Table-3: Nominal and Real Prices of Seed Cotton (Phutti) at Market Price: 2000-01 to 2010-11

Crop year	Nominal Market Price	CPI	Real Market Price
	Rs per 40 kgs	2000-01=100	Rs per 40 kgs
1	2	3	4=(2/3)x100
2000-01	957	100.00	957
2001-02	813	103.54	785
2002-03	921	106.75	863
2003-04	1370	111.63	1227
2004-05	885	121.98	726
2005-06	1017	131.18	773
2006-07	1110	141.87	782
2007-08	1468	158.90	924
2008-09	1557	191.90	811
2009-10	1910	212.44	918
2010-11	3552	244.84	1451

Note: Market prices are the average monthly wholesale prices of seed cotton during post-harvest period in major producing area markets of the Punjab.

- Sources: 1. Pakistan Economic Survey, 2009-10.
 2. For 2010-11: Federal Bureau of Statistics, Islamabad.
 3. Directorate of Economics and Marketing (E&M) Punjab, Lahore.
 4. Cotton (phutti) Policy Analysis Reports (various issues), API.

Table- 4 : Nominal and Real Prices of Basmati Paddy at Indicative and Market Prices: 2000-01 to 2010-11 Crops

Crop year	Nominal Prices		Consumer Price Index (CPI)	Real Prices	
	Indicative	Market		Indicative	Market
1	2	3	4	5=(2/4)x100	6=(3/4)x100
	---- Rs per 40 kgs ----		1990-91=100	---- Rs per 40 kgs ----	
2000-01	460	410	100.00	460.00	410.00
2001-02	460	470	103.54	444.27	453.93
2002-03@	485	502	106.75	454.33	470.26
2003-04	485	505	111.63	434.47	452.39
2004-05	510	560	121.98	418.10	459.09
2005-6@	560	537	131.18	426.89	409.36
2006-07@	585	594	141.87	412.35	418.69
2007-08@	650	920	158.90	409.06	578.98
2008-09	1500	1183	191.90	781.66	616.47
2009-10	1250	1097	212.44	588.40	516.38
2010-11	1250	1325	244.84	510.54	541.17

Sources: i) Economic Survey of Pakistan 2009-10.

ii) Directorate of Agriculture Economics and Marketing (E&M), Punjab, Lahore.

Notes: 1. The market prices are the average wholesale prices during the post harvest period i.e. October- January in important producer area markets in the Punjab.

@. Recommended price of the crop by API, as the Indicative price was not announced

Table-5: Nominal and Real Indicative and Market Prices of IRRI-6 Paddy: 2000-01 to 2010-11 Crops

Crop year	Nominal prices		Consumer price Index(CPI)	Real Prices	
	Indicative	Market		Indicative	Market
1	2	3	4	$5=(2/4)\times 100$	$6=(3/4)\times 100$
	---- Rs per 40 kgs ---		1990- 91= 100	---- Rs per 40 kgs ----	
2000-01	205	180	100.00	205.00	180.00
2001-02	205	205	103.54	197.99	197.99
2002-03@	215	218	106.75	201.41	204.22
2003-04	215	257	111.63	192.60	230.22
2004-05	230	338	121.98	188.56	277.09
2005-06@	300	290	131.18	228.69	221.07
2006-07	306	310	141.87	215.69	218.51
2007-08@	325	509	158.90	204.53	320.33
2008-09	700	585	191.90	364.77	304.85
2009-10	600	666	212.44	282.43	313.50
2010-11	600	935	244.84	245.06	381.88

- Sources:** 1. Directorate of Agriculture Farms & Major Crops Development, Sindh, Hyderabad.
2. Rice (Paddy) Policy Analysis Report (various issues), API.
- Notes:** The market prices are the average wholesale prices during the post harvest period i.e. October-January in important producer area markets of IRRI in Sindh.

Table-6: Nominal and Real Indicative Prices and Market Prices of Sugarcane Realized by the Growers in the Punjab: 2000-01 to 2010-11

Crop year	Nominal Prices		Consumer Price Index (CPI)	Real Prices	
	Indicative *	Market**		Indicative	Market
	---- Rs per 40 kgs ----		2000-01=100	---- Rs per 40 kgs ----	
1	2	3	4	$5=(2/4) \times 100$	$6=(3/4) \times 100$
2000-01	35	45	100.00	35.00	45.00
2001-02	40	37	103.54	38.63	35.73
2002-03	40	35	106.75	37.47	32.79
2003-04	40	34	111.63	35.83	30.46
2004-05	40	40	121.98	32.79	32.79
2005-06	45	60	131.18	34.30	45.74
2006-07	60	60	141.87	42.29	42.29
2007-08	60	60	158.90	37.76	37.76
2008-09	80	100	191.90	41.69	52.11
2009-10	100	150	212.44	47.07	70.61
2010-11	125	175	244.84	51.05	71.48

Notes: * Indicative price of sugarcane at mill-gate fixed by the Provincial Government.

** Prices of sugarcane actually realized by the growers during API's field survey.

Sources: 1. Economic Survey of Pakistan: 2009-10.

2. Various issues of API's Price Policy Papers for Sugarcane.

Table-7: Nominal and Real Indicative Prices and Market Prices of Sugarcane Realized by the Growers in Sindh: 2000-01 to 2010-11

Crop year	Nominal Prices		Consumer Price Index (CPI)	Real Prices	
	Indicative *	Market **		Indicative	Market
	---- Rs per 40 kgs ----		2000-01=100	---- Rs per 40 kgs ----	
1	2	3	4	5=(2/4)x100	6=(3/4)x100
2000-01	36	50	100.00	36.00	50.00
2001-02	43	47	103.54	41.53	45.39
2002-03	43	36	106.75	40.28	33.72
2003-04	41	35	111.63	36.73	31.35
2004-05	43	41	121.98	35.25	33.61
2005-06	60	60	131.18	45.74	45.74
2006-07	67	67	141.87	47.23	47.23
2007-08	67	67	158.90	42.16	42.16
2008-09	81	100	191.90	42.21	52.11
2009-10	102	160	212.44	48.01	75.32
2010-11	125	185	244.84	51.05	75.56

Notes: * Indicative price of sugarcane at mill-gate fixed by the Provincial Government.

** Prices of sugarcane actually realized by the growers reported during API's field survey.

Source: Sugarcane Policy Analysis Report (various issues), API.

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IX. TOBACCO FARMING IN PAKISTAN

Abstract The study was intended to evaluate the economic significance of the tobacco farming in the country which is an important cash crop of Pakistan. Being a highly labour intensive crop, approximately more than 10 million peoples are involved in its cultivation, tobacco industry and its trading. It is the only sector in the country where the tobacco industry makes prompt payments to the tobacco growers and contributes a hand some amount in the government revenue in form of development cess, central excise duty and sale tax. However, extension work for the development of tobacco & discouragement of unlawful trade is needed



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Assistant Chief, API

B. Introduction

Tobacco is a leafy annual plant, originally grown in South and Central America, but now cultivated throughout the world. Tobacco is an agricultural product processed from the fresh leaves of tobacco plants in the Nicotiana. Its most common usage is for smoking in the form of a cigarette or cigar. Tobacco is commercially available in dried, cured, and natural forms.



In Pakistan two types of tobacco are grown: 1) Indigenous variety; II) Virginia variety. The origin of former type of tobacco dates back to the early 1600's when it was introduced in this part from Europe by the Portuguese. The later type, however, is of recent derivation and be in accord with the creation of Pakistan when FCV tobacco was grown on a limited scale during 1948. Pakistan is now producing both types of tobacco, namely *Nicotiana tabacum* and *Nicotiana Rustica*.

Tobacco is the only crop grown in Pakistan with an average yield of 2097 kgs/hect. (FAO STAT 2008) is well above (20 %) the world average yield of 1752 kgs/hectare.

From economic point of view, tobacco is the topmost important all over the world. Likewise, in Pakistan tobacco growing, manufacturing, distribution and retailing employs over one million persons directly or otherwise. Manufacturing takes up the highest number of persons — 35 per cent followed by 33 per cent by growing and 32 per cent in distribution and retail. Tobacco & its manufactures, contributed Rs 46.70 billion in the GDP in 2008-09. It is the highest contributor of excise duty in govt. revenue compared to others agriculture produces. Over 5 per cent of all taxes collected in the country come from the tobacco industry.

C. Usage of Tobacco

Tobacco is consumed in two ways, either by smoking or chewing. While smoking the following tobacco products are consumed: Cigarette, Cigar, Bidi (Hand rolled, leaf wrapped country cigarettes) and Supari, Gutkha, Pan etc. are the products that are chewed. Due to diverse climatic conditions every type of tobacco is grown in Pakistan. Almost 90% of area is accounted for by *Nicotina Tobacum* and 10% by *Nicotina Restica*. Only two third of the tobacco output in the country is Flue cured Virginia (FCV) variety, suitable for cigarette manufacturing.

Tobacco use in Pakistan is common and one of the highest in the South East Asian Region. There are about 22 million smokers in the country and 55% of the households have at least one individual who smokes tobacco. As a result Pakistan accounts for a sizeable proportion of the cigarettes consumed in South Asia.

The different types of tobacco produced in various parts of the country with their common usages are given below:

Types of tobacco	Botanical species	Popular name	Area where grown	Usage
Flue-Cured	Tabacum	Virginia	KPK/Punjab	Cigarettes
Light Air-Cured	Tabacum	Burely	Swat	Cigarettes
Light Sun-Cured	Tabacum	Hookah	Punjab/Sindh	Hookah
Dark Air-Cured	Tabacum	Dark Air-Cured	Punjab	Cigarettes, Biri
Semi-Oriental	Rustica	White Patta	KPK	Chewing/ Hooka
Dark Sun-Cured	Rustica	Naswar	KPK/Punjab/Baloch.	Snuff/Cigarettes

Tobacco water is a traditional organic insecticide used in domestic gardening. Tobacco dust can be used similarly. It is produced by boiling strong tobacco in water, or by steeping the tobacco in water for a longer period. When cooled the mixture can be applied as a spray, or 'painted' onto the leaves of garden plants.

Topical tobacco paste is sometimes recommended as a treatment for wasps, hornets, fire ant, scorpions, and bee stings. An amount equivalent to the contents of a cigarette is mashed in a cup with about a 0.5 to 1 teaspoon of water to make a paste and applied to the affected area.

D. Transplanting

Tobacco seeds are scattered onto the surface of the soil. Seedbeds are fertilized with wood ash or animal manure. Seedbeds are then covered with branches to protect the young plants from frost damage. These plants are left to grow until around April.

After the plants have reached a certain height, they are transplanted into fields. This is done by making holes in the tilled earth and then place the small plant in the holes. Various mechanical tobacco planters were invented during late 19th and early 20th century to automate this process.

E. Topping

Topping of tobacco is the removal of the terminal bud with or without some of the small top leaves just before or after the appearance of the flower head. Immediately after topping, the buds in the axis of the leaves, which otherwise remain dormant, become active and put forth shoots known as suckers. Since, like flowers, the suckers also become a drain on the nutrients of the plant, these are also removed. **The removal of these suckers is called suckering or de-suckering.** Topping reduces lodging, both by removing the seed head and by inducing development of stronger roots. It also increases the leaf area of the upper 1/3 of the plant and hastens leaf maturity. Topped plants have turgid leaves and can withstand greater moisture stress than non topped plants. For good returns, only as many leaves should be left on the

plant as are capable of maturing. For maximum yield under a given set of environmental conditions, a certain minimum number of leaves per hectare are required, irrespective of whether this number is obtained by high plant population and low topping or low plant population and high topping. Suckering is done either manually or by applying chemicals (sukericides).

F. Harvesting

Tobacco is harvested in one of two ways. In the oldest method, the entire plant is harvested at once by cutting off the stalk at the ground with a sickle. In the nineteenth century, bright tobacco began to be harvested by picking individual leaves off the stalk as they ripened. The leaves ripen from the ground upwards, so a field of tobacco may go through several "pickings" before the tobacco is entirely harvested, and the stalks may be turned into the soil or take away to use as fuel/other purposes.

G. Curing

Cut plants or pulled leaves are immediately transferred to tobacco barns, where they will be cured. Curing methods vary with the type of tobacco grown, and tobacco barn design varies accordingly. Air-cured tobacco is hung in well-ventilated barns and allowed to dry over a period of four to eight weeks. Fire-cured tobacco is hung in large barns where fires of hardwoods are kept on continuous or intermittent low burn and takes between 5-6 days, depending on the process and the tobacco.

After tobacco is cured, it is moved from the curing barn into a storage for grading and making bales for sale.

H. Cigarette Industry in Pakistan

There are 12 tobacco companies having 15 cigarette manufacturing factories with an installed capacity of 96.187 billion cigarette pieces per annum of three shifts. Out of these, 10 factories are located in Khyber Pakhtunkhwa with an installed capacity of 36.737 billion pieces per annum. One factory with an annual installed capacity of 12.100 billion pieces is located in Sindh, and 4 factories are located in the Punjab with an installed capacity of 47.350 billion pieces per annum.

I. Pakistan Tobacco Board

In view of the economic importance of tobacco, The Pakistan Tobacco Board was established in 1968. Before the establishment of Board, the balance of trade was unfavorable, but now our exports outstripped imports. The Board has its research stations at Mardan, Mansehra, Gujrat, Okara and Sahiwal with a zonal office at Lahore and head office at Peshawer. The purpose of these stations is to conduct research, solve local problems and convey information to the growers through the extension staff. Besides improving the quality and quantity of tobacco, the Board is extending the cultivation of tobacco to new suitable areas of the country.

J. Marketing of Tobacco

The tobacco marketing in Pakistan is executed in direct purchase system. The production and marketing of tobacco is keeping up under Martial law Order-487. After promulgation in 1985, a number of amendments have also been introduced. MLO-487 empower that the weighted average price for the tobacco crop shall not be lowered than the previous year price. MLO-487 has been played a great positive role to safeguard the interest of the growers. The law obligates manufacturers to stick to

their conveyed targets and purchase their indicated quantity irrespective of changed circumstances, if any, at the time of tobacco purchase.

K. Purchasing of Tobacco

As per Rule No 8 of the Tobacco Marketing Control Rules 1993, no Tobacco Company or tobacco dealer shall close its purchase depots or business premises till such time it has purchased its full targeted demand of various types of tobacco.

For regulation of tobacco marketing, the Pakistan Tobacco Board (PTB), Ministry of Commerce ascertains the requirement of various tobacco companies for different types of tobacco from the ensuing crop, and publicizes the same at the time when nurseries are being sown. The underlying idea is to create an awareness of the manufactures requirements among the growers so as to aim at a crop size bearing a relationship with the demand. The tobacco companies are bound to execute agreement with the tobacco growers on prescribed form for their total requirements of both Virginia as well as Burley type of tobacco.

The grading and pricing by the tobacco companies are supervised by the Vigilance Committee operating in each purchase depot during the marketing season.

1. Flue-Cured Virginia (FCV) Tobacco

Upon the leaf maturing, leaf picking is done by the farmers on plant position basis and the harvested leaves are cured in flue-curing barns. After completion of curing, the cured leaf is graded

into 17 grade prescribed by the PTB which are based on plant position i.e. bottom, middle and top. After grading it is offered by the growers at the purchase centers of the tobacco companies for sale. Tobacco offered for sale is appraised by the company's buyers, assigned grades and given prices not below the minimum ones notified through the PTB for each grade.

The stocks purchased at buying courts are shipped for re-drying. The re-dried and processed tobacco is thereafter either used in domestic industry for manufacture of cigarette or for export purposes.

2. Dark Air-Cured (DAC) Tobacco

When the DAC crop matures, the leaf picking is done by the farmer on plant position basis and the harvested leaves are cured on rocks in sheds. After completion of curing the cured leaf is graded into seven grades prescribed by PTB which are based on plant position i.e. bottom, middle and top. After grading it is offered by the growers at the purchase centers of the tobacco companies for sale. The tobacco offered for sale is appraised by the company buyer, assigned grade and given prices not below minimum ones notified by the Federal Government for each grade.

3. White Patta (WP) Tobacco

White Patta tobacco is grown by the growers with out any agreements. The tobacco companies purchase only limited quantities of this type of tobacco from the growers. While rest of white patta tobacco (70-75 %) goes to the mandis/auction floors

where it is auctioned and picked up by the mandi walas, agents and suppliers. Some quantity out of the purchased stock is bought from the agents by the retail dealers from all parts of the country for consumption through chillum, niswar, gazari and bidis and some of it is lifted by the tobacco companies in prized (processed) form from the tobacco suppliers/dealers against proper agreements.

4. Burley Tobacco

When the crop matures, the leaf picking is done by the farmers on plant position i.e. bottom, middle and top. After grading, it is offered by the growers at the purchase centers of the tobacco Companies for sale. The tobacco offered for sale is appraised by the Company's buyer assigned grade and give prices according to the grade.

5. Hukkah Tobacco

The crop when matures, is harvested and after drying in the field for 2 days, cured in pits. After 7-8 days tobacco plants are taken out of the pit and leaves are detached from the stalk. These leaves are twisted in the form of ropes and dried. The ropes having uniform moisture content (about 13-14%) and sweet aroma are packed (about 40Kg/bag) in gunny nags. Tobacco Dealers from big cities of the Punjab purchase hookah tobacco directly from the growers. Some quantity is also purchased by village level small agents and brokers.

6. Naswar Tobacco

The crop when matures is harvested and leaves are detached from the stalk next completed within one week. The green tobacco produced by above mentioned curing technique fetches maximum price being the best naswar tobacco. Naswar tobacco is purchased by the retail dealers from all parts of the country for consumption through chillum, naswar and snuff.

L. Federal Excise Duty and Sale Tax on Tobacco and its Manufactures: 2004-05 to 2008-09

A handsome amount in form of federal excise duty and sale tax is collected by the government on tobacco and its manufactures which is given in Table-1 below:

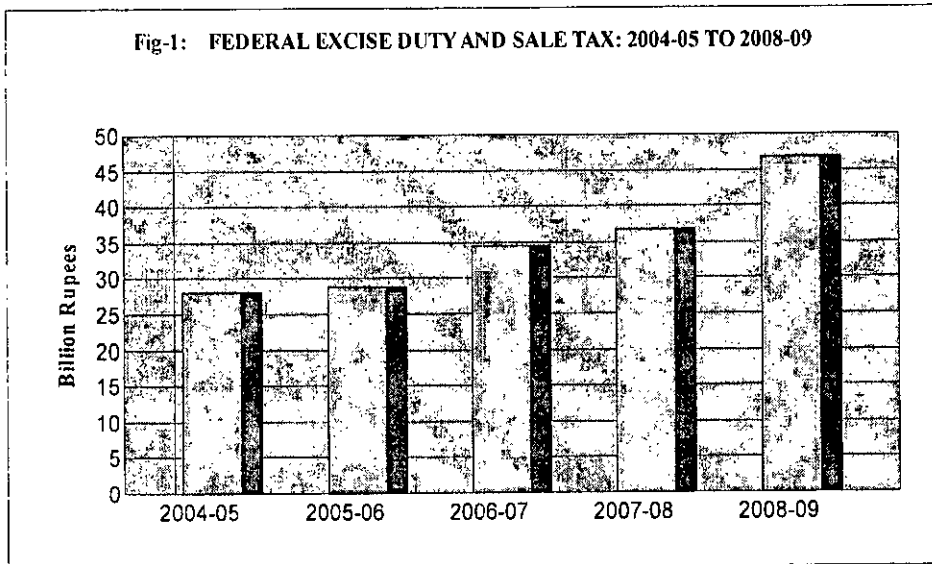
Table-1: Federal Excise Duty and Sale Tax Realized on Tobacco and its Manufactures: 2004-05 to 2008-09

Billion Rupees

Particular	Rate of Central Excise Duty	04-05	05-06	06-07	07-08	08-09
i) Tobacco used manufacture cigarette	i) Rs.2.2046 per kg.	0.27	0.21	0.52	0.48	0.25
	ii) Rs 1.70 per kg w.e.f. 1-7-1980					
	iii) Rs 2.20 per kg w.e.f. 7-6-1990					
	iv) 20 % ad-valoruem per kg w.e.f. 9-6-1994					
ii) Tobacco used for other purpose than cigarette.	Rs. 1.323 per kg. Exempted from excise duty w.e.f. 1-7-1997					
iii) Cigarette	Excise duty & sale tax levied according to the prices of cigarette	27.82	28.65	33.94	36.33	46.44
	Total	28.08	28.86	34.46	36.81	46.70

Source: Pakistan Tobacco Board, Ministry of Commerce, Peshawar.

Tobacco is the smallest crop in terms of area among the crops cultivated in Pakistan, accounting for 0.21 per cent of the total cropped area under cultivation. However, its contribution in the govt. revenue is the largest one. None other agriculture crop and its manufactures contribute in govt. revenue as tobacco. The revenue collected by the government on tobacco and its manufactures in the form of Federal Excise Duty (FED) and Sale Tax (ST) stood at Rs 46.70 billion in 2008-09. Government revenue from tobacco & its products is portrayed in Fig-1 below:



M. REVIEW OF TOBACCO CROP

1. long-term Changes

Area, yield and production of tobacco during the decade ending 2000-10 is presented in Table-2 below.

Table-2: Area, Yield and Production of Tobacco: 2000-01 to 2009-10 Crops

Year	Punjab	Sindh	KPK	Balochistan	Pakistan
	Area (000. hectares)				
2000-01	17.7	0.2	26.5	1.2	45.6
2001-02	18.5	0.1	29.8	1.0	49.4
2002-03	18.0	0.1	27.2	1.3	46.6
2003-04	17.1	0.1	27.0	1.4	45.6
2004-05	16.6	0.1	32.2	1.6	50.5
2005-06	17.7	0.1	36.5	2.1	56.4
2006-07	17.6	0.1	30.8	2.4	50.9
2007-08	16.6	0.3	32.7	1.8	51.4
2008-09	16.3	0.4	31.1	1.9	49.7
2009-10	17.8	0.2	36.2	1.6	55.8
	Yield (kgs/hectare)				
2000-01	1243	1000	2309	1417	1866
2001-02	1238	2000	2346	1500	1913
2002-03	1217	1000	2364	1462	1893
2003-04	1234	2000	2330	1429	1890
2004-05	1241	2000	2401	1500	1990

Continued.

Year	Punjab	Sindh	KPK	Balochistan	Pakistan
	Yield (kgs/hectare)				
2005-06	1220	1000	2408	1429	1996
2006-07	1222	2000	2539	1417	2029
2007-08	1199	1333	2596	1444	2097
2008-09	1227	1250	2627	1421	2111
2009-10	1315	1500	2599	938	2138
	Production (000 tonnes)				
2000-01	22.0	0.2	61.2	1.7	85.1
2001-02	22.9	0.2	69.9	1.5	94.5
2002-03	21.9	0.1	64.3	1.9	88.2
2003-04	21.1	0.2	62.9	2.0	86.2
2004-05	20.6	0.2	77.3	2.4	100.5
2005-06	21.6	0.1	87.9	3.0	112.6
2006-07	21.5	0.2	78.2	3.4	103.3
2007-08	19.9	0.4	84.9	2.6	107.8
2008-09	20.0	0.5	81.7	2.7	104.9
2009-10	23.4	0.3	94.1	1.5	119.3

Source: Agricultural Statistic of Pakistan, Ministry of Food & Agriculture, 2009-10.

During the decade ending 2009-10, the area, yield and production of tobacco crop at overall basis ranged at 45.6-56.4 thousand hectares of area, 1866-2138 kgs/hectare of yield and 85.1-119.3 thousand tonnes of production.

2. Provincial Shares in Area and Production

Based on three years average (2007-10), annual production of tobacco works out at 110.67 thousand tonnes from an average area of 52.30 thousand hectares (129.24 thousand acres) as given in Table-3.

**Table-3: Provincial Shares in Area and Production of Tobacco:
Average of 2007-08 to 2009-10 Crops**

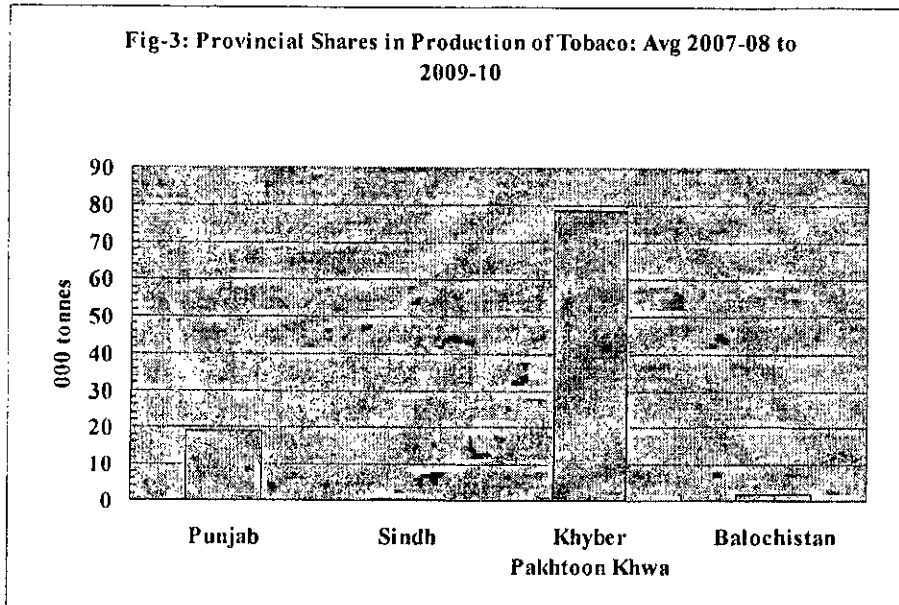
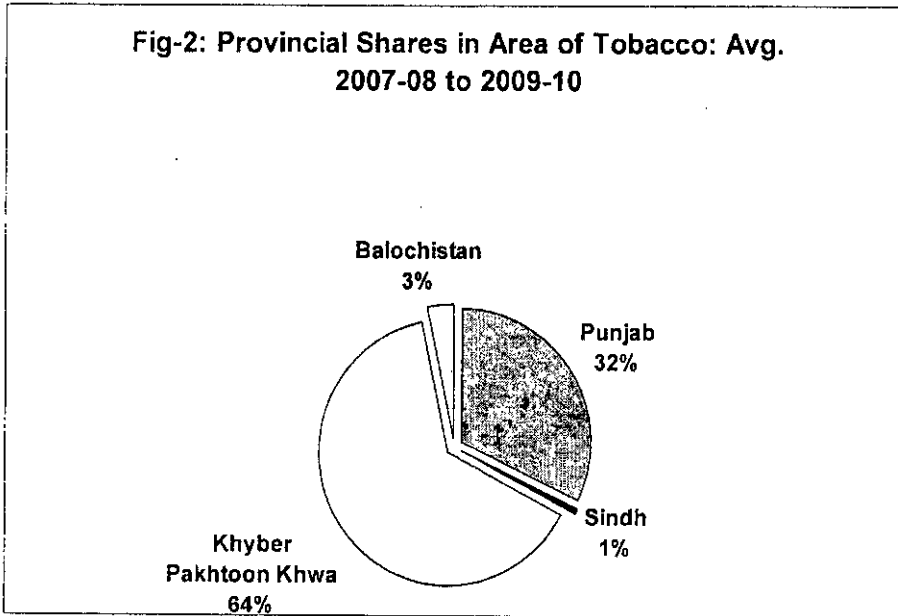
Country	Area		Production	
	000 hectares	Per cent	000 tonnes	Per cent
Pakistan	52.30	100.00	110.67	100.00
Punjab	16.90	32.31	21.10	19.07
Sindh	0.30	0.57	0.40	0.36
KPK	33.33	63.74	86.90	78.52
Balochistan	1.77	3.38	2.27	2.05

Source: Table-2.

It is evident from the Table-3 that the Khyber Pakhtun Khwa (KPK) is the core producing province of tobacco in the country. In the total production of tobacco, the shares of KPK, Punjab, Balochistan and Sindh are 78.52, 19.07, 2.05 and 0.36 per cent respectively.

The provincial shares of Khyber Pakhtun Khwa (KPK), Punjab, Balochistan and Sindh in area under tobacco crops are

63.74, 32.31, 3.38 and 0.57 per cent respectively. Province-wise shares in the area and production are given in Fig-2 and 3.



3 Long-term Changes: 2000-01 to 2009-10

The trends in area, yield and production of tobacco crop during the decade ending 2009-10 is given in Table-4 below:

Table-4: Average Annual Growth Rates of Area, Yield and Production of Tobacco: 2000-01 to 2009-10 Crops

Country/Province	Area	Yield	Production
	-----Per cent per annum----- -----		
Pakistan	1.71	1.61	3.35
Punjab	-0.66	0.20	-0.46
Sindh	9.65	0.67	10.38
KPK	2.79	1.58	4.42
Balochistan	6.63	-2.53	3.94

Note: The growth rates have been worked out by estimating the equation $Y=a(1+r)^x$ through Ordinary Least Squares (OLS) method from the data given in Table-1.

The production of tobacco crop at country level increased @ 3.35 per cent per annum due to increase in yield by 1.61 per cent and expansion in area by 1.71 per cent during the period under reference.

In the Punjab, production has decreased @ 0.46 per cent due to solely decrease in area @ 0.66 per cent per annum though the yield has increased at nominal rate of 0.20 per cent annum.

In Sindh, tobacco production is estimated to rise @ 10.38 per cent per annum due to 9.65 per cent expansion in area and 0.67 per cent rise in yield.

In the Khyber Pakhtunkhwa, the increases in area and yield by 2.79 and 1.58 per cent per annum resulted increase in production by 4.42 per cent per annum.

In Balochistan, tobacco production during the period under reference has recorded an average annual growth of 3.94 per cent only of escalation in area by 6.63 percent since yield has decreased by 2.53 per cent per annum.

N. Cost Of Production of Flue-Cure-Varginaia (FCV) Tobacco

The cost of production (COP) is one of the important factors in price determination of any farm produces. However, its empirical estimation involves a number of conceptual problems and practical difficulties due to wide variations in the use level of inputs, technology adoption and diverse farming practices resulting in varying yield levels of farm productivity.

1. Average Farmers' Cost of Production

The Pakistan Tobacco Board (PTB) carries out an annual field survey to update the cost of production of various types of tobacco through its "**Cost of Production Committee**" comprising representatives of: i) Pakistan Tobacco Board ii) Tobacco Growers iii) Agriculture Policy Institute iv) Provincial Agriculture Extension Deptt., v) M/o Industries and vi) Tobacco Companies.

Due to diverse climatic condition, various types of tobacco are produced in Pakistan. Out of these, FCV tobacco production is overriding and accounts for approximately 72 per cent of the total cigarette types of tobacco. The average farmers' cost of production of FCV tobacco in plain area for the 2009-10 crop, worked out by the Pakistan Tobacco Board, Peshawar from the data and information collected during field survey conducted in the major growing areas of the Khyber Pakhtunkhwa during Sep-Oct. 2010 is summarized in Table-5.

Table-5: Average Farmers' Cost of Production of Tobacco in Khyber Pakhtun Khwa (KPK): 2009-10 Crop

	Items	Unit	Cost estimates
1.	Cost of cultivation including transportation etc.	Rs/hectare	3,08,566
2.	Yield	Kgs/hectare	3352
3.	Cost of production at tobacco company depots/market level	Rs/kg	92.05

The cost of growing one hectare of FCV tobacco in the Khyber Pakhtun Khwa (KPK) in plain area during 2009-10 crop year is worked out to Rs 3,08,566, inclusive of land rent (Table-5). Based on the average yield of 3352 kgs per hectare, the cost of production to harvest and deliver the tobacco at the market/tobacco company depots would be Rs 92.05 per kg.

2. Cost of Major Operations/Inputs of FCV Tobacco in Khyber Pakhtun Khwa (KPK): 2009-10 Crop

The shares of different field operations and farm inputs in the total cost of cultivation of tobacco in the plain area of KPK during 2009-10 crop is presented in Table-6

Table-6: Cost of Major Operations/Inputs of FCV Tobacco: 2009-10 Crop

S. No	Operation/inputs	Average (Rs/hect.)	Per cent share
1	Nursery Raising	6806	2.13
2	Preparation of land	9113	2.85
3	Ridge Making	3107	0.97
4	Manuring	3828	1.20
5	Sowing operation	4231	1.32
6	Plant protection	6244	1.95
7	Ch. Fertilizer including app.	20625	6.44
8	Inter culture	9319	2.91
9	Topping/Suckering	5964	1.86
10	Irrigation	4631	1.45
11	Mark up @ 12 % for 8 month	5909	1.85
12	Barn plastering/Repairing	2176	0.68
13	Cost of curing per barn	16887	

Continued

S. No	Operation/Inputs	Average (Rs/hect.)	Per cent share
14	Total cost of curing	147089	45.95
15	Exp of meal of 2 men for 64 days (128 meals @ Rs 100/meal	12800	6.53
16	Exp. of 3 graders for 3 days per curing	8100	
17	Barn charges on rent for full season	16757	5.23
18	Managerial charges for 8 months	1600	0.50
19	Depreciation	1743	0.54
20	Land lease	50079	15.64
21	Total cost of production	320121	100.00
22	Value of by-product	11555	
23	Net Cost of production	308566	
24	Yield per hectare (Kgs)	3352	
25	Cost of production (Rs/kg)	92.05	

Note: Rounding off figures may result in a slight difference.

The pay out on curing is the salient component in the total cost of production of FCV tobacco for the 2009-10 crop, accounting for 46 per cent. The other leading elements are: land lease (16 %), meal expenses during curing period (7 %), chemical fertilizer including FYM & transportation/application (6 %), barn charges (5 %).

O. Minimum Support Price and Average Weighted Price

1. Minimum support price of tobacco

The government annually fixes and announces minimum support price (MSP) for various types of tobacco. It is the price which ensures the tobacco growers that they would not receive fewer price for their produce than MSP in case of surplus supply of the crop. A number of factors are considered such as:

- Cost of production;
- MSP of last year;
- world tobacco trend;
- Rate of inflation (CPI) in the economy and;
- Increase in the prices of other agriculture crops especially of competing crops.

Before 2008, there was no proper time schedule for announcing the minimum support price for tobacco. It was to be announced after cultivation of the tobacco crop usually during standing crop generally in March- April. This custom was not good in favor of the growers.

Since 2008, the PTB announces the minimum support price for different types of tobacco crop long before cultivation (generally in November) which enable the farmers to choose whether to grow tobacco crop or not keeping in view the expected returns on their investments.

2. Weighted average price

It is the price worked out by the tobacco companies from different prices paid to the growers for their produce for various grades/qualities of a specific type of tobacco during purchasing period of the year.

The COP, MSP & Wt. Average prices during 2000-01 to 2010-11 is presented in the Table-7 below:

Table-7: Cost of Production, Minimum Support Price and Avg. Wgt. Price of FCV Tobacco

Crop Year	COP		MSP		Wt. Avg. Price		Difference b. w. MSP & COP	
	(Rs/kg)	% change	(Rs/kg)	% change	(Rs/kg)	% change	Absolute (Rs)	Per cent
1	2	3	4	5	6	7	8 = 4-2	9 = 4/2 %
2000-01	42.25	-	33.66	-	45.94	-	- 8.59	20.33
2001-02	43.94	4.00	35.21	4.60	46.19	0.54	- 8.73	19.87
2002-03	45.70	4.01	35.91	1.99	47.53	2.90	- 9.79	21.42
2003-04	49.34	7.96	38.10	6.10	48.56	2.17	- 11.24	22.78
2004-05	53.77	8.98	41.47	8.85	55.61	14.52	- 12.30	-22.88
2005-06	61.66	14.67	44.46	7.21	56.25	1.15	- 17.20	-27.90
2006-07	59.17	-4.04	60.35	35.74	61.98	10.19	1.18	1.92
2007-08	64.21	8.52	66.80	10.69	75.00	21.01	2.59	4.03
2008-09	72.50	12.91	82.00	22.75	98.00	30.67	9.50	13.10
2009-10	86.00	18.62	98.00	19.51	110.00	12.24	12.00	13.95
2010-11	92.00	6.98	104.30	6.43			12.30	13.04

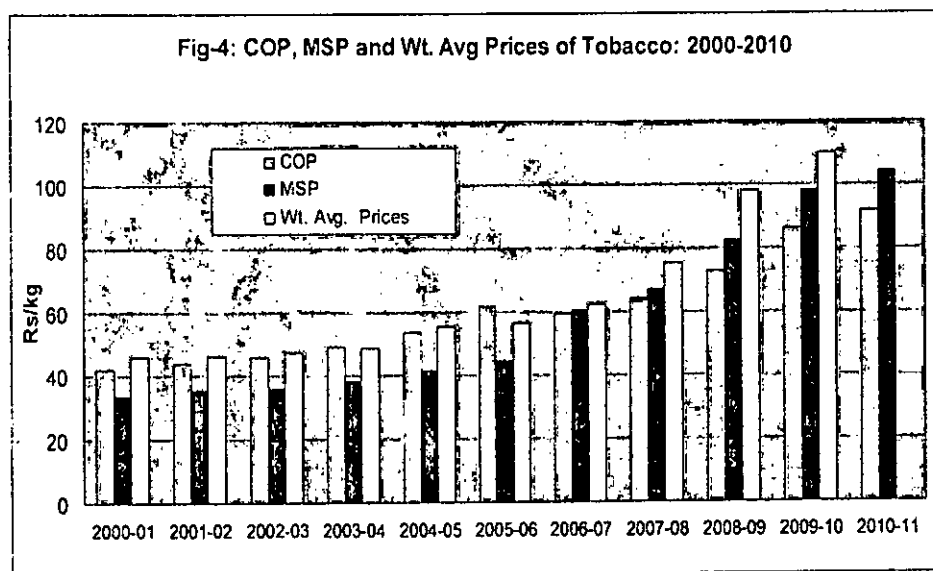
The data given in table-7 shows that harmonization between COP and MSP of tobacco lacked until 2005-06 and the MSP remained lower than COP by Rs 8.59 to 17.20 per kg or 19.87 to 27.90 per cent. Most of the tobacco growers of KPK were have a deep concern over this situation and consequently requested the provincial and federal concerned authorities to take corrective steps to this regard.

A team of the Agriculture Policy Institute, under supervision of the Ex-ADC/MINFA/Chairman, API conducted a mini field survey in

February 2007 to collect data from various tobacco growers regarding inputs use level, inputs prices, outputs, custom hiring rates of different operation involved in FCV tobacco farming.

After a thorough examination and proper processing of the data, rationalized COP was worked out at Rs 59.17 per kg for FCV tobacco for 2006 crop. After detailed discussion in the meeting of Price & Grade Revision Committee, held on 1st January 2007 at PTB on various items of the COP of FCV tobacco, Rs 60.35 per kg MSP for FCV 2007 was recommended based on COP of Rs 59.17 for 2006 crop, allowing 2 % profit margin to cover escalation in the COP for 2006-07 crop. It was the first time that the price recommended was correlated with the cost of production.

Trend in the cost of production, minimum support price and average weighted price is shown in the Fig- 4 below:



P. Tobacco Yield among Competing Countries

Global tobacco during 2008 occupied an area of 3.793 million hectares with a total production of 6.645 million tones. The world 10 top producing countries contribute 78 per cent of total area and 81 per cent of total production (Table-8).

Table-8: World Area, Production and Yield of Tobacco: 2008 Crop

S. No	Country	Area (hect.)	S. No	Country	Production (tonnes)	S. No	Country	Yield (kgs/hect.)
1	China	1326703	1	China	2836725	1	UAE	21250
2	Brazil	432182	2	Brazil	851058	2	Lao	8882
3	India	370000	3	India	520000	3	Oman	4704
4	Indonesia	199031	4	USA	363103	4	Cyprus	3600
5	Malawi	161626	5	Argentina	170000	5	Portugal	3500
6	Turkey	146874	6	Indonesia	169668	6	Italy	3438
7	USA	143459	7	Malawi	160238	7	Peru	3406
8	Argentina	92000	8	Italy	110000	8	Uruguay	3333
9	Zimbabwe	51800	9	Pakistan	107765	9	Samoa	3200
10	Pakistan	51398	10	Turkey	93403	35	Pakistan	2097
Sub-Total		2975073			5381960			
% of the world		78.43			80.99			
World total		3793304			6645338			1752

Source: FAO STAT 2008.

In terms of tobacco **area**, China is on the top with 1.327 million hectares, followed by Brazil with 0.432 million and India with 0.370 million hectares while Pakistan with 0.514 million hectares lies at 10th number.

In terms of tobacco **production**, China is on the top with 2.837 million tones, followed by Brazil with 0.851 million tones, India with 0.520 million tones and USA with 0.363 million tones. Pakistan retains 9th position with 0.108 million tones in tobacco production of the world.

In terms of **yield** per hectare, UAE lies at the top with 21250 kgs per hectare followed by Lao with 8823 kgs, Oman with 4704 kgs. **Pakistan** ranks at 35th in terms of yield with 2097 kgs/hect while **India** lies at 72nd position with yield of 1405 kgs/hect. There is a lot of potential to raise tobacco productivity per hectare in Pakistan.

Q. Recommendations

Tobacco being a major cash crop of the country needs special attention. All stakeholders need to endeavor to develop the tobacco sector to help the economic growth of the country.

This can be achieved by maximizing the participation from various stakeholders. Following reforms are recommended to improve tobacco sector:

- **Agriculture extention reforms:**

- **Non-Recommended Varieties:** It has been reported that presently most of the growers prefer to cultivate non-recommended tobacco varieties to get higher yields. Such practice is not harmful for the industry only but as well as for growers also as NRV are disease prone and may create serious problems in future;
- **Research Development:** Research development activities need to be enhanced to produce better quality tobacco and private companies may also be involved into the process;
- **Farm Subsidies:** In order to improve and sustain the tobacco quality and keep the cost of production of tobacco at a low level, the assistance of the govt. is needed for subsidies on fertilizers, pesticides and suckricides;
- **Energy Conserving:** To reduce the cost of production of tobacco by teaching the growers the techniques of conserving of energy resources, introducing to them about cost effective varieties and reduction of crop losses by better crop practices;
- **Crop Insurance:** A scheme of crop insurance of the farmers by involving the banks and financial institutions to save them from any unforeseen circumstances.

- **Pricing policy:**

Generally the Minimum Support Price of Tobacco is based on average weightage of different types of

tobacco. This can be misleading for the managers of Agriculture Policy. It is highly recommended that the formula of average weightage price, may be done away with, and Minimum Support price be worked out for the major types of tobacco.

- **Measures to control unlawful trade:**

The government has already taken a number of steps to curb the share of the illicit sector. However, enforcing level measures are needed further to reduce the share of duty-non paid sector in the tobacco trade. If this unlawful sector is brought under control, it will benefit the govt. with higher revenues expected to Rs 8.0 to 10.0 billion per annum.

References:

- 1- Pakistan Tobacco Board (PTB), Peshawar.
- 2- Pakistan Tobacco Industry.

STATISTICAL APPENDIX



Table 1: Headline and Core Inflation: 1991-92 to 2009-10

Muhammad Amin
Assistant Chief, API

Year	Consumer Price Index by Group			*Core	Headline and Core Inflation			
	General	Food	Non-Food		General	Food	Non-Food	*Core
	Base 2000-01=100)				(.Percent)			
1991-92	47.41	46.33	48.52	48.84	10.58	10.64	10.52	10.52
1992-93	52.07	51.84	52.31	52.51	9.83	11.74	7.81	7.5
1993-94	57.94	57.72	58.18	58.21	11.27	11.34	11.22	10.9
1994-95	65.48	67.24	64.09	64.43	13.02	16.67	10.17	10.7
1995-96	72.55	74.05	71.36	71.46	10.79	10.13	10.34	10.9
1996-97	81.11	82.86	79.73	79.62	11.80	11.89	11.73	11.4
1997-98	87.45	89.20	86.07	85.60	7.81	7.65	7.94	7.5
1998-99	92.46	94.46	91.12	89.47	5.74	5.90	5.61	4.5
1999-00	95.78	96.56	95.16	92.59	3.58	2.23	4.69	3.5
2000-01	100.00	100.00	100.00	100.00	4.41	3.56	5.09	4.2
2001-02	103.54	102.50	104.28	103.00	3.54	2.44	4.28	3.0
2002-03	106.75	105.40	107.66	103.10	3.10	2.89	3.24	2.0
2003-04	111.63	111.74	111.55	106.08	4.57	6.01	3.62	3.0
2004-05	121.98	125.69	119.47	113.67	9.28	12.48	7.10	7.2
2005-06	131.64	134.39	129.77	122.22	7.92	6.92	8.63	7.5
2006-07	141.87	148.21	137.58	134.35	7.77	10.28	6.02	5.94
2007-08	158.90	174.36	148.45	145.60	12.00	17.65	7.90	8.37
2008-09	191.90	215.69	175.81	171.17	20.77	23.70	18.45	17.55
Jul-Apr								
2008-09	190.54	214.60	174.28	169.42	22.35	26.61	19.01	17.83
2009-10	212.44	240.41	193.52	188.34	11.49	12.03	11.04	11.17

Not: * Core inflation is defined as overall inflation adjusted for food and energy.

Source: Pakistan Economics Survey, 2009-10.

Table-2: Prices Indices: 1991-92 to 2009-10

Year	Wholesale Price Index by Group						Sensitive Price Index	GDP Deflator
	General	Food	Raw material	Fuel lighting & lubricants	Manufactures	Building material		
1991-92	44.84	45.42	43.78	34.09	52.38	56.72	46.26	224.33
1992-93	48.14	50.24	48.67	34.83	54.63	57.97	51.22	244.28
1993-94	56.03	57.23	62.55	40.81	63.67	66.47	57.26	274.73
1994-95	65.00	67.50	72.16	44.90	73.40	81.04	65.85	312.60
1995-96	72.22	75.44	75.95	52.95	79.88	87.23	72.90	338.48
1996-97	81.62	84.37	87.01	62.17	89.41	98.63	81.98	388.00
1997-98	86.99	90.45	93.81	69.65	91.62	98.62	88.01	413.39
1998-99	92.51	96.55	103.21	75.81	94.45	99.62	93.68	437.59
1999-00	94.15	97.09	92.39	83.16	98.76	97.15	95.39	100.00
2000-01	100.00	100.00	100.00	100.00	100.00	100.00	100.00	108.02
2001-02	102.01	101.95	100.31	103.14	101.87	101.10	103.37	110.71
2002-03	107.77	105.62	115.51	115.95	103.67	102.90	107.06	115.61
2003-04	116.29	112.99	135.12	119.23	111.83	126.48	114.38	124.55
2004-05	124.14	125.03	110.44	138.01	113.05	143.79	127.59	133.30
2005-06	136.68	133.78	121.93	174.57	116.27	144.18	136.56	145.59
2006-07	146.17	145.67	138.85	184.10	119.91	151.93	151.35	158.60
2007-08	170.15	173.27	156.57	223.34	128.33	177.18	176.78	184.33
2008-09	201.10	213.54	184.45	258.96	140.67	213.00	218.16	221.77
Jul-Apr								
2008-09	200.57	212.52	181.86	258.80	140.55	217.63	216.94	221.77
2009-10	223.15	236.75	226.56	293.70	152.04	197.55	245.07	244.12

Source: Federal Bureau of Statistics.

Table-3: Indices of Crop Acreage and Production: 2000-01 to 2009-10

Year	Acreage Index				Production Index			
(1999-00=100)								
2000-01	96.8	96.8	98.1	98.8	93.0	91.2	95.5	94.0
2001-02	96.5	94.4	104.4	101.2	96.5	85.2	94.4	103.6
2002-03	95.3	94.5	93.6	106.6	104.0	91.8	90.8	112.1
2003-04	99.9	99.5	100.2	102.9	106.9	94.9	89.4	115.1
2004-05	100.7	99.9	107.0	94.9	104.1	106.3	126.9	101.9
2005-06	101.1	101.6	104.0	90.3	100.7	106.7	115.8	96.3
2006-07	102.8	103.0	103.1	100.6	116.6	114.6	114.4	117.9
2007-08	103.8	103.1	102.4	114.0	125.6	107.7	103.7	137.5
2008-09	106.1	109.1	94.5	100.3	113.8	123.9	105.2	107.9
(2005-06=100)								
2005-06	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2006-07	101.7	101.4	99.1	111.5	115.8	124.7	113.0	110.7
2007-08	102.6	101.4	98.4	126.2	107.4	100.9	116.2	111.9
2009-09	104.9	107.4	90.9	111.1	98.7	89.5	90.8	99.2
2009-10	104.9	106.5	100.1	99.5	122.5	142.8	112.0	110.4

Source : Federal Bureau of Statistics.

Table-4: Composition of Value Addition by Major Crops (At Constant Factor Cost 1999-2000)

Fiscal year/Crops	2002-03	2003-04	2004-05	2005-06	2006-07	207-08	(%age share)	
							2009-09 (R)	2009-10 (P)
All major crops	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Food crops	62.66	63.52	61.55	63.37	63.85	62.24	66.69	65.30
Rice	15.85	16.94	15.28	17.45	15.78	16.63	17.20	17.66
Wheat	39.26	38.98	37.58	38.23	39.27	37.12	40.43	39.61
Barley	0.19	0.19	0.15	0.15	0.15	0.15	0.13	0.12
Jowar	0.39	0.46	0.31	0.27	0.29	0.29	0.26	0.24
Bajra	0.41	0.59	0.36	0.42	0.43	0.58	0.53	0.52
Maize	3.13	3.32	4.14	4.70	4.42	5.37	5.08	4.82
Gram	3.41	3.05	3.73	2.14	3.51	2.10	3.06	2.33
Fibre crops	22.98	22.06	27.21	25.58	23.65	22.67	21.85	23.50
Cotton	22.98	22.06	27.21	25.58	23.63	22.67	21.85	23.50
Cash crops	12.95	13.00	9.95	9.75	11.20	13.82	10.20	9.96
Sugarcane	12.95	13.00	9.95	9.75	11.20	13.82	10.20	9.96
Other crops	1.41	1.43	1.28	1.31	1.29	1.27	1.26	1.24
Sesamum	0.12	0.15	0.16	0.20	0.16	0.18	0.21	0.17
Rapeseed & mustard	0.81	0.81	0.65	0.57	0.67	0.58	0.58	0.62
Tobacco	0.48	0.46	0.47	0.54	0.46	0.51	0.47	0.46

Source: Federal Bureau of Statistics

Table-5: Growth Rates of Major Crops in Pakistan 1947-48 To 2009-10

Period	Parameter	Crops				
		Wheat	Rice	Maize	Sugarcane	Cotton
----- Per cent per annum -----						
1947-48 to 1959-60						
Area		1.53	2.74	2.10	7.61	1.79
Yield		-1.18	-0.19	0.66	-1.53	2.09
Production		0.33	2.54	2.62	6.12	3.86
1959-60 to 1969-70						
Area		2.85	3.22	3.41	4.24	3.39
Yield		3.37	4.44	0.98	3.67	3.23
Production		6.32	7.80	4.42	8.06	6.48
1969-70 to 1979-80						
Area		1.27	3.31	0.43	3.19	0.80
Yield		3.18	0.59	1.79	-0.46	-1.54
Production		4.49	3.92	2.24	2.72	-0.76
1979-80 to 1989-90						
Area		1.06	0.36	1.85	0.24	2.48
Yield		1.52	-0.52	1.01	0.79	6.96
Production		2.60	-0.16	2.88	1.03	9.61
1989-90 to 1999-00						
Area		0.77	1.82	0.41	2.04	1.34
Yield		2.01	3.11	0.82	1.84	-0.88
Production		2.80	4.98	1.25	3.92	0.31
1999-00 to 2009-10						
Area		1.0	4.2	0.35	1.13	0.2
Yield		1.1	1.9	3.87	0.54	1.3
Production		2.1	2.2	4.23	0.65	1.5
1947-48 to 2009-10						
Area		0.55	0.81	0.79	1.13	0.78
Yield		1.05	0.71	0.70	0.40	1.03
Production		1.60	1.55	1.46	0.06	2.26

Note: The above growth rates are trend growth rates and have been calculated through Ordinary Least Squares (OLS) Method.

Table-6: Farm Level Cost of Production of Important Crops

Crop/ Year	Wheat		Seed Cotton		Rice Paddy			Sugarcane		
	Punjab	Sindh	Punjab	Sindh	Basinati	IRRI	IRRI	Punjab	Sindh	NWFP
					Punjab		Sindh			
----- Rupees per 40 kgs -----										
1982-83	65	54	-	-	93	55	56	-	-	-
1983-84	73	64	166	-	85	56	37	-	-	-
1984-85	70	64	176	107	85	57	37	7.10	7.10	7.10
1985-86	72	66	182	112	88	59	40	7.17	7.17	7.17
1986-87	77	70	170	163	104	68	52	7.73	6.92	7.67
1987-88	77	77	175	167	109	69	53	7.60	7.15	7.86
1988-89	81	80	175	167	114	73	56	8.21	7.60	8.36
1989-90	81	79	185	175	114	73	56	9.14	8.34	9.31
1990-91	93	94	214	211	136	82	67	10.53	9.39	10.90
1991-92	109	108	248	247	165	101	75	12.55	10.86	12.18
1992-93	123	121	278	273	174	106	83	13.23	12.72	13.57
1993-94	133	136	294	288	189	114	88	14.75	13.88	15.23
1994-95	153	155	328	330	213	128	103	16.13	15.81	16.39
1995-96	167	170	364	373	228	139	114	16.94	16.80	17.40
1996-97	204	201	412	425	259	161	130	18.72	18.40	18.79
1997-98	244	241	544	519	297	182	144	22.21	22.22	22.18
1998-99	254	247	581	557	310	189	158	25.11	24.57	24.57
1999-00	269	261	606	582	329	204	167	26.25	25.48	25.58
2000-01	285	264	660	610	353	210	168	27.22	26.39	26.51
2001-02	307	283	734	666	382	227	176	32.40	30.39	32.29
2002-03	322	291	757	685	400	241	184	31.71	31.35	30.29
2003-04	344	313	815	718	439	258	195	34.59	33.33	31.71
2004-05	389	358	839	786	439	258	195	35.98	34.59	32.31
2005-06	428	406	856	791	517	297	232	39.27	40.86	34.70
2006-07	449	423	963	884	566	324	255	46.48	47.56	40.53
2007-08	436	420	1,015	935	605	346	274	50.99	51.73	45.66
2008-09	658	641	1252	1174	767	461	376	61.34	62.27	52.78
2009-10	747	762	1224	1268	950	524	468	82.80	80.03	77.77
2010-11	811	828	1691	1550	1113	681	569	98.77	96.13	89.89

Source: Agriculture Policy Institute (API), Islamabad.

Table-7: Farm Level Cost of Production of Selected Crops

Crop/ year	Non-traditional Oilseeds		Potatoes	Gram	Onions	
	Sunflower	Canola			Punjab, Sindh & N.W.F.P	Balochistan
	----- Rupees per 40 kgs -----					
1982-83	127	-	38	141	23	23
1983-84	139	-	-	-	-	-
1984-85	139	-	41	138	-	-
1985-86	144	-	44	139	29	29
1986-87	146	-	43	149	29	29
1987-88	152	-	41	149	31	31
1988-89	165	-	47	157	34	34
1989-90	165	-	49	172	37	37
1990-91	186	-	49	173	43	43
1991-92	203	-	58	176	50	42
1992-93	218	-	61	192	55	48
1993-94	238	-	68	225	61	52
1994-95	282	-	73	263	67	59
1995-96	318	-	79	298	72	64
1996-97	377	371	98	313	82	73
1997-98	412	397	123	347	91	84
1998-99	434	421	125	323	102	93
1999-00	448	455	123	376	108	106
2000-01	461	461	124	436	106	125
2001-02	-	-	-	-	-	-
2002-03	-	-	-	-	-	-
2003-04	522	525	-	-	-	-
2004-05	549	-	-	-	-	-
2005-06	678	662	200	-	149	-
2006-07	715	688	200	720	-	-
2007-08	-	-	-	-	-	-
2008-09	-	-	-	-	-	-
2009-10	-	-	-	-	-	-

Source: Agriculture Policy Institute(API), Islamabad.

**Table-8: Nominal and Real Support Prices of Food Crops
1990-91 to 2009-10**

Year	Wheat		Rice Paddy			
	Nominal	Real	Basmati		IRRI (FAQ)	
			Nominal	Real	Nominal	Real
1	2	3	4	5	6	7
----- Rupees per 40 kgs -----						
1990-91=100						
1990-91	112.00	112.00	142	142.00	77	77.00
1991-92	124.00	112.14	154	139.27	100	90.43
1992-93	13.00	107.04	189	155.62	114	93.87
1993-94	160.00	118.40	193	142.81	100	74.00
1994-95	160.00	104.76	190	124.40	142	92.97
1995-96	173.00	102.24	234	138.29	184	108.74
1996-97	240.00	126.86	283	149.59	161	85.10
1997-98	240.00	117.67	290	142.18	207	101.49
1998-99	240.00	111.29	370	171.57	231	107.11
1999-00	223.39	134.29	364	162.94	203	90.87
2000-01=100						
2000-01	300.00	300.00	410	410.00	180	180
2001-02	300.00	289.74	470	453.93	205	198
2002-03	300.00	281.03	502	470.26	218	204
2003-04	350.00	313.54	505	452.35	257	230
2004-05	400.00	327.92	560	459.09	338	277
2005-06	415.00	315.25	537	408.00	290	221
2006-07	425.00	299.87	594	419.11	310	219
2007-08	625.00	401.31	920	579.00	509	320
2008-09	950.00	533.59	1181	620.00	585	307
2009-10	950.00	447.19	1097	516.00	666	314

Source: Agriculture Policy Institute (API), Islamabad.

Table-9: Nominal and Real Support Prices of Cash Crops: 1990-91 to 2009-10

Year	Seed Cotton		Sugarcane			
	MNH-93		Punjab		Sindh	
	Nominal	Real	Nominal	Real	Nominal	Real
1	2	3	4	5	6	7
----- Rupees per 40 kgs -----						
1990-91=100						
1990-91	330	330.00	15.25	15.25	15.75	15.75
1991-92	342	309.28	16.75	15.15	17.00	15.37
1992-93	386	317.83	18.50	15.23	18.75	15.44
1993-94	471	348.53	19.00	14.06	20.40	15.10
1994-95	810	530.35	20.50	13.42	21.90	14.34
1995-96	753	445.01	25.00	14.77	25.00	14.77
1996-97	872	460.94	38.00	20.09	40.00	21.14
1997-98	857	420.18	35.00	17.16	39.00	19.12
1998-99	936	434.94	32.00	14.84	36.00	16.69
1999-00	614	274.86	35.00	15.67	42.00	18.80
2000-01=100						
2000-01	957	957	45.00	45.00	50.00	50.00
2001-02	813	785	37.00	36.00	47.00	45.00
2002-03	921	863	35.00	33.00	36.00	34.00
2003-04	1370	1227	34.00	30.00	35.00	31.00
2004-05	885	726	40.00	33.00	41.00	34.00
2005-06	1017	773	60.00	46.00	60.00	46.00
2006-07	1110	782	60.00	42.29	67.00	47.23
2007-08	1468	924	60.00	37.76	67.00	42.16
2008-09	1557	811	100.00	52.11	100.00	52.11
2009-10	1910	918	150.00	70.61	160.00	75.32

Source: Agriculture Policy Institute(API), Islamabad.

Table-10: International Prices of Major Agricultural Commodities: 1980-81 to 2009-10

Year	Cotton (cif North Europe)		Wheat (Fob, pacific) US Western white	Rice 100% second grade (fob, Bangkok)	Sugar		Edible oils		
	Sindh/ Punjab Afzal 1-1/32"	Index-B Cottons			Raw sugar ISA price (fob & stowed caribbean) port in bulk	White sugar (fob & stowed London)	Soybean oil (fob Decature)	Palm oil (fob Malaysia)	Sun-flower (fob NW European ports)
	-- US cents/lb.--			----- US \$ per tonne -----					
1980-81	-	-	-	-	-	-	519	588	-
1981-82	64.96	63.96	-	-	203	284	464	571	-
1982-83	65.95	67.25	165	272	174	243	405	445	-
1983-84	74.13	79.68	145	267	139	190	520	502	-
1984-85	54.00	57.55	140	217	139	146	681	742	-
1985-86	36.13	39.25	134	188	133	185	572	498	-
1986-87	59.84	59.59	108	186	139	187	343	283	-
1987-88	63.94	64.97	119	220	206	246	349	344	-
1988-89	61.42	63.50	168	284	263	351	519	443	476
1989-90	76.51	77.27	158	296	301	402	417	328	482
1990-91	76.32	77.22	117	292	203	303	458	317	480
1991-92	56.67	57.06	154	290	202	280	417	365	459
1992-93	53.99	53.25	150	253	211	274	471	379	492
1993-94	61.45	69.39	133	297	248	323	596	448	627
1994-95	75.89	75.44	163	282	302	397	605	647	691
1995-96	80.95	80.48	200	365	270	384	550	523	617
1996-97	76.23	75.27	163	342	245	319	504	525	545
1997-98	72.23	68.00	139	308	218	272	571	605	726
1998-99	51.28	68.00	115	290	146	216	439	487	560
1999-00	47.46	49.28	112	235	159	202	349	331	410
2000-01	56.78	53.70	113	185	206	250	335	235	428
2001-02	3841	38.95	132	189	151	232	411	329	587
2002-03	51.36	51.42	146	198	179	228	539	421	592
2003-04	60.10	63.17	149	220	145	224	632	481	663
2004-05	46.10	51.19	143	274	198	275	545	392	703
2005-06	54.59	55.06	134	298	327	408	572	416	635
2006-07	58.63	56.61	188	312	257	376	771	655	846
2007-08	69.21	72.90	314	489	273	344	-	-	-
2008-09	N.Q	61.14	283	662	340	418	-	-	-
2009-10	N.Q	70.80	212	549	450	575	-	-	-

Sources: - For wheat: International Grains Council, London.
 - For cotton: Cotton Outlook, UK.
 - For rice: Food Outlook. FAO, Rome.
 - For sugar: International Sugar Organization (ISO), London.
 - For edible oils: Oil World.

Table -11: Average Export Prices (fob Karachi) of Agricultural Commodities: 1980-81 to 2009-10

Year	Export prices (fob Karachi)					
	Cotton	Rice		Sugar	Onions	Potatoes
		Basmati	IRRI			
	----- Rupees per tonne -----					
1980-81	15,994	7,029	3,168	-	1,580	1,820
1981-82	12,694	7,599	3,061	2,887	1,830	1,800
1982-83	15,288	8,005	2,668	2,619	1,220	1,940
1983-84	18,041	8,090	2,697	3,341	1,240	1,850
1984-85	16,612	9,394	3,030	-	1,460	2,270
1985-86	12,976	10,813	2,582	-	1,290	1,640
1986-87	11,976	12,369	2,577	-	1,140	1,500
1987-88	21,429	12,672	3,520	-	1,260	1,800
1988-89	21,459	13,259	4,420	5,820	2,260	2,140
1989-90	32,424	14,583	3,860	9,699	1,850	1,380
1990-91	33,912	10,494	3,881	-	3,460	2,400
1991-92	28,435	10,261	4,825	-	2,080	1,980
1992-93	26,629	11,189	5,364	-	2,190	2,140
1993-94	31,818	12,427	5,166	9,912	4,170	2,580
1994-95	62,059	12,526	5,961	11,936	3,900	2,540
1995-96	56,029	13,830	7,923	12,015	3,840	1,770
1996-97	59,135	17,469	7,847	-	4,250	3,820
1997-98	61,847	19,827	8,676	13,757	5,930	5,420
1998-99	66,565	24,050	10,450	12,739	17,710	6,960
1999-00	45,335	26,390	9,587	16,524	7,995	5,532
2000-01	59,753	27,527	9,496	-	7,789	6,661
2001-02	42,971	28,830	10,273	6,605	6,234	6,555
2002-03	51,906	29,408	10,293	1,305	5,580	5,746
2003-04	89,616	29,759	12,133	13,689	7,429	5,966
2004-05	81,289	31,964	14,110	18,782	7,497	8,862
2005-06	78,572	34,340	14,356	26,055	9,839	11,250
2006-07	67,632	37,154	15,367	-	9,578	10,952
2007-08	79,179	59,952	29,238	22,001	13,203	10,151
2008-09	87,295	85,449	40,744	29,689	12,980	10,428
2009-10	1,62,347	69,525	35,457	-	16,301	17,590

Source: Federal Bureau of Statistics.

Table-12: Average Import Prices (cif Karachi) of Agricultural Commodities: 1980-81 to 2009-10

Year	Import Prices (cif Karachi)							
	Wheat	Gram	Sugar	Onions	Potatoes	Edible oils		
						Soyabean	Palm	Sun-flower
----- Rupees per tonne -----								
1980-81	2,076	-	6,704	8,760	1,710	5,770	5,450	-
1981-82	2,224	-	5,873	5,530	1,640	5,450	5,370	-
1982-83	2,204	-	4,248	5,280	5,420	5,760	2,270	-
1983-84	2,952	-	4,265	3,900	2,170	8,620	5,270	-
1984-85	2,807	-	-	-	-	12,470	8,640	-
1985-86	2,472	-	3,601	-	-	9,830	9,480	-
1986-87	3,132	-	3,686	-	-	6,830	6,490	-
1987-88	3,079	-	3,815	-	1,220	8,060	4,910	-
1988-89	3,229	-	4,708	-	-	11,560	6,960	-
1989-90	4,197	10,580	9,102	-	-	10,410	6,890	-
1990-91	3,208	8,360	8,269	3,730	1,070	13,733	8,340	-
1991-92	4,205	11,960	7,832	-	4,410	12,599	9,098	-
1992-93	4,212	8,730	7,357	2,560	3,900	11,494	11,296	18,234
1993-94	3,804	8,870	9,335	1,100	1,110	15,848	12,549	19,816
1994-95	4,874	12,450	13,228	2,070	1,030	21,394	22,214	22,683
1995-96	7,718	13,430	15,606	1,170	2,900	24,599	25,170	23,100
1996-97	7,570	10,860	14,480	2,360	2,560	23,489	22,420	24,400
1997-98	7,413	11,370	15,189	5,990	2,620	33,964	28,244	32,793
1998-99	5,886	17,420	15,122	3,800	1,570	30,881	30,488	36,378
1999-00	7,316	16,700	15,850	3,178	1,822	43,360	19,850	-
2000-01	-	19,370	15,557	3,514	1,162	36,320	16,240	-
2001-02	-	19,790	17,185	5,661	1,258	36,980	19,990	-
2002-03	-	18,290	18,158	3,063	1,214	36,730	25,300	-
2003-04	12,550	18,234	16,539	3,090	1,227	32,460	27,574	-
2004-05	12,924	18,990	19,606	8,294	3,756	44,261	27,254	-
2005-06	9,729	17,533	24,465	5,275	5,275	39,436	25,810	-
2006-07	18,520	35,659	26,804	10,632	5,479	50,878	32,498	-
2007-08	29,738	41,060	24,858	7,720	6,306	59,614	57,857	-
2008-09	27,398	54,245	35,830	19,789	10,846	76,138	61,654	-
2009-10	36,246	28,871	49,289	13,338	9,444	86,967	64,602	-

Sources: Federal Bureau of Statistics.

Table-13: Import Parity Prices of Agricultural Commodities 1980-81 to 2009-10

Years	Wheat based on fob (Pacific) price of US western white wheat		Sugarcane based on fob (London) price of white sugar		Onions	Potatoes	Edible oils		
	If consumed at Karachi	If consumed at Lahore	Punjab & NWFP	Sindh	Based on actual import prices		Soyabean	Sunflower	Canola
							Based on their respective quoted price		
----- Rupees per 40 kgs -----									
1980-81	-	-	-	-	-	-	-	-	-
1981-82	-	-	-	-	-	-	-	-	-
1982-83	-	-	-	-	-	-	-	-	-
1983-84	-	-	-	-	-	-	-	-	-
1984-85	-	-	-	-	-	-	-	-	-
1985-86	-	-	-	-	-	-	-	-	-
1986-87	-	-	7	7	-	-	-	-	-
1987-88	-	-	-	-	-	-	-	-	-
1988-89	-	-	19	19	-	-	-	-	-
1989-90	171	-	20	20	-	-	-	-	-
1990-91	-	-	19	19	-	70	-	-	-
1991-92	170	200	20	20	-	223	129	178	-
1992-93	190	240	24	25	-	-	138	207	-
1993-94	175	227	-	-	-	-	163	296	-
1994-95	236	293	-	-	-	-	342	391	-
1995-96	323	397	46	47	-	280	422	368	391
1996-97	280	368	-	-	115	256	430	368	417
1997-98	265	357	-	-	151	-	476	547	536
1998-99	280	357	-	-	-	-	379	420	427
1999-00	281	366	-	-	-	-	357	325	330
2000-01	320	404	45.16	46.22	-	-	-	-	-
2001-02	365	449	43.44	44.46	-	-	-	-	-
2002-03	403	453	39.13	40.05	-	-	-	-	-
2003-04	476	556	34.12	34.92	-	-	-	-	-
2004-05	457	544	43.71	44.74	-	-	-	-	-
2005-06	384	480	52.73	53.97	-	-	-	-	-
2006-07	637	696	62.49	63.96	-	-	-	-	-
2007-08	1,403	1,479	65.14	66.67	-	-	-	-	-
2008-09	1,169	1,249	-	-	-	-	-	-	-
2009-10	940	1,023	196.99	212.26	-	-	-	-	-

Source: Agriculture Policy Institute (API), Islamabad.

Table-14: Export Parity Prices of Agricultural Commodities: 1980-81 to 2009-10

Years	Seed cotton based on Afzal 1-1/32" cif (North Europe) price	Rice (paddy) based on actual export prices		Sugarcane based on fob (London) price of white sugar		Onions	Potatoes
		Basmati	IRRI	Punjab & NWFP	Sindh	Based on actual exports prices	
----- Rupees per 40 kgs -----							
1980-81	-	-	-	-	-	-	-
1981-82	-	-	-	-	-	-	-
1982-83	-	-	-	-	-	-	-
1983-84	-	-	-	-	-	-	-
1984-85	-	-	-	-	-	-	-
1985-86	-	169	30	-	-	39	-
1986-87	191	229	46	-	-	-	-
1987-88	352	229	46	-	-	-	-
1988-89	279	228	66	-	-	20	9
1989-90	426	237	94	-	-	164	87
1990-91	477	134	40	-	-	49	39
1991-92	-	155	84	-	-	52	112
1992-93	391	167	82	-	-	33	136
1993-94	539	201	70	19	19	169	121
1994-95	711	162	74	27	26	127	79
1995-96	851	168	110	-	-	117	87
1996-97	903	244	129	33	34	125	105
1997-98	844	359	155	34	34	190	118
1998-99	514	421	189	22	22	530	223
1999-00	514	489	165	22	23	193	142
2000-01	936	509	170	26.90	27.53	-	-
2001-02	660	486	161	25.36	25.96	-	-
2002-03	807	494	168	26.05	26.66	-	-
2003-04	1,211	514	229	22.15	22.67	-	-
2004-05	840	549	278	30.72	31.44	-	-
2005-06	903	713	304	37.61	38.49	-	-
2006-07	1,099	738	333	46.00	47.08	-	-
2007-08	1,461	1,362	530	46.39	47.48	-	-
2008-09	-	2,089	788	-	-	-	-
2009-10	-	1,511	621	156.07	167.88	-	-

Source: Agriculture Policy Institute (API), Islamabad.

Table-15: Support and Market Prices of Wheat and Quantities Procured: 1980-81 To 2009-10

Year	Support price	Market price *	Difference between market and support prices	Procurement by government agency	Government agency
	Rs per 40 kgs		Percent	Million tonnes	
1980-81	58	60	3	3.99	PASSCO and Provincial Food Departments
1981-82	58	62	6	3.13	
1982-83	64	67	4	3.82	
1983-84	64	71	10	2.28	
1984-85	70	77	9	2.53	
1985-86	80	82	2	5.04	
1986-87	80	80	-	3.98	
1987-88	83	85	2	3.49	
1988-89	85	93	9	4.13	
1989-90	96	102	6	4.41	
1990-91	112	121	8	3.16	
1991-92	124	134	8	3.25	
1992-93	130	139	7	4.12	
1993-94	160	170	6	3.64	
1994-95	160	176	10	3.74	
1995-96	173	185	7	3.45	
1996-97	240	273	14	2.72	
1997-98	240	259	8	3.98	
1998-99	240	261	9	4.07	
1999-00	300	297	-1	8.55	
2000-01	300	275	-8	4.00	
2001-02	300	292	-3	4.04	
2002-03	300	305	2	3.51	
2003-04	350	388	11	3.51	
2004-05	400	471	18	3.45	
2005-06	415	420	1	3.88	
2006-07	425	432	2	3.88	
2007-08	625	651	26	3.92	
2008-09	950	950	0	9.19	
2009-10	950	902	-48	6.71	

Note: * Average wholesale price of Multan, Okara and Hyderabad during post harvest period: April - July.

Sources: - MINFAL, Islamabad.
- ALMA, Karachi.
- Agriculture Marketing Information Services, Lahore.
- PASSCO, Lahore.
- Provincial Food Departments.

Table-16: Support and Market Prices of Basmati and IRRIPaddy: 1980-81 to 2009-10

Year	Basmati		IRRI	
	Support price*	Market price**	Support price*	Market price**
-----Rs per 40 kgs-----				
1980-81	75	-	39	-
1981-82	85	-	45	-
1982-83	88	90	49	-
1983-84	90	92	51	-
1984-85	90	92	51	-
1985-86	93	114	53	59
1986-87	102	113	53	53
1987-88	130	141	55	70
1988-89	135	135	60	73
1989-90	143	136	66	69
1990-91	143	143	73	78
1991-92	155	158	78	98
1992-93	175	190	85	112
1993-94	185	194	90	98
1994-95	211	192	103	137
1995-96	222	231	112	181
1996-97	255	296	129	164
1997-98	310	297	153	205
1998-99	330	362	175	234
1999-00	350	358	185	206
2000-01	385	302	205	179
2001-02	385	361	205	205
2002-03	-	471	-	221
2003-04	400	473	215	252
2004-05	415	453	230	346
2005-06	460	427	260	289
2006-07	-	451	-	320
2007-08	-	1289	-	525
2008-09	-	1181	-	585
2009-10	-	1097	-	666

Notes:

- * Support/indicative price of Basmati-385 paddy(Punjab) and IRRI paddy in sindh
 ** Average wholesale prices of in the main producing area markets during post-harvest (November to January) Basmati paddy in the Punjab and for IRRI paddy in Sindh.

Sources: Agriculture Marketing Information Services, Lahore for Basmati and Agriculture Market committees of respective area of Sindh for IRRI.

Table-17: Support and Market Prices of Seed Cotton and average Spot rate of Cotton Lint : 1980-81 to 2009-10

Year	Seed cotton *		Cotton Lint	
	Support price	Market price ⁽ⁿ⁾	Support price	Market price
-----Rs per 40 kgs-----				
1980-81	182	174	476	482
1981-82	192	193	473	453
1982-83	197	188	473	496
1983-84	200	336	496	824
1984-85	203	182	500	549
1985-86	207	196	500	509
1986-87	207	211	500	538
1987-88	207	234	504	610
1988-89	210	238	507	617
1989-90	225	279	539	732
1990-91	260	334	645	840
1991-92	290	337	715	883
1992-93	310	382	770	982
1993-94	325	475	801	1,232
1994-95	423	794	986	2,060
1995-96	423	739	986	1,962
1996-97	540	840	-	2,575
1997-98	540	808	-	2,525
1998-99	-	876	-	2,722
1999-00	825	580	-	2,051
2000-01	725	941	-	2,961
2001-02	780	783	-	2,289
2002-03	800	842	-	2,577
2003-04	850	1282	-	3163
2004-05	925	893	-	2296
2005-06	975	1,038	-	2577
2006-07	1,025	1,144	-	2750
2007-08	-	-	-	3233
2008-09	-	1541	-	3667
2009-10	-	1910	-	4358

* Average wholesales prices of seed cotton (phutti) in the main producing area markets of the Punjab and Sindh.

Sources:

- Pakistan Central Cotton Committee (PCCC), Karachi.
- Agriculture Marketing Information Services, Lahore.
- Karachi Cotton Association for Cotton Lint Prices.

Table-18: Support and Market Prices of Gram, Onions and Potatoes: 1980-81 to 2009-10

Year	Gram		Onions		Potatoes	
	Support price	Market price*	Support price	Market price*	Support price	Market price*
	-----Rs per 40 kgs-----					
1980-81	-	186	19.30	27	26.80	61
1981-82	-	249	19.30	77	26.80	53
1982-83	-	189	25.00	49	40.50	35
1983-84	153	149	30.00	82	40.50	60
1984-85	153	169	30.00	62	40.50	61
1985-86	153	151	32.50	36	42.00	45
1986-87	161	131	34.50	76	44.50	47
1987-88	161	242	36.50	66	44.50	94
1988-89	180	245	40.00	94	50.00	85
1989-90	200	182	44.00	76	55.00	38
1990-91	210	177	54.50	123	55.00	104
1991-92	230	267	65.00	85	65.00	81
1992-93	235	338	70.00	156	67.00	82
1993-94	275	479	84.00	136	77.00	77
1994-95	315	632	84.00	168	84.00	103
1995-96	330	332	92.00	125	84.00	238
1996-97	400	423	106.00	201	115.00	288
1997-98	425	401	125.00	234	145.00	116
1998-99	425	628	140.00	257	145.00	106
1999-00	-	760	-	105	145.00	111
2000-01	425	798	-	120	-	144
2001-02	-	882	-	243	-	195
2002-03	-	933	-	108	-	231
2003-04	-	610	-	262	-	148
2004-05	-	694	-	266	-	157
2005-06	-	720	-	198	-	379
2006-07	-	1,102	-	198	-	469
2007-08	-	1,293	-	404	-	406
2008-09	-	1,709	-	720	-	526
2009-10	-		-	716	-	664

Note: *Average wholesale during post-harvest prices in main producing area markets.

Sources: - ALMA, Karachi.
- Agriculture Marketing Information Services, Lahore.

Table-19: Support/ Indicative Prices of Sunflower and Canola Oilseeds: 2000-01 to 2009-10

Crop year	Sunflower *		Canola *	
	Support price/ indicative price	Market price	Support price/ indicative price	Market price
	-----Rs/40 kgs-----			
2000-01	-	650	-	600
2001-02	-	600	-	650
2002-03	630	725	650	750
2003-04	670	700	650	795
2004-05	-	721	-	758
2005-06	690	728	690	760
2006-07	830	730	750	1,051
2007-08	1,600	1,725	1225	1,705
2008-09	-	1273	-	1400
2009-10	1600	1633	-	1600

Note: * Average wholesale prices during post-harvest in major producing area markets.

Sources: i) From 2000-01 to 2006-07, All Pakistan Solvent Extractor Association (APSEA).
ii) From 2007-08 to onward, Pakistan Oil Seed Development Board, Islamabad

Table-20: Average Market Prices of Fertilizer: 1983-84 to 2009-10

Year	(Rs per 50 kg bag)				
	Urea	DAP	SSP	NP	SOP
1983-84	128	133	40	110	40
1984-85	128	133	40	110	40
1985-86	128	146	40	110	50
1986-87	130	146	46	110	50
1987-88	135	161	53	119	60
1988-89	165	185	58	137	72
1989-90	185	217	68	150	107
1990-91	195	249	93	173	150
1991-92	195	272	93	173	150
1992-93	205	264	93	196	195
1993-94	210	269	96	203	195
1994-95	235	379	150	250	195
1995-96	267	479	183	320	331
1996-97	340	553	211	384	532
1997-98	341	565	200	397	540
1998-99	346	665	234	457	541
1999-00	327	649	298	464	543
2000-01	363	670	253	468	682
2001-02	394	710	280	519	765
2002-03	411	765	287	539	780
2003-04	420	913	329	622	809
2004-05	468	1001	373	704	996
2005-06	509	1079	407	710	1170
2006-07	527	993	334	670	985
2007-08	581	1931	560	1294	1495
2008-09	751	2578	874	1700	2175
2009-10	800	2267	7263	1452	2370

Source:

1. Federal Bureau of Statistics.
2. National Fertilizer Development Centre, Islamabad.