



# THE DAWN PAKISTAN FOOD & AGRI EXPO - CONFERENCE 2016

DAWN

April 5 & 6, 2016

Expo Centre, Johar Town, Lahore  
Timing: 11:00 a.m. to 7:00 p.m.



TUESDAY APRIL 5, 2016

# PASSIVE PEASANTRY NO MORE!



**Farmer activism is a new phenomenon emerging on the horizon and the trend seems to be rather contagious after it made an impact early on that was more than what the activists might have themselves expected. How far the resulting policy adjustments lead to actual spending and improvement within the sector remains to be seen, but the farmers stand convinced that activism is paying dividends and that they need to continue treading the path with a bit more vigour. It's an 'Agriculture Emergency', they plead, and the government is listening.**

BY AHMAD FRAZ KHAN

# The power within

**It is the noisy urban minority that has an impact on the policy-making process, many believed. It is interesting to see how the farmers have suddenly got politically alive.**

**T**HE farming community, traditionally taken as a voiceless and docile majority dwelling the countryside, is now defying this time-tested behaviour. In the last two years, they have taken to the streets more than a dozen times, blocking the main roads connecting cities, picketing at the federal parliament and provincial assembly and surviving heavy rains and police baton charges. What worries the rulers more is the fact that this activism is turning out to be contagious.

Started by the Pakistan Kissan Ittehad, it spread to other, hitherto benign farmers' organisations like the Kissan Board Pakistan. The KBP also joined the fray when it called for long-march to capital and has also been arranging public meetings under the slogan of *Kissan Raj* (farmers' rule) and preparing, if its leaders are to be believed, for long haul of farmers' activism. These are worrying times for the traditional ruling elite.

Agitated by farmers' protests and energy behind them, the federal government came up with a historic package of Rs. 341 billion to ameliorate the situation. However, the package did not work up to the satisfaction of federal expectations because it did not deal with the main demand of farmers – finding ways to lower the cost of production. As the federal package lost its relevance, Punjab came up with another placatory package of Rs. 100 billion – promising to spend the entire amount on the development of sector. As an additional measure, it promised to form a Kissan Commission to oversee the spending, thus taking it out of the bureaucratic rigmarole. Chief Minister Shehbaz Sharif himself announced the package and asked the farmers to come up with suggestions of spending the money. He also promised to head the commission himself and ensured free flow of promised money.

How far these provincial measures lead to actual spending and improvement of the sector remains to be seen. However, it has convinced the farmers that their activism is paying the dividends and they need to continue treading the same path. The government's yielding the space is only strengthening the farmers' resolve.

Pakistan has been living on the notion that it is the noisy minority of cities that impact the government's decision-making process and even remove the governments. It is interesting to see how the farmers, who were never a part of past protests, have suddenly become politically alive and gained strength. It all started in 2013, when farmers of a few villages in South Punjab (district Multan to be exact) started protesting against the overbilling of their tube wells. Since most of the farming community had much commonality in this overbilling cause, their strength only grew. For the next few months, anyone from the local distribution com-



UNITED the farmers now stand against what they believe are discriminatory policies.

pany (Multan Electric Power Company or MEPCO) faced collective resistance of the community. It saved countless tube wells from disconnection. Suddenly, the farmers realised that their problems could be lessened if they join hands. Soon this process spread to other areas such as Khyber Pakhtunkhwa where farmers were worried because of patwaris (the lowest rung revenue officer assessing and collecting various taxes) and police. Any revenue or police officer asking for money would find hundreds of farmers gathered in front of his office or police station and forced to drop the demand or even pay back if he had already taken the gratification. That is how things started rolling for farmers.

Soon, the farmers decided to take their overbilling case to the Punjab government instead of the MEPCO officials, who were refusing to listen. In order to put pressure on the Punjab government in almost identical manners, which have worked locally, the farmers blocked Multan road on March 1, 2013 and started marching towards Lahore. They were stopped midway (at Okara bypass), but they kept the road blocked for the next two days. It was the beginning that never stopped. The lead-

ership of Pakistan Kissan Ittehad (Farmers Unity) was taken to Murree by helicopter to see the Prime Minister and electricity rates for tube wells were reduced to a fixed package of Rs. 10.35 per unit.

In March 2014, the PKI did it again; this time for a bigger subject – trade with India. This slogan had a wider appeal and the PKI started encroaching into area of already established organisations like the Kissan Board Pakistan (farmers' wing of Jamaat-e-Islami) and Farmers Associates Pakistan (FAP), headed by erstwhile foreign minister Shah Mehmood Qureshi – now a PTI leader. With huge manpower at its disposal, the PKI was able to almost reach Lahore before they were stopped on a peripheral post. The police arrested almost 400 farmers, booked them under various charges – even terrorism. But they only returned after protracted negotiations with second-in-command Law Minister Rana Sanaullah assured them a meeting with federal ministers on the subject and also promised to put his weight behind them. The PKI kept blocking local roads to sustain pressure on the government.

Those 400 arrests only made PKI wiser, helping

it change its tactics. Instead of leading a protest, the farmers started coming to protests rendezvous individually and quietly. In June, they were able to reach Islamabad to hold a protest rally in front of the parliament and spilt milk to highlight woes of the livestock farmers.

This protest led to the Rs. 341 billion package in mid-September, or at least convinced the PKI that it was its continuous protests that forced the government, as the government realised the resolve and plight of the community.

With these successes under its belt, the PKI started to get involved into bigger issues and the opposition parties, realising its numerical value, started falling behind it – making the PML-N government even jittery. In February 2016, the PKI arranged an All Parties Conference at a five-star hotel at Islamabad, giving its activism a new (political) connotation. All opposition parties thronged to the venue and fearing of being left behind, the PML-N also joined. The final charter of demand carried signatures of all political parties – the PML-N, the PPP, the PTI, the MQM, the JI etc.

During these years, the Kissan Board of Pakistan also announced and held a number rallies under a new found slogan of *Kissan Raj*. It also announced a long march, where the head of JI Siraj-ul-Haq led the rally through the South Punjab but the effort almost fizzled out before it reached the destination. Despite unraveling midway, the call and effort itself reflected new thinking and planning among the political forces – use farming community to force political agenda under the garb of agricultural agenda.

This is also the point where the farmers' organisations should stop and ponder. Theirs is a genuine and innocent movement, rooted in social and economic crisis of the community. Would the involvement of politics in their movement help or negate their cause? Agriculture, given its social and economic importance in the country, would be better served if its remains bi-partisan. It is for both (farmers and politicians) to realise it, and farmers have bigger stakes in keeping their movements within the neutral territory. Otherwise, their movement may soon be divided among themselves and each party would claim pound of flesh for itself, leaving the main body to fester. The eagerness of politicians to use their movement was evident by the pre-APC press conference by the PTI, where it tried to claim the credit of the conference. The sector and movements for its betterment would be better served as long as it is seen without politics. ■

**T**HE joint declaration signed by all mentionable farmer bodies and the political parties demand for what they called "agriculture emergency" in the country. The document is the collective consensus of all major farmer organisations namely Farmers Associates Pakistan (FAP), Kissan Board Pakistan, Sindh Abadgar Board etc. It was also signed by the PML-N, PPP, MQM, PTI, JI and PML-Q.

It analyses how the cost of production skyrocketed in the last few years and how prices of output have collapsed. How trade with India was hurting Pakistani farmers and, if necessary, how should it be allowed? How much farmers have suffered because of marketing failure in the country and how the failures of the governments, to allocate promised budgets, have hurt their lives? How the imposition of GST ruined the agricultural economy of the country without bringing corresponding benefits and how cheap import of skimmed milk powder is destroying livestock sector in the country and adding to farmers' poverty.

The charter demanded the following things:

#### Declare 'agriculture emergency'

\* Agricultural commodity prices have collapsed over the last three years. Profitability in all major crops has been wiped out. Farmers' resources are exhausted. Agriculture activity has become unsustainable. The crisis has also engulfed the agriculture inputs industry. Demand for goods and services in the rural economy have declined sharply. Pakistan's GDP growth will decline sharply. If not remedied immediately, social unrest, crime and violence in the rural areas is imminent. As per FAO report, agricultural commodity prices will remain depressed in

## Combating the problems of agricultural sector

the next few decades. An 'agriculture emergency' may be declared immediately, where top priority in resource allocation is accorded to this sector.

\* Agriculture Income Tax exemption may be enhanced to Rs. 500,000 as is the case with other sectors and citizens.

#### Rationalising cost of production

\* Aggressive taxation in inputs leads to higher food prices. The cost of production for all crops has skyrocketed. While prices have plummeted by 40 to 50 per cent, as an immediate measure, all taxes including the GST on agriculture inputs may be withdrawn (seeds, fertilizer, pesticides, farm machinery etc.).

\* Duty-free import of all fertilizers, including urea, may be allowed by the private sector.

\* Availability of latest seed varieties is a major impediment to productivity enhancement. National and international seed companies may be provided all facilities (including IPR cover) to operate in our market.

\* Electricity prices have been slashed for other sectors of the economy. Water is the most critical input for crop production. It is demanded that electricity price for tube well connections may be fixed at a flat rate inclusive of all taxes at Rs. 5 per unit. This measure will yield major productivity gains for the economy.

\* As is the case in other countries, 'Green Diesel' voucher scheme may be launched for tractor and tube wells operation at the rate of

50 per cent of prevailing market price.

#### Minimum market price

\* A minimum market price for all major crops such as wheat, paddy, sugarcane, cotton, maize, potato and oilseeds may be announced immediately. It is the responsibility of the Government to intervene in case of market failures. These market failures occur due to government's inability to foresee the impending situation and adopting timely measures.

\* The federal and provincial governments must immediately double the procurement target of wheat as compared to last year.

\* As an immediate emergency measure, Government may procure Rs. 5 billion worth of potato to provide relief to the grower.

#### Trade policy and trade with India

\* The Federal Government along with Punjab Government is complicit in using trade policy instruments to rob the farming community of their labour and toil. Agricultural trade with India especially through land route is unacceptable until a level playing field is provided to Pakistani farmers in form of similar support and all barriers imposed by India through NTBs and negative regulatory mechanism are removed. We must adopt a similar Tariff and Non Tariff Barrier regime.

\* Free and duty-free export of live animal, grains and horticulture products may be allowed.

\* Stop the use of coercive methods through

Government machinery and law enforcement machinery for price suppression of farm produce.

\* Dairy farmers, especially the small and landless farmers, are currently receiving approx. Rs. 40/litre of milk whereas their cost of production is above Rs. 80. Multinational and local milk processors are busy importing low quality, subsidised, milk powder and whey to merely reconstitute and exploit our markets and consumers. All this is possible due to a farmer hostile policy of low import duties (20 per cent). It is demanded that import duties on milk powder and whey powder may be fixed at 100 per cent. India has an import duty rate of 68 per cent in spite of their relatively developed dairy industry and Dairy Cooperative Movement. Turkey has 180 per cent import duty.

#### Marketing infrastructure, market promotion

\* This year has witnessed crop disasters in price and production. Cotton farmer has lost \$1.7 billion in production and \$480 million in price drop, potato growers have lost \$1.5 billion in price collapse, and paddy growers lost \$350 million due to price manipulation.

\* Farmers are at the mercy of the trader when their crops arrive in the market and a glut situation is created. This year, the price of paddy jumped by 60 per cent within days after the farmers had sold it. This caused a loss to the farming community of over Rs. 35 billion. Proper storage infrastructure along

with modern marketing, banking and logistics mechanism may be developed to provide farmer with crop retention power. Government should provide incentives including 50 per cent subsidy for grain and cold chain storages. Minimum 1 million tons.

#### Amalgamation research, extension and education led by the university system

\* Agricultural research in Pakistan has come to a standstill. We have missed out on many emerging technologies such as the bio-tech seed revolution and currently we are laggards in adopting the IT and precision agriculture technology. This has made our sector look uncompetitive. Funds for research are inadequate (90 per cent go into wages and operations) and research being conducted is not demand-based. If we are to survive as a competitive agriculture economy, the system must be re-organised, and financed adequately.

\* Agriculture research facilities must be strengthened rather than usurping the lands for other purposes.

#### Water

Water is our 'gold'. Water storages are imperative for the development of agriculture and our survival. Large and small dams, including on-farm reservoirs may be constructed on immediate basis.

#### Budget allocations

As per vision 2025 of the Planning Commission, Development budget (PSDP) of Pakistan shall have a minimum allocation of at least 10 per cent of total for agriculture projects. This allocation must be increased to 20 per cent at least. ■

—Ahmad Fraz Khan



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# Bumper crops losing lifeline?

BY ASHFAK BOKHARI

**A**T a time when international prices of agricultural commodities are in steep decline, some at their lowest since 2009, and prices at home are higher because of higher cost of production, thus making their exports an unprofitable proposition, bumper crops are hardly a matter of rejoicing for the country and the farmers.

The country is passing through a phase when producing more does not earn accolades which at times would yield profit. Under the changed circumstances, the growing mountains of wheat, sugar and rice have, in fact, become a source of torment for those at the helm of affairs. Effective measures should be taken by government. First, the government should fix a reasonable support price to enable farmers earn a reasonable return of their labour and investment. Then it should fix a reasonable subsidy to enable exporters sell their produce at profitable rates. It is a tall order for the regime. Cotton is the only commodity which has no surplus but rather suffers from 34pc drop in output caused by pest attacks.

What is disquieting for the farmers and landowners is the absence of grain storages in the country which compels them to keep their produce in the open, exposing it to ill-effects of weather and subsequent contamination, thus rendering it unfit for human consumption. There are a few storages but these are run by the public sector entities. Nor are there any traditions of providing surplus food such as wheat and sugar to poor consumers at lower prices. Because of their high prices, consumers pay 40pc more for wheat, 20pc more for rice, and 30pc more for milk when compared with global rates. However, exports of these commodities are either negligible or in decline. The exports of rice have fallen over 11pc in July-December period and that of basmati rice, a major foreign exchange earner, by about 28pc. Sugar exports have also come down by a big margin.

Of late, there has been a growing demand from leading farmers, particularly in Punjab, for fixing support price of wheat at Rs 1,500/40kg. The government, they say, did not take into account the global trends while raising the price to Rs1,300 in November 2014 from Rs1,200. But the Ministry of National Food Security & Research opposes any raise in the support price urging the ECC to maintain the rate at Rs1,300/40kg, saying any increase would pose more problems in a competing market.

Even the support government provides to farmers on certain crops has not benefited them. In case of wheat, for instance, efforts to increase the support price have not paid any dividends. The government procures 25pc of the crop on fixed support price while the rest is bought by private sector at much lower rates. This factor has led many analysts to demand doing away with support



SAFE while they are still in the field. Once it comes to storage, most crops suffer and suffer big time.

price phenomenon. The government has imposed sales tax and other levies on agricultural inputs which, if withdrawn, could bring down the cost of production to a considerable extent, eliminating the need for support price.

The fact remains that bumper wheat crops in the three consecutive seasons have contributed to the glut. The country has pre-crop wheat stock of 5.5m tons, according to the Pakistan Flour Mills Association (PFMA). Indications are that the new wheat crop will be a bumper crop of over 25m tons this season. The new crop has started arriving in Sindh and will arrive in Punjab after April 15. The wheat procurement target for this season has been fixed at 6.95m tonnes against 6.6m tonnes in the previous year. Unless the federal government decides to resume payment of (required) level of subsidy, the wheat exports are unlikely to pick up pace.

The federal government has been considering different options to dispose of the unsold wheat before the arrival of the new crop but could not formulate a viable strategy. A decision by the Economic Coordination Committee (ECC) in January 2015 to allow export of 1.2m tons of wheat at \$45 per ton subsidy for Sindh and \$55 per ton for Punjab resulted in export of only 274 tons against Punjab's 0.8m ton quota and Sindh's 0.4m tons. Now it is exploring the possibilities of selling surplus wheat to the Gulf countries. The Ministry of Food Security has asked the foreign office to lobby in the Gulf States for its proposals.

The target countries are Saudi Arabia, UAE, Qatar and Kuwait which import wheat mostly from the US and Canada. The Gulf countries do not produce wheat and other agricultural commodities and depend on imports. Pakistan could enter into bilateral agreements with them for

export of staple food commodities by offering competitive prices. Pakistan's food and agro-products exports touched \$500m last year. Rice remains the leading export to the UAE.

Regarding sugar situation, a stock of 2.25 million metric tons was available in the country in February, according to the Federal Secretary for Industries and Production. The crushing season will continue till mid-April, hence adding to the available domestic stock. The Ministry of National Food Security and Research has estimated 65.44 million tons production of sugarcane for season 2015-16. On average, 80pc of the sugarcane produced in the country is crushed by sugar mills to produce sugar at the recovery rate of 9.8pc. Monthly consumption of sugar in the country is 0.4 million metric tons.

Regarding export of sugar, the Economic Coordination Committee of the Cabinet (ECC) allowed in December 2015 export of 0.5m tons with a huge amount of Rs6.5bn export subsidy in a phased manner, with first export target of 200,000 tons which was to be met by December 31. The export subsidy was agreed to by the government for not only clearing the glut but also for preventing any sharp rise in sugar price in the local markets so as to protect the interests of the consumers, most of whom happen to be poor and sugar is an essential commodity for them. As most of sugar mill owners are often accused of working as a cartel, an inter-ministerial committee, headed by the Commerce Minister, was set up by the Prime Minister to keep a watch on whatever happens on the sugar front and review every month the stock and export situation.

The millers, who are also exporters, were warned by the committee that the subsidy would be withdrawn if the local price increased by more

than 10pc in the domestic market. They, however, were able to manipulate a raise in the market price of sugar from Rs57 to Rs62 but since it was less than 10pc they escaped a punitive action. In this way, they were able to reap benefits from both market price and export subsidy. Feeling frustrated by the attitude of the millers, some participants of the meeting strongly favoured the diversion of the surplus to the poor population through utility stores.

The country's rice sector is currently passing through multiple crises and the reasons include soaring cost of production because of expensive inputs, substandard seeds, unsold stock of 500,000 tonnes from the last two years (valued at more than \$1bn), an acute shortage of funds, and inability of growers, millers and exporters to repay their loans. And the government seems to be indifferent to the situation.

However, after the devolution of agriculture to the provinces, there is much confusion over policy issues. The provincial governments are reluctant to take initiatives to address growers' problems and want the centre to step in. Even the much-vaunted Rs341bn agriculture relief package has failed to satisfy rice growers, who argue that the cash support of Rs5,000 per acre is insufficient to make up for the losses they have incurred. As a result, Pakistan is losing its coveted place in the global rice market. In fact, the demand for Pakistani rice is in decline because of its comparatively higher prices. The country has been producing about 2m tons of basmati rice, half of which is consumed domestically.

One reason for basmati's poor show is that since 1997 no new basmati seed has been introduced while Indians came up with five new varieties in the last 10 years. Pakistan launched a long grain Basmati 385 variety in the 1980s which was a major success in terms of yield. In the 1990s, another high-yield and longer grain variety, called Super Basmati, was introduced. But after being in use for around two decades, these varieties have lost much of their potency and their yields have declined drastically.

The challenge the government faces at the moment is how to minimise the cost of production in producing crops to make farming an attractive enterprise for the farmers. The Federal Minister for National Food Security and Research Malik Sikander Hayat Bosan says his ministry is working on mechanisms to bring down the cost of production. One such mechanism could be reduction in prices or taxes of agricultural inputs which the farming community has been demanding for quiet long.

At present, the use of inputs in the country is below the desired levels and if their prices keep going up their use would further come down, affecting the quality of output. Today, over 80 pc of farmers are small landholders possessing only about five acres of land. Many farmers have to do non-farm labour as well to make both ends meet or switch to crops requiring less inputs. ■

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# It's getting too hot to handle



THE wet and the dry of farming have both taken a serious hit in the face of climate changes that have gripped the planet. How to move forward is something we have not decided yet.

**The unusual weather pattern has confused the farmers, leaving them to wonder what it means to their crops and what future holds for them. Making matters worse is the fact that there is no one to guide them.**

BY AHMAD F. KHAN

A few weeks ago, the National Aeronautics and Space Administration (NASA) of the USA released the latest temperature data and set the alarm bells ringing around the globe. Global temperatures in the month of February were around 1.15 and 1.4 degrees warmer than average, making it an unusually warmer month on record. What worried everyone more was the fact that the monthly record broken in February was set only a month before, reflecting a big leap in temperatures in a very short period.

Part of this dramatic rise may be caused by the El Niño effect that originates in the Pacific Ocean and has knock-on impact on temperature and rainfall around the world. In this changing global scenario, the impact on Pakistan is even severe because it hardly has any absorbing capacity to take such shocks. These unpredictable weather waves hit the country in eight months between August and January and literally put agriculture upside down.

The social and political cost for the country has been too much to bear. It has stocked off farmers' protests never seen before in the history of the country because individual losses for farmers have been catastrophic, national economy is still counting the loss and both federal and provincial governments are sparing hundreds of billions of rupees in relief and subsidy packages to sooth the fraying farmers' nerves. All this has happened within a single year of weather impact.

It all started with unusual rains in August and September last year. Erratic weather during these two months wiped off almost 35 per cent of cotton crop, and the farmers put the loss figure at Rs. 170 billion – two months of erratic rains costing this much on a single crop. These rains washed away all the pesticides that were sprayed and did not allow next spray because of short interval between two showers. They diluted the nutrients and no farmer could afford another application of fertilisers. It created conducive environment for pest attack and caused the return of the pink bollworm after ten years of hiatus. To top it all, it made crop management almost impossible for common farmers by stretching the financial and human efforts too thin. All these factor were caused by a single source; the bad weather. These rains reduced the crop to around 5.5 million bales, by taking average yield down in all districts of core cotton belt: In Rahim Yar Khan, the average production is down to 20 maunds against 24 last year; in Rajanpur, it is 21 maunds against 25 last year; DG Khan dropped from 22

maunds to 15 maunds; Multan from 23 to 16 maunds; Khanewal from 24 to 16 maunds and Muzaffargarh from 23 maunds to 15.

The country and the farming community were still licking their wounds when next cycles of equal unpredictability started impacting agriculture. December and January, which host huge Rabi crops like wheat, were in for bigger shock. Six of eight weeks of these winter months maintained temperatures usually associated with spring months and confused the plants like never before. The December weather data reveals it all. According to metrological record, the base temperature of December and the first half of January rose by three to four degree Celsius as compared to last year. In 2014, December had minimum temperature of five degree Celsius against around nine degree Celsius this season. What further twisted the picture was the upper limit: against 12 degree Celsius last year, it maintained a steady pattern of early 20s – at 23 degree Celsius most of the days. The fluctuation between highest and lowest temperature was an exceptional 14 degree Celsius for most of December against six degrees last year. First two weeks of January maintained almost identical pattern before winter finally set in for three weeks. After those three weeks, temperatures went back to the mid-20s Celsius.

This unusual weather pattern confused the farmers and farming alike. According to farmers, wheat tillering suffered the most, especially for early sown crop. Most of the plants during those six weeks were maintaining a single stem, rather than a usual cluster because of cold weather, helped by foggy and overcast conditions, which usually help the plants multiply stems after the germination. That process went missing because of consistent high temperatures during December and first part of January and no one knows what it would mean for the final yield.

Similarly, the potato growers had their own weather-related issues to moan about. They claimed to have been forced to delay harvesting because of hot weather, which kept the plants green. Normally, cold and frosty weather burns exposed parts of the potato plants and force farmers to go for the harvesting. This year, those parts remained green till late as neither cold nor frost touched them and the farmers delayed harvesting to gain on weight. But they only ended up creating glut as the entire harvesting was carried out in squeezed span and the price loss only hurt them further.

To further complicate the situation, their delay in harvesting ate into the time of corn sowing, creating problem for maize. The delayed maize sowing took the crop directly into hot days of

March and would push it towards the early maturity. The corn crop matures on heat units rather than the time span. As it would directly land into the hot zone, the maturity process must have started prematurely. Hot weather would also restrict vegetative growth, force the crop into early pollination and affect the yield. If weather gets hotter, pollen may also get wasted, further compromising the yield.

The orchard owners, especially those of mango growers, had their own worries to share. The plants started bearing flowers in early January – a process normally happening after mid-February because of relative hot weather, which created spring conditions in the field. The subsequent cold weather only burnt the flowering and made it hard for the plants to have another bout of flowering. The citrus plants also had the same disturbed cycle forcing them to bear flowers quickly. How much those weak plants which have just given fruits, can handle the next flowering

burned remains to be seen. The entire cropping pattern was thus in for uncertain and confusing times for the plants.

With a single season of disturbed weather and that too by a few degree Celsius, the entire agricultural spectrum has become vulnerable and uncertain. Farmers of all major and minor crops, even those with ornamental tree, are confused what this weather means to them and their crops and what future holds for them. What makes the matter worse is the fact that there is no one to guide them out of their confusion because there have been no studies on changing pattern, let alone their impact on individual crop cycles and training of the Extension Staff to handle such situations.

The federal and provincial governments have so far promised around Rs. 441 billion (Rs. 341 by the centre and Rs. 100 billion by Punjab) to pacify protesting farmers, who claim to have been stung mainly by two factors: taxation regime and uncertain cropping

behaviour. The government needs to realise the impact sooner, otherwise this cost is bound to escalate and soon spin out of the financial reach of the country.

The most tragic part of the weather-related crisis has been the consistent ignorance of the phenomenon despite almost all national and international institutions – the ministry of Science and Technology, Climate Change, the State bank of Pakistan, the World Bank – issuing periodic studies and warnings of impending climatic changes and its ill impacts on the agriculture and national economy. However, most of these warning went unheeded because of intangible nature of the threat. That theoretical threat is now a verifiable reality and needs to be studied in all possible aspects: the causes, the patterns, the extent, the ramifications and, finally, the mitigating measures. Ignoring it any more could cause irreparable economic and social loss to the country. ■

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BY FRAZ AHMED

# Cotton crop in a shambles

**A**S the country mourns the disastrous loss of cotton crop (up to 35 per cent according to latest figures) this year, the planners, especially in Punjab, are now worried about the next crop as well. Though the early sowing has begun, all initial signs suggest that Punjab alone may lose 15 to 20 per cent area. This loss would come at the top of almost 15 per cent acreage that the crop has lost in the last few years; it dropped from 6.2 million acres to 5.5 million in the last two years. The loss, and its speed, has been major worries for the planners, and now, they fear, both would be hastened as crop loses its economic sheen for the farmers.

This year alone, the cotton farmers claim to have lost a staggering amount of Rs. 218 billion on their crop – Rs. 170 billion because of inclement weather making farm management almost impossible and leading to massive pest attack and another Rs. 48 billion due to subsequent drop in prices. With no guarantees available either against weather behaviour or insurance against prices crash, they are flocking out of crop in droves.

The official explanation blamed the weather for the entire crop loss. However, a committee formed by the Chief Minister to locate the causes of crisis disputed that clarification. The committee, headed by Vice Chancellor of the Agriculture University (Faisalabad) Dr Iqbal A Khan, maintains that the provincial excuse of bad weather being the major cause, even if taken as true, is only valid up to a point. It leaves huge unexplained portions such as why Rahim Yar Khan Division, which received 10 times more rain than the previous year, still performed better. Likewise, the Multan Division, which received double the amount of rain than its yearly average, was still able to perform like previous year. Such holes in the Punjab Agriculture Department's explanation only prove that no single factor can explain this year's crop failure. Substantiating its stance further, the committee said that the crisis was not limited to one year. The data gathered over the period of last 23 years (since 1992, when the country harvested bumper yield) reveals that the country has been stuck between 12 million bales to 14 million bales; inclement weather, or not. During the same period, India has almost tripled its production despite being next door neighbour and suffering almost similar



THE future of the crop and that of those involved with it is at stake.

weather patterns.

The provincial agriculture planners, however, insisted that the only difference between last year's over seven million bales production and this year's 5.3 million bales was the weather. The climate took average production down in the entire cotton belt. In Rahim Yar Khan, the average production came down to 20 maunds against 24 last year; in Rajanpur, it was 21 maunds against 25 last year; DG Khan dropped from 22 maunds to 15 maunds; Multan from 23 to 16 maunds; Khanewal from 24 to 16 maunds and Muzaffargarh from 23 maunds to 15 maunds.

The department has been acting under same SOPs for decades – its actions were the same in both years, but weather single-handedly failed the crop. Last year, August and September rains hit the crop on many fronts. It washed away all the pesticides that were sprayed and did not allow the next spray because of short interval between two showers. It diluted the nutrients and no farmer could afford second application of them owing to financial reasons. It also created conducive environment for pest attack and caused the return of the pink bollworm after a hiatus of ten years. To top it all, it made crop management almost impossible for common farmers by stretching the

financial and human efforts too thin. All these factor came from a single source; the bad weather.

The farmers, who had gathered at the beginning of this year to discuss the causes of cotton failure, came up with five factors. To them, it was a failure of seed, bad weather, cost of inputs, and failure of market and international price crash that led to disaster.

Punjab's fears were further heightened by the farmers' explanation because it has very limited role in these areas even if it wants to help the farmers. Out of five factors that farmers held responsible for their woes, only one is directly concerned to the provincial government, that too only up to a point. Two of them are federal subjects and the other two are beyond the control of both the federal and the provincial governments.

Out of five reasons, according to farmers, the failing BT regime tops the list. Allied to this is the pest problem, especially pink bollworm, which caused up to 60 per cent of crop losses in some areas. The growers argue that since the world has moved to Bollgard III, even four, which have resistance against the bollworm, the western research institutions have stopped searching for solution against it. The Pink problem is now limited to Pakistan and, to some extent,

India, where research is almost non-existent. What makes the matter worse is that none of the current chemical is effective against it. Thus, the farmers are in a bind: vulnerable seed and, with no effective pesticide in case of pest attack.

To them, the next biggest problem is crashing market and domestic prices. The federal government, according to them, does not play any role in stabilising both despite playing huge role in their destabilitation. It keeps adding to the cost of production through a set of policies but stays out of trading when output hits the market. The farmers are paying up to 22 per cent of taxes on pesticides, but price of production is left to the greedy industry that only maximises its own profits. That is why farmers are losing interest in the crop. To them, national loss comes much later; they are the first ones to suffer financially and socially and have the right to make choices – and they are, unsurprisingly, opting out. They are after maize, cane and even pulses seeds, instead of cotton, this year. Their shopping spree of alternate seed generates fears about cotton crop in provincial policy circles.

The next twin-problems, according to them, are climatic changes and slide in international prices which has made the management of crop and export almost impossible. Persistent rains, this season, restricted the pesticides application to almost nil and dwindling world prices left them at the mercy of local industry that chose to hike its profits even at the cost of the crop's future.

Out of these problems, which farmers hold responsible for crop crisis, Punjab can help refining the seed industry only; even in that case, the final certification has to come from the federation. The problems of marketing and pricing are mainly federal forte, and both of them cannot control climate and international prices. The crop thus is challenging the policy-makers like never before and they have to think afresh about its future and role in economy.

The pesticides industry adds another layer of problem when it claims that no chemical in the world is effective against Pink Bollworm once it has attacked the crop – only preventive measures (the PB

Ropes and Pheromone Traps) help. A certain lobby is twisting the argument to favour new varieties; otherwise the pest is attacking advanced varieties of Bollgard with the same ferocity as it has done in case of Bollgard-II. The pink bollworm is thus turning out to be next the CLCV, which used to cost one to two million bales every year in the '90s and the first decade of the current millennium.

This situation provides the context for next crop, which is now being sown in the province and the country. It puts heavy onus on Punjab, not only as major host of the crop and beneficiary of its financial and political benefits, but also for being extension of federal government – belonging to the same party and the family.

It should push the federation both at official and the party level to take care of the crop, which is too important to be left to the whims of one stakeholder. Apart from refining the seed sector, it has to plead for better marketing, where the price of the crop does not fall below at least than the officially calculated cost of production. It does not mean to make the industry suffer, but only to ensure a win-win situation even if it means the federal government is picking up a part of price to maintain import price parity for the industry. The federal government can certainly ask the industry to procure cotton at a certain price, calculate how much extra industry paid (as compared to import) and compensate the industry through other means. At the same, the federation should also take measures to bring the cost of production down. It needs to compare how much tax it has been collecting on inputs and compare them with loss they are causing to the economy. Only then it would be in a better position to calculate true cost of those taxes.

Another issue that needs immediate resolution is import of crop. As the country starts sowing, the federation now needs to calculate how much imports were needed, how much has been imported and where to stop the process. If, in the name of domestic shortage, the industry is allowed free import and create a glut even for next season, the crop's crisis would certainly turn into an existential danger, at least in Punjab. ■

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BY ASHFAK BOKHARI

# Seeds of discontentment

**Agriculture, including seed business, became a provincial subject after the passage of the 18th Amendment. But the provincial assemblies passed a special resolution authorising the federal government to amend the Seed Act of 1976 and retain it as a federal subject.**

**T**WO legislative bills that seek to change the very shape of the country's seed sector but had to traverse a long journey have finally been passed by the National Assembly, but have got stuck up in the Senate. They are the Seed (Amendment) Bill 2014, and the Plant Breeders' Rights Bill 2015.

Both bills are radical in their approach and equally controversial in their content. The bills were originally moved in 2010 but were then put on the backburner without assigning any reason. After being frozen for four years, one bill, relating to seed business, was revived following the formation of the Intellectual Property Organisation (IPO-Pak) on April 8, 2015, as a regulator of intellectual property rights (IPRs). The two bills and IPRs are closely connected. The seed bill, an amended form of 1976 Seed Act, was re-launched as 2014 bill.

The Plant Breeders' Rights bill was revived last year and re-launched as a 2015 bill. Pakistan, being a member of the WTO, is required to provide protection to plant varieties under sui generis system under Article 27-3 (b) of the Trips law. The sui generis (unique) system for plant varieties must comply with the basic principles of national (equal) treatment.

Seeds are one of the key pillars of food production and rural families and farming communities have over the years worked hard to create hundreds of crops and thousands of their varieties. The regular exchange of seeds among farmers has enabled crops to adapt to different conditions, climates and topographies. This is how the farming had spread and then fed the world with a diversified diet.

Agriculture, including seed business, became a provincial subject in Pakistan after the passage of the 18th Amendment in the Constitution in 2010. But, according to Federal Minister for Food Security and Research Sikandar Hayat Bosan, all the provincial assemblies had passed a special resolution authorising the federal government to amend the Seed Act of 1976 and retain it as a federal subject.

Since their introduction, the basic reforms suggested in the two bills had been the object of intense debate in the NA standing committees and among civil society groups and farmers bodies. Informed analysts are of the view that agricultural research and development are at a crossroads. One path leads to privatisation of agriculture and the other toward farmer-led agriculture. One cannot move both ways when it comes to IPRs. Governments and the formal research sector have yet to acknowledge this conflict. Many Asian countries, including Pakistan, are trying to meet WTO obligations in the hope of attracting foreign private sector investment for domestic R&D and simultaneously protecting the interests and rights of the farmers. Unfortunately, the two cannot go together.

That the country tends to take the path of private



THE journey of a potential bumper crop begins with its raw form; the seed.

sector-led agriculture is evident from Sikandar Hayat Bosan's statement attached with the text of the new seed law. The 1976 law, he says, had failed to fulfil the requirements of a 'modern seed industry' because the capacity of the public sector, over the years, has grown weaker. Today, he says, "it is the private sector which is playing a stronger and more vibrant role across the world. The new innovations in hybrid technology and genetically modified crops have transformed the seed industry." Currently, the share of public sector in seed production and supply in Pakistan is only 15pc.

It was in 1980s that the private sector entered the seed business. The first seed company was registered in 1981. The pace picked up in the 1990s. In 1994, seed business was formally given the status of industry and was granted stimulus associated with that designation. By 2000, 291 private seed companies had been registered. Four multinationals also established their Pakistan affiliates during the 1980s-90s. These included Monsanto (1984), Pioneer (1989), Syngenta (1991), and ICI Pakistan (1998). By 2012, there were 963 companies. However, the seed sector has all these years been controlled and managed by the public sector.

The seed market, at present, is mostly dominated by profiteers who sell seeds which have low germination and impure genetics. Seventeen cases were filed in courts against such peddlers in 2013. What

happened later is not known. However, the use of certified seeds has come down to 15-20pc which mostly come from the farmers' saved stock. If agriculture is able to sustain itself and feed most of the population today, it is because the farmers have saved and recycled seeds of various crops, protected their purity, exchanged and shared them with fellow farmers.

Under the proposed new setup, the private sector will be allowed "to produce basic seed for its multiplication and certification" and establish seed testing laboratories. Besides, the law permits registration of GM crops provided no 'terminator technology' is involved in the development of seed variety.

These laws have been strongly criticised by the farmers' organisations which had, of late, been taking out rallies and holding sit-ins mostly in cities of Punjab to register their protest against what they say putting limitations on what farmers can do with their seeds and with the seeds they buy. Seed saving, an age-old practice which forms the basis of farming, is an anathema for the seed multinationals and hence needs to be replaced by branded seeds. There will be no more re-use of the seeds for the next crop. The farmers will have to buy seeds for each crop from the registered companies at a higher cost. Such expenditure the small farmers, at least, cannot bear and soon many of them may have to quit the farming.

The Foreign Office's concern on introduction of GM seeds is an important development as conveyed by Environmental Protection Agency's chief during the proceedings of a public interest petition in Lahore High Court. While appearing on behalf of the federation on May 14, 2014, he said: "the Foreign Office has also conveyed its concern to the Climate Change Division that the subject of GM seeds is a matter of grave concern for national security and trade. It can be used as a biological weapon of mass destruction to destroy Pakistan's major crops such as potato, wheat, rice, corn, cotton and vegetables through modified viruses, bacteria and other parasites." Asif Shuja, a former director-general of the Pakistan Environment Protection Agency, was recently quoted as having stated that the country does not have the expertise to conduct safe trials of GM crops.

The bill which amends the 1976 Seed Act was approved by the federal cabinet in 2007 but remained frozen for two years. It was re-approved by the cabinet in 2009 and was introduced in the National Assembly on January 11, 2010. The bill was referred to the standing committee concerned. There it remained unattended for three years and could not be passed owing to dissolution of the

national legislature on March 17, 2013 because of fresh general elections.

The bill was again approved by the federal cabinet on May 15, 2014 for the third time and introduced in the NA for the second time on August 8. It was passed by the NA standing committee on food security on October 16. However, it took another four months to be taken up by the National Assembly on March 16, 2015 but before the bill could suffer any further delay it was put to vote and was passed the same day.

The Plant Breeders Rights bill was approved by the National Assembly Standing Committee on Cabinet Secretariat on January 6, this year after inclusion of a few amendments. What the bill now awaits is a formal nod by the upper house of parliament. The ruling party senators were seen in an unusual hurry to get the bill passed and had in fact tried to rush through the draft in a meeting of the committee a few days earlier criticising the longer delay in adoption of the bill. It is interesting to note that the bill was introduced in the NA on November 27, 2015.

The fact remains that intellectual property rights and plant breeding have nothing to do with each other. In Asia, and much of the developing world, patents were never allowed on life forms because of ethics, colonial legacies and the threat that statutory monopolies in the health and food sectors pose to peoples' basic needs. Not long ago, developed countries also excluded living organisms from intellectual property regimes. But with the advent of the hybrid seed industry and, later, of life sciences industry, plant breeding has become a big business.

In 1973, Pakistan sought help of the World Bank to review and reform its seed provision system. This was the beginning of first large-scale seed industry project under which comprehensive legal and institutional reforms were undertaken to improve seed supply to farmers. The most salient feature of this project was the enactment of the Seed Act, 1976, which specified procedures for registration of varieties and seed certification. The Act also created National Seed Council, Provincial Seed Councils, and two separate agencies.

These agencies were merged in 1998 to constitute the FSC&RD as it stands today. The mandate of Punjab and Sindh corporations for agricultural supplies was redefined, and these were converted into Punjab and Sindh Seed Corporations, respectively. In KPK, an Agriculture Development Authority was established, which was mandated to produce seed for local consumption. This phase was marked by the leading role of public sector organisations and the low profile of the private sector. ■

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# Hatching profits

BY KHAWAJA MOHAMMAD AMER

**Commercial poultry farming has become a major industry and it now meets 40 per cent of the total domestic meat consumption.**

**P**OUULTY farming is now being considered one of the most vibrant sectors of rural economy throughout the world. Even in South Asian countries poultry farming is growing at a fairly fast pace to meet the ever-increasing demand for proteins through chicken meat and eggs. In Pakistan, the poultry industry has made considerable contribution to food production and plays a vital role in the economy of the country. Setting up poultry farms in Pakistan has virtually proven to be a profitable enterprise as it is the best source of cheap, palatable and nutritious food protein, and, above all, well within the reach of the common man. Massive advertisement campaigns by the big poultry enterprises have also helped in attracting the general public towards the various poultry products.

The prices of chickens and eggs are opened on a daily basis keeping in view the supply and demand position and are truly governed by demand-supply in a free market mechanism. On the other hand, the demand for chicken and eggs is influenced by the prices of supplementary food items like beef, mutton, pulses etc. It also immediately reacts to climate changes. For instance demand increases in winter and decreases in summer. Quite contrary to the general norms of international price trends, in Pakistan the price of poultry and eggs even changes with Islamic calendar. For instance during the month of Muharram, Safar and Zil Hajj demand for chicken goes down rather considerable and during the month of Shaban, Shawwal and Rabi-ul-Awwal, being the wedding seasons, demand rapidly goes up.

Poultry farming on large commercial scale in the private sector was started in the country due to a unique decision of PIA in 1965 to deviate from its core business of operating an airline and explore other avenues to generate revenue. As a result, the first modern hatchery unit in Karachi was established. Later on, other investors impressed with the earnings of PIA Shaver jumped in to this business which resulted in establishment of poultry farms in the country. Though PIA had to close down this business, the private sector grew rapidly enough to fill the gap which could have been created by the closure of PIA's poultry farm.

It has been observed during the last 35 years that poultry farming in Pakistan has developed as an important sub-sector of livestock. This expansion continues to fill the genuine gaps of the animal pro-



tein and should be fully encouraged in order to promote the welfare and prosperity of the people by providing them with a nutritious and balanced diet.

The commercial poultry farming therefore emerged with the combined efforts and foresight of the government and the private enterprises. Commercial poultry production was initially concentrated around the large urban centres in the provinces of Sindh and Punjab, mostly at Karachi, Lahore. But with the passage of time, it is now spread all over the country. In the province of Sindh, there are farms in Mirpurkhas, Sukkur, Nawabshah as well as in small cities. Similarly, in the province of the Punjab, poultry farms have been well established in the areas of Rawalpindi, Faisalabad, Multan, Lahore, Bahawalpur, Rahim Yar Khan and Mianwali.

Poultry produced in Pakistan is being developed through two management systems i.e. commercial farming and rural poultry farming. The commercial poultry farming sector is a classic example of private sector enterprise with a phenomenal growth of 25 to 30 per cent per annum. The achievement of this rapid growth was possible due to the incentives granted by the government from time to time, like liberal financing and credit, income tax exemption, duty-free import of grandparent and parent flocks, machinery and poultry farm equipment, such as hatcheries, cages, brooders, feed ingredients such as

soybean, meal, maize, and sorghum used in poultry feeds, in addition to liberal and easy facility to obtain loans from commercial banks and financial institution.

The poultry industry in Pakistan, according to published reports, witnessed a meteoric rise as the private sector effectively and efficiently used the poultry farming introduced by the PIA. And in a very short span of time, poultry farming became one of the most promising sources of additional income. Besides this, poultry farming has a number of advantages. It produces much needed protein and food; it serves as a source of income and employment to many and it has good returns. Poultry keeping is becoming more and more capital intensive, and it is very profitable. The income from poultry business begins to emerge within eight to nine weeks for broiler or 20 to 22 weeks for layers. A broiler is a young male or female bird under the age of 10 weeks. These are generally fast-growing breeds reared and marketed for meat. Depending on feed and management, broilers mature in eight weeks weighing near 2.5 kilograms and consume about 4 kg of feed in the period of six to eight weeks, which is the usual age for marketing. Most breeders rear broilers to be ready for sale during festivals when demand of profit is high. A layer of mature age generally lays 250-300 eggs. These eggs provide high quality protein to the household. In addition to eggs and meat,

poultry provides manure that is of great value on the farm. It has been observed that nearly 40 hens or deep litter yields about 1000 kilograms of manure per year. The income from layers (hens) begins to appear within eight to 10 weeks, for broilers or 18 to 20 weeks for layers. According to the economic survey, (94-95), 2.35 kilograms/capita per year eggs were available in Pakistan during this period.

In the local market, according to reports available, the increased poultry production had released the pressure on the demand for beef and mutton. For the past many years, the poultry meat, being cheaper as compared to beef and mutton, has delivered great nutritional support to consumers. Commercial poultry farming has become a major industry and it now meets 40 per cent of the total domestic meat consumption. Per capita poultry meat consumption currently stands at only five kilograms and 51 eggs per annum, compared with four kilograms and over 300 eggs per capita per year in developed countries. There is still great scope for the home market to increase its consumption levels. The present challenges in poultry farming are poor law and order situation, acute power shortages, higher prices of poultry feed and scant resources to combat breakout of poultry diseases which kills thousands of birds.

Available reports confirm that investment in poultry farming and expansion in sales network of poultry meat in the last few years has given a boost to local sales and made it the cheapest meat available in the country. To some extent, this has provided relief to consumers against a sharp increase in prices of red meat owing to its increasing exports. Fresh local investment in poultry farming has started paying dividends in terms of higher number of poultry birds and increased production of white meat. Exclusive on Poultry Table 3: Export of Poultry Live and Meat Year Poultry Live Poultry Meat Quantity (000 Nos) Value (Rs. Million) Quantity (Tonnes) Value (Rs. Million) 2009-10 151 27 --- 2010-11 1,553 291 553 788 2011-12 2,131 319 319 46 Source: Federal Bureau of Statistics, Government of Pakistan.

Poultry industry has flourished over the last few decades. Now it is the country's second-largest industry next to textiles with a turnover of approx. Rs 300 billion (\$3 billion). The last decade has seen significant investment in the industry, particularly in closed housing. Banks made net fresh loans of Rs 4 billion in one year to October 2011 before distributing additional loans of another Rs3 billion in the following year to October 2012. This support was, however, not continued and there is now a need to support this industry from stalemate. ■

**A**FTER developing a world-class genetic, trade and infrastructural base, the poultry industry now seems to be on a suicidal mission. On the one hand, it claims to be selling chicken meat below its cost of production for the last two years and reporting businesses closures, while, on the other, it is regularly colliding with the legal framework of doing business in Pakistan.

At the beginning of 2016, it earned the distinction of being the only industry, which has been fined twice by the Competition Commission of Pakistan (CCP) for "influencing pricing, production and sale of poultry products" and thereby engaging in anti-competitive business activity. It was second time in the last six years that poultry industry has come under the CCP hammer. It was fined Rs. 50 million in August 2010. In 2016, it faces double fine for replicating meat trade practices in the egg market as well.

Though it was predictable but the decision is unfortunate for an industry already in the throes of crisis, if its own claims about declining profitability are to be believed. On the face of it, tough time should have made the industry more careful in conducting its business, not otherwise. Unfortunately, it has taken exactly the opposite route if the CPP decision is to be believed. The PPA was fined for almost identical reasons it was punished for in 2010. In 2010, it was guilty of violating Section 4 of the competition Act. In 2016, it is again held guilty on the same ground, with doubling of crime by intervening in the egg market as well. The PPA's advertisements in newspapers stating rates of live birds, chicken meat and eggs were considered anti-competitive and violation of CPP's act.

Apart from cursing the CCP for failing to

## Poultry industry 'chickening' out?

"understand" interpretation offered by the PPA on the issue, the industry needs to search its soul as well where has it gone wrong, and repeatedly so. What are the parameters of doing business and how to remain within those boundaries? Or at least, why has industry not been able to convince the CCP on variety of its claims. These are serious business issues that the poultry industry needs to consider in near future to save it of further embarrassment in Pakistani market.

The timing of the fine could not have been worse for the industry, if the state of its business, as portrayed by the PPA, is taken valid. According to the industrial claims, chicken meat is being sold far below the cost of production for the last two years. Because of this persistent loss, over 40 per cent businesses have already pulled their shutters down, and more are on their way to closure. For the last two years, the PPA has publicly been pleading for official survival package; freight subsidy on exports, concessional loans and deferring payments of loans that have matured to keep farmers in the business. Getting fined should have been the last thing that it would have asked for at this stage.

The industry claims that it, through newspapers advertisement, has been conveying, not controlling, chicken meat and egg prices – an explanation, which the CCP refused to subscribe to as "subjective interpretation." Through advertisements, the PPA was at least

telling the market those rates, had its blessings and backing, if nothing else and this is violative of rules, CCP claims in its decision. The fine was thus slapped and the PPA would certainly challenge it in the court and a long-drawn legal battle would follow.

But apart from the legal wrangling, the PPA has some explanation to do. For example, if the industry has been selling chicken below the cost of production for the last two years and over 40 per cent of businesses have already been closed by huge losses, how has huge over-production, according to PPA's own explaining for low prices, is still glutting the market? There seems to be some miscalculation on the part of PPA, either in cost of production or in closure of businesses. It is for the PPA to remove such dichotomies in its public stances that could hurt it even more.

Secondly, it also needs to clarify why it has been held guilty on the same account twice? Is it refusing to play by the rules and insists on, what the CCP calls, subjective explanation of its behaviour? Or if it is convinced about the variety of its claim, why has it not been able to convince the CCP of its rationality? The earlier it is disconnected between the body, designed to keep things transparent, and the industry are resolved, the better it would be for everyone.

The industry also needs to check its business model. Despite coming of age on two very vital fronts, genetic base and infrastructure,

it has failed on two equally vital areas i.e. price stability and consumer awareness. The poultry industry around the world brought price stability through expansion in processing and exports. The Pakistani industry lacked on both fronts despite having ample opportunities in the last decade and also an elaborate platform – a world class genetic base and even better management practices that it brought in with huge investment. This failure comes to haunt it in cycles.

It has never looked beyond domestic market for business expansion. Its critics say that the kind of profits it had been making in the country are unprecedented and forced it to concentrate on the domestic market, leaving export option out despite having all the required wherewithal for regional and continental expansion. It had the world's best gene pool, even better practices and hungry Gulf markets just around the corner. But domestic profits are too lucrative for it to allow it overseas undertaking. Now, as the traditional and profitable market hits a saturation point and the PPA finds itself at the end of road, it needs to check itself as well.

The poultry industry also needs to take cue from industries around the world; how they created a balance between their profits and consumers concerns. They invested heavily both on consumers awareness and farmers training. Both these factors are totally missing in Pakistan. The elite class has developed few, what the industry calls, misconceptions about

raising of flocks and its ill-effects on human health and is weaning away from it. If they are purely misconceptions, why has the industry not been able to remove them? It has not been done yet and costing it a part of its market.

The farmers currently joining the industry are producing blindly without taking the cyclical impact of market and prices into account. They only realise when prices actually fall. The industry lacks production and demand database to forewarn them against shortages and gluts. It has done almost nothing on this account despite having a proactive association if conveying of market price through advertisement is taken as benchmark. If rates can be conveyed, why not market analysis?

On top of it all, the PPA should not forget that its rates advertisement campaign had a context, which it built publicly. In the same press conference, where it pleaded for official subsidy package, it also warned the government and public of impending rise in prices because of declining production. Only a few months down the line, the advertisement campaign started, and was noticed by the CCP. The PPA needs to ponder on these points because they would keep nagging its business as well as its public stances in foreseeable future.

Apart from pleading for a rescue package like other industries, like sugar for example, and expecting the CCP to behave as per its expectations, it should try to strengthen its weak links: inefficiencies, consumers' awareness, farmers' training, investing in processing and efficiencies and finding export markets. Unless it is able to do that, it would remain a willing victim of CCP interventions and would keep making a bad name for itself. ■

—Ahmad Fraz Khan

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# Inside the 'white gold' industry

BY KHAWAJA AMER

**K**ARACHITES consume over seven million litres of fresh milk per day, which, if calculated on the current retail milk price of Rs.80 per litre in the city, comes to over Rs. 560 million a day. The figure clearly shows the significance of fresh milk in the most developed urban city of the country. It is very interesting to note that even an average middle class family of five members with a standard income of Rs. 35-40 thousand per month spends a very high component of the monthly income on fresh milk. The Karachi milk industry, according to local cattle farm-owners, comprises about 92 per cent of undocumented or loose milk economy while the remaining eight per cent represents the organised big dairy milk brands.

There is no denying of the fact that fresh milk - also known as White Gold - can be used to make an enormous variety of high quality dairy products that is why this industry occupies a special position among the other sectors of agriculture. Fresh milk produced and sold on daily basis gives a regular income to the numerous small producers and retailers. Since this is a highly labour-intensive business and provides a lot of employment opportunities, the local cattle farmers argue that the government could play a vital role in improving the life of the small farmers and give a much required boost to rural economy by facilitating them in developing cattle farms on modern lines and allowing them to sell their product at a price rational enough to maintain the cattle farms in a better way and at the same time make both ends meet comfortably.

Despite holding the 92 per cent share of the local milk market, our dairy farmers are still using old and worn-out methods and it is essential that they improve and upgrade these techniques for better productivity. The government can play a role by supplying them mechanised equipment at subsidised rates. As we know, our farmers have for centuries adopted old dairy farming methods, they must change all this now if they want to keep up the pace with today's advanced world. They must follow better animal health methods and have access to reproduction and nutrition specialists. It is the duty of the government and the animal husbandry department to help the dairy farmers in this respect.

It is interesting to note that Karachi and Mumbai are the only cities having the hub consisting of large semi commercial cattle farms selling undocumented or loose milk on such a massive scale in the entire South Asia. There are over 22,500 established milk outlets in the Karachi. In these shops, fresh milk is sold, without pasteurisation or other treatment. The local consumers prefer buffalo milk which contains more fat and hence is good for other byproducts of the milk like yoghurt, cheese, butter, ghee etc. Milk is also used to make Khoya and different types of sweets. Milk processing companies use milk as a raw material to formulate different types of milk i.e. pasteurised milk, UHT milk, condensed milk, skimmed milk, milk powder, etc.

According to a local cattle farm owner, fresh milk sold in the market is a combination of 90 per cent of buffalo and 10 per cent of cow milk. This is standard ratio to maintain the required level of fat in the milk that is 6 to 6.50 per cent. Moreover, maintaining a buffalo herd is much easier and inexpensive than cow herd for simple reason that buffaloes are strong enough to sustain the extreme heat of Karachi whereas cows are not. No other ingredient, either to enhance the shelf life or calcium content of the milk is added to the fresh milk. In fact, it is available in the market with all the freshness. However, the



CONSUMERS queueing up at shops selling fresh milk is not an uncommon sight.

addition of drinking water by some retailers cannot be ruled out. But then they argue that the addition of drinking water is not harmful in any way.

A comprehensive report on the supply chain of fresh milk is available in Karachi buffalo colony Value Chain Assessment Final Report for the USAID Agribusiness Project by Derek J. Massey and Shafqat Ali Sayed, which reads, "The supply chain through which the fresh milk reaches to the retailers from cattle farms is very simple. Milk is collected in 500 litre open tubs where often ice is added "for cooling" and then transferred into 37.5 litre (40kg) galvanised steel cans which are immediately tightly capped. Within two hours of the end of milking, all 40 kg cans are picked up by a network of pickup trucks twice daily. The middlemen, commonly called 'Pekkar', are responsible for delivering the milk cans loaded in a truck to an organised establishment of milk collection which is owned by a master distributor. The milk is then delivered via the cans to households and multiple milk selling stores throughout the entire city of Karachi and its surroundings all within the first three hours of milking. Pekkar negotiate the form of payment with farmers who sell their milk in advance. They maintain a constant payment schedule as agreed between them. Within five to six hours, all cans are returned to all farmers by a return visit by the Pekkar. All cans are washed prior to the second daily milking and the same process is repeated a second time during the afternoon milking. The milk is normally presold for a month or even up to a year to a Pekkar so the farmer is tied into a contract."

It is interesting to note that the share of Tetra Pak milk is only eight per cent in the most enlightened city and financial capital of the country. When packaged milk was first introduced in Pakistan in 1981, the Karachiites were not ready to accept it as drinking milk. They, however, gradually started using it only for tea. Naturally so because in general, people thought Tetra Pak milk was not as healthy as loose fresh milk. An aggressive campaign was therefore, started by the leading brands of the dairy milk in the country to change the perception of the public. Though people living in the upscale posh localities of the city gradually started responding to their campaign, the fact remains that all the big brands have to run reminder campaigns to achieve their sales target. On the contrary, those involve in the business of fresh loose milk do not require any such campaign. Needless to emphasise that we continue to see com-

mercials aired on our TV channels showing how free from germs and bacteria Tetra Pak milk is. The massive advertisement campaigns definitely succeeded in winning the minds of people living, especially on the other side of the Clifton Bridge who switched over from traditional, loose, fresh milk provided by dairy farms to the Tetra Pak milk.

The user of packaged milk argue that they prefer using and recommending packaged milk, for the simple reason that it is convenient and more nutritious. Additionally, it is not exposed to moisture, bacteria, air and ultraviolet light, all of which can cause quality deterioration and compromise food safety. This is because of the technology that is used to pack milk i.e. Ultra High Treatment or Ultra High Temperature and 6-layered packaging. You can google these terms to under-

stand them better because I think this is the basis of the misunderstanding. Just because milk is heated at a high temperature for a very short time does not mean it loses its nutrition. On the contrary, there are studies, both local and international, which prove that packaged milk is more nutritious than the 'loose' milk.

The companies dealing in packaged milk argue that as far as milk is concerned packaging is of vital importance, because it is perishable and requires very special kind of packing to preserve the milk for few months. With this objective in mind, they use tetra pack to deliver fresh and hygienic milk to its consumers without sacrificing in health measures. The Ultra High Temperatures (UHT) milk, they argue, pass through heating and cooling stages in quick succession, and is

immediately put into a sterile Tetra Pak shelf-safe carton. This process avoids any re-infection. The end result is a product that lasts up to six months without refrigeration or preservatives.

The packaged milk producers either use UHT or HTST (high temperature short time). The milk is heated on a prescribed high temperature for only a few seconds and then cooled down and immediately aseptically packed in tetra packs. This not only prevents entry of any microbes but also helps retain the nutritional strength of the packaged product. Once you open the pack, refrigerate it and consume the milk within two to five days. Apart from being environmentally friendly, aseptic packaging increases the shelf life of the product, eases its transportation and also prevents adulteration of any sort. ■

**Karachi is the only city having large semi-commercial cattle farms selling loose milk on such a massive scale in the country. There are over 22,500 established milk outlets in the city, selling milk without pasteurisation or other treatment.**

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BY ASHFAK BOKHARI

# Eyeing the halal market



A major anomaly the current structure, under which the Pakistan Halal Authority will function, suffers from is lack of synergy between the PHA and related bodies which will help run various projects. Pakistan National Accreditation Council (PNAC), which will play central role in matters relating to halal certification, is incidentally a subsidiary unit of the Ministry of Science and Technology. Federal Minister for Science and Technology will be the head of PHA.

Why the Ministry of Science and Technology has been chosen to play a key role in a highly important and sensitive enterprise relating to enquiry of what is halal and what is 'haram', is difficult to understand nor has its justification been explained. This task would have been performed quite efficiently by the Ministry of Religious Affairs. Then, how the Ministry of Science and Technology will plan and carry out proper promotion of halal exports remains to be seen. Normally, such a task is assigned to the Ministry of Commerce which has adequate expertise to do it in a befitting manner.

Selling halal products of Pakistan is no easy task for these will be competing with those of multinationals which are known for quality. Unless these anomalies are addressed, new halal project may end up as a non-starter. It is interesting to note that the science ministry does not have the mandate to stop the sale or purchase of items that might contain 'haram' ingredients. This, the Secretary for Ministry of Science and Technology told the Senate committee meeting, was a provin-

cial subject and only provinces can check the sale of items containing haram ingredients.

The centre-province relationship may come under strain on several counts, once the Pakistan Halal Authority becomes functional. Since, it will be the first and only legal entity at the federal level dealing with the halal sector, it will be of interest to witness how the provinces react. Will they be allowed to legislate similar laws by setting up their own bodies although the federal law will be applicable across the country? At present, Punjab is the only province which has its own body called Punjab Halal Development Agency (PHDA) to prescribe standards and processes for certification of shariah-compliant products but it lacks the power to act as an authority.

Similarly, another entity namely Pakistan Halal Product Development Board (PHPDB) which was set up in 2009 has not so far been given legal status. In consultation with PHDA, Pakistan Standards and Quality Control Authority (PSQCA), Pakistan National Accreditation Council (PNAC) and other stakeholders, national standards for halal industry were drafted but could not be implemented. Similarly, Halal Research Council was set up a few years ago to supervise halal-related affairs in the absence of a formal legal organisation. What will be their fate once PHA starts functioning remains to be seen but under 18th Amendment the provinces can have their own certification bodies.

Another instance of lack of synergy is evident from two different stances on WTO. The PNAC

Director General Ismat Gul Khattak while addressing the Senate Standing Committee meeting on January 25 said that Pakistan wanted to establish its own accreditation system for halal foods instead of relying on the World Trade Organisation and its recommendations. But the Federal Science Minister says that the PNAC has been created as a requirement of the WTO to reduce technical barriers of trade as has been done by other countries.

A major problem halal meat exporters face is their inability to comply with the strict safety codes of meat importing countries. What is lacking is capability and technical know-how in processing, storing, transporting and marketing of meat. The global halal trade is expected to be worth \$1.6trn by 2018, growing at a compound annual growth rate of about 6.9pc, according to a research report by Dubai Chamber of Commerce. Although Pakistan's share is negligible at present, it can raise its share by becoming one of the active players in the global meat trade if the PHA acts effectively. Halal market includes a large variety of food products from raw chicken and beef to processed foods and cold drinks, pharmaceuticals and even toiletries. Indonesia is the biggest halal food market in Asia with Turkey being the second largest. Brazil is the largest player in the global market, exporting halal products worth \$4.73bn followed by India at \$2.11bn and Australia \$1.63bn.

The proposed Pakistan Halal Authority will set halal standards for government-notified products and processes for adoption by a national standards body in accordance with OIC guidelines.

Malaysia, which plays a leading global role in the promotion of halal food products, has its own halal standards and awards recognition to international bodies after these are approved for conducting halal certification work. According to a list issued on July 31, 2015, Malaysia recognises 73 organisations across the world as halal certification bodies. This includes one organisation from Pakistan, namely, Jamea Markaz Uloom Islamia, Mansoor, Multan Road, Lahore. Will it work under PHA or Malaysia is difficult to decide.

Malaysia also has its own protocol for guidance in preparation of halal meat and poultry productions. It was interesting to observe when Punjab Food Authority (PFA) recently directed franchised fast food outlets in Lahore to strictly ensure the use of halal meat after it received several complaints that meat being imported by the food outlets was obtained through stunning. The PFA directed the butchers and fast food outlets in the city to adopt the Malaysian Protocol for the halal meat and poultry production. ■

**Pakistan's share in the rapidly growing halal market stands at less than 0.3pc of the total global business.**

**H**OW far can Pakistan succeed in securing a reasonable share in the global halal market after the much-awaited Pakistan Halal Authority (PHA) comes into existence? May be it is too early to judge but the fact remains that the new set-up is hardly poised to take bold initiatives.

If at all, it will be a long journey for unless the numerous flaws, anomalies and irritants the PHA's institutional arrangements suffer from are eased out, no goal-oriented campaigns can effectively be launched, much less succeed, to sell halal concept within the country and quality halal products outside the country. Then, the widespread illusion that since Pakistan is a Muslim country, its products deserve to be welcomed, if not preferred, in the global halal market needs to be shed. Halal market, one must admit, is as much commercial as are other markets. It is no more restricted to Muslim consumers and producers.

But in the statement of objects and reasons, accompanying the halal bill, Federal Minister for Science and Technology Rana Tanveer Hussain, regrets that the huge halal market has been "taken away by non-Muslim countries", meaning it has to be retrieved from non-Muslim occupiers. No wonder, none of the Muslim countries are among the top ten and, ironically, the country considered world leader in this market has so far been New Zealand. According to Ministry of Commerce figures, Pakistan's share in the rapidly growing halal business stands at less than 0.3pc of total global business.

The Pakistan Halal Authority Bill which was introduced in the National Assembly on July 30, 2015, was passed by the lower house on December 6 and sent to the Senate. The Council of Common Interests had in its meeting on March 18, 2015, given approval for its creation. The Senate Standing Committee on Science and Technology approved the bill in its meeting on January 25. The Ministry of Science and Technology, its secretary says, has been working on the bill since 2011. What the bill now awaits is approval by the upper house to become a law. The bill also provides a list of halal and non-halal animals. Contravention of the new law, its draft says, will be punishable with imprisonment of up to six months, or with the fine of up to Rs500,000, but not less than Rs50,000, or with both. The OIC guidelines define method of slaughtering of halal animals. It goes without saying that uniformity and consensus especially among OIC member countries is very important to have one halal standard.

Once approved, the PHA will be the first legal body to regulate trade in numerous products according to what is permissible by Islamic laws. Falling within the ambit of halal is a large variety of food products, from raw chicken and meat to processed foods and cold drinks, milk and allied products, even pharmaceuticals and toiletries.

## The foreign component in national agriculture sector

BY AHMAD FRAZ KHAN

**P**AKISTAN'S agriculture, though not in an ideal condition, has improved a lot compared to where it was at the beginning. For example, Punjab, the producer of 80 per cent of the country's agriculture, has seen its wheat production jumping from 2.7 million tonnes in the early '50s to 19.50 million at present, rice from mere 325,000 tonnes to 3.4 million tonnes, sugarcane from 6.5 million tonnes to 43 million tonnes and maize from 200,000 tonnes to 3.9 million tonnes. It has been a tedious journey spanning seven decades.

This improvement has been a result of local initiatives, foreign guidance, international money and indigenous farmers' sweat and blood. There is a long list of actors who played a very vital role in setting up the development agenda and then helped with the execution. The World Bank, the USAID, the Asian Development Bank and the Japan International Cooperation Agency (JICA), they all came together to help Pakistan's agriculture at various points of time.

One of the most consistent players has been the USAID which has played an important role in the agriculture. Its help has especially been vital in the development of two water-sector projects in remote areas of Waziristan and Skardu. The Gomal Zam Dam, which it helped build, especially when

the projects fiscal line had dried, now irrigates close to 200,000 acres in the tribal areas of the D.I Khan by providing 324,400 acres feet storage.

Similarly, the Satpara Dam, where it played a vital financial role, now provides water to over 9,000 acres around Skardu, in Gilgit-Baltistan province. Both these projects have lined water courses to conserve maximum water till it reached the fields. In total, over the past five years, USAID has rehabilitated irrigation and drainage services for nearly 500,000 acres of Pakistani farmland.

In other areas, the USAID has partnered with international organisations like the United Nations Food and Agriculture Organisation (FAO) to improve agriculture practices in far-flung areas such as Balochistan. The Balochistan Agriculture Project is one such effort, which involves increased production, sales, and revenues from crops and livestock in eight backwards districts of Balochistan. The project has not only taken modern technologies and management approaches, new seed varieties and livestock breeds, and improved water management techniques to these areas, it also helped establish and train community organisations, farmers' marketing collectives, and mutual marketing organisations. One would be in a better position to assess the final impact once the programme is over this year, but the influence in the area is already visible.

Similarly, the Agricultural Innovation Programme (AIP), implemented by the International Maize and Wheat Improvement Centre (CIMMYT), supports research aimed at improving agricultural productivity. Through this programme, USAID has introduced dozens of new varieties of maize that are drought- and heat-resistant, and have enhanced nutritional quality. They also have increased tolerance to insect attacks and low soil nitrogen. The programme, as written in the project documents, has three primary components: agricultural research to raise yields in cereals, livestock, and horticulture; competitive grants to support agricultural researchers; and training for the next generation of researchers in the agricultural sciences at leading US land grant universities.

The Pakistan Strategy Support Programme (PSSP), through the International Food Policy Research Institute (IFPRI), promotes research in social sciences aimed at increasing the availability of scientific evidence for policy decisions. The main objective is to improve the ability of local decision-makers to analyse and create policies related to agricultural growth and poverty reduction. The programme sponsors research, builds networks of researchers, and disseminates research results in four key areas: agricultural production; water management and irrigation; macroeconomics, markets, and trade; and poverty dynamics and social safety nets.

The Dairy Project, implemented by the Rural Development Foundation, is training in dairy farming best practices. Participants learn techniques that help improve milk yields and livestock management. The project is promoting linkages between small dairy farmers and suppliers, service providers (including financial service providers), and high-end markets along with upgrading 100 dairy farms to serve as service and supply hubs for the larger dairy farming community in Punjab.

Its help in the marketing sector, a perennial weakness of the Pakistani agricultural system is of immense help. Under the US-Pakistan Partnership for Agricultural Market Development (AMD), Pakistan's commercial agriculture and livestock sectors meet international and domestic demand in targeted product lines by improving production, marketing, and business management practices. For instance, the project has facilitated the participation of Pakistani companies in various food and agricultural expos around the region, linking them with international buyers and boosting exports. AMD will also assist in the development of market systems, quality standards, marketing associations, and improve cooperation among traders, buyers, and growers.

Of late, it helped establish the US-Pakistan Centre for Advanced Studies in Agriculture and Food Security at Agriculture University (Faisalabad). It is one of the three centres

that the USAID has funded in three different universities and provinces to strengthen abilities in applied research and develop solutions in the areas of energy, water, agriculture, and food security. The Centre - collaboration between the University of Agriculture, Faisalabad and the University of California, Davis - drives innovation and growth in the agriculture sector. The Centre's research and outreach to the private sector focuses on topics such as climate change, precision agriculture, and biotechnology.

The US Department of Agriculture (USDA) has also been a source of strength for Pakistani agriculture. Through a fruitful partnership, it has been helping strengthen the capacity of public and private institutions through exchange opportunities, sharing advanced technologies and staff training. These activities focus on animal and plant health, increasing dairy production, improving soil fertility and soil health, along with demonstration and dissemination of technological information to improve water use efficiency in irrigation.

All these initiatives created examples and models that should be followed by the government agencies and departments all over the country because they represent the technological advancement in the field of agriculture. The sooner Pakistan, especially Punjab, is able to do it, the better it would be for everyone. ■

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## TRANSFORMING DAIRY FARMERS FROM SUPPLIERS TO PROFESSIONALS

At Nestlé, we believe the development of the community lies in the development of the people. Our Milk Collection and Dairy Development (MCDD) team has been playing a vital role in transforming the livelihoods and encouraging socio-economic empowerment of rural dairy farmers through trainings, demonstrations of best practices, provision of quality feed, and development of model farms.

Nestlé Pakistan is committed to creating shared value for the communities it operates within.



## AUSTREX &amp; DAIRCARE PAKISTAN

AUSTREX is a trusted global livestock exporter with a strong international reputation for understanding customers' needs and delivering consistent and reliable solutions in Pakistan in partnership with DairyCare that enhance profitability and success. Austrex is a global leader in livestock export. It is providing complete services including cattle selection, dairy cattle exports, dairy cattle transportation and services to handle dairy cattle at farm for existing and potential dairy and livestock farmers. In partnership with DairyCare Pakistan, AUSTREX has the expertise, experience and connections to make it easily possible for you to buy the best dairy herd that is suitable to your farming need and budgets. AUSTREX shipping has further strengthened with the induction of state-of-the-art cattle carrier "Ganado Express" in its fleet livestock carriers.

We have consistently been importing and supplying high producing dairy milking cows from Australia since 2011. Our flagship dairy farm in Pakistan is "Interloop Dairies Ltd". Other corporate dairy farms that are our clients include Sharif Dairy Farm, Nishat Dairy Ltd, Military Dairy Farms, Awan Dairy and many others.

AUSTREX in partnership with DairyCare Pakistan is above and beyond every other exporter, committed to supply high quality Australian dairy breeding cattle to various dairy farms in Pakistan. Team of AUSTREX experts and DairyCare Pakistan experts focus on pre and post cattle import support to dairy farms in Pakistan. We go even beyond this and come in partnership with our client and provide him support and assistance he requires during pre and post farm set-up operations.

Our complete cattle buying solution in partnership with AUSTREX makes the whole process convenient and easy for you, we oversee the cattle buying procedure on your behalf from cattle selection to shipping and handling, and you will concentrate on your farm with peace of mind.

By the grace of Allah, our dedicated ship to Pakistan is scheduled twice a year to bring high quality Australian breeding cattle for existing and new corporate dairy farms. We believe in quality and transparency of operations. New and existing farms management teams are welcome to contact us and join us in Australia to witness our massive and highly organised cattle selection, shipping and export operations. We have started booking dairy cattle orders for our ship scheduled to arrive in Pakistan this year.

## BANK OF PUNJAB

The agriculture sector of Pakistan accounts for 21 per cent of GDP, 43.5 per cent of employment and 60 per cent of export. The size of agricultural economy is more than Rs.3,000 billion with more than 22 million hectares under the plough. The agriculture sector has four sub-sectors including crops, livestock, fisheries and forestry. Despite challenges of agriculture sector, farmers are striving hard to keep themselves on the track of prosperity. They require Agri credit for the purchase of farm inputs, Agri Implements and for development purposes.

Bank of Punjab after identifying the growing needs of farmers had taken initiative through introduction of its fifty Agri products in 1997. Whether it's the matter of credit provision to largest sugar firms or getting along with small farmers, the bank is striving to satisfy their needs through diversified credit products.

The Bank is gratified to meet farm credit needs of small as well as corporate borrowers by providing them credit for Agri Input, Purchase of Tractor and value chain financing. BOP's Kissan Dost Tractor Scheme is catering to the needs of individual farmers at very convenient covenants for financing up to five years. The bank is offering this facility at 30 per cent down payment with financing limit of Rs. 300,000 to 500,000.

BOP Kissan Dost Production Loan is aiming to meet the work-

## Partners in progress

ing capital needs of individual farmers. It is revolving credit in nature with maturity of three years subject to the condition of meeting annual clean up requirement and regular mark-up repayment.

BOP Grower Loan for sugar mills customers is actually based on value chain financing given the robust Sugar Production in Pakistan. It is actually capturing the needs of both corporate and individual farmers at more flexible terms.

The bank is nimble in terms of credit need assessment, assets securitisation and credit monitoring. It has the vision to be the charthouse in agri financing by introducing more customised agri credit solutions.

## ECAM-LUMS

Agriculture is central to robust economic growth, development and alleviating rural poverty in Pakistan. According to a World Bank report, national average yields of major crops like wheat and rice in Pakistan are only 55 per cent of progressive farmer yields, the highest achievable yields in the country. This inability to realise full potential is rooted in a number of contributing factors, including slow adoption of technology and modern practices, inefficient management, infrastructural and supply-chain bottlenecks, financing, economic and policy lapses.

Executive Certificate in Agribusiness Management (ECAM), offered by Raising Executive Development Centre, Lahore University of Management Sciences (LUMS) in collaboration with Nestlé Pakistan, is a modular executive certificate programme designed to provide participants with leading-edge managerial know-how and skills considered essential to operate successfully in a high-stake agribusiness environment where opportunities are expanding rapidly with growing population. The duration of the programme is 24 days of class contact, excluding field trips with a weekend model, making it highly suitable for working professionals.

The ECAM learning experience is rigorous and application-driven, with guest speakers representing policy makers, and agribusiness leaders from diverse business segments (dairy, horticulture, etc.) interact with the programme participants on regular intervals. To provide practical exposure, an experiential component includes field visits and interactions with experts from various subsectors of agriculture.

ECAM programme participants consist of a wide range of representation from various segments, agri entrepreneurs, farm-owners, and processors involved in the agribusiness value chain. Diversity of programme participants brings together enormous experiences and agribusiness knowledge, creating an enriching learning environment and networking opportunity.

Nestlé Pakistan and the Embassy of the Netherlands have been partners with LUMS for ECAM. The sponsorship and technical support from the funding partners has enabled Raising Executive Development Centre (REDC) to subsidise the programme for executives. ECAM has generated academic scholarship in the form of local and indigenous case writing as well as contribution to Suleman Dawood School of Business (SDSB) degree programme.

"The programme has equipped us with new concepts and tools that are very helpful in improving and implementing agribusiness decisions," says Omair Haassan Bodla of Bodla Agri Farm.

"A very comprehensive and value adding programme, giving a true insight of the future lucrative aspects in agribusiness," says Mr Haroon Tahir, Anglo Hub (Pvt.) Ltd.

This programme has been developed by LUMS in collaboration with Nestlé Pakistan as a part of Creating Shared Value initiative.

## FATIMA GROUP

Established in 1936 and with a success story spanning over eight decades, Fatima group is one of the most progressive business conglomerates in Pakistan. It has a strong and diversified portfolio of products and services, comprising of fertilisers, textiles, sugar, energy, mining and trading. We have invested in large scale manufacturing plants and state-of-the-art technology with the goal of pursuing excellence in standards of production and management practices.

Our companies are listed below:  
Fatima Sugar Mills (1988): The plant is located at Sanawan, Muzaffargarh with a crushing capacity of 9,500 million tonnes per day. The company is engaged in production and sale of white refined sugar as well as molasses.

Reliance Weaving Mills Ltd (1990): Located in Multan over an area of 705 Kanals, the company is involved in the manufacturing and sale of "Yarn" and "Woven Grey Fabric". It supplies products to United States of America, Europe, Middle East, Far East, China, other Asian countries and the local market.

Reliance Commodities Private Limited: It is a leading trading company involved in export of molasses along with import of sugar and fertilisers (majorly Di Ammonium Phosphate). The company owns a storage terminal in Karachi for molasses and warehouses for fertilisers. It is the winner of numerous FPCCI Best Export Performance awards for molasses.

The fertiliser business was established through the consortium of two leading business houses of Pakistan, Fatima Group and Arif Habib Group.

Fatima Fertilizer Company Limited (2003): Located at Mukhtar Garh, Sadiqabad, the fertiliser complex is a fully integrated production facility, capable of producing two intermediate products, i.e. Ammonia and Nitric Acid and three final products which are Urea, Calcium Ammonium Nitrate (CAN granular) and Nitrophos (NP). The plant has dedicated gas allocation of 110 MMCFD from Mari Gas Field and in-house 56MW captive power plants in addition to off-site and utilities. The commercial production commenced in July 2011. The Complex has an annual designed (metric Tons) production capacity of, Urea 500,000, Calcium Ammonium Nitrate 420,000 and Nitrophos 360,500.

Fatima Fert (2015): Fatima Group acquired Fatima Fert (formerly known as Dawood Hercules Fertilizers) along with the popular urea brand, "Babar Sher". Fatima Fert has Urea's production capacity of 440,000 metric tonnes.

Pakarab Fertilizers Limited (2005): In 1972, an agreement was signed between Government of Pakistan and State of Abu Dhabi to establish a fertiliser plant at Multan over an area of 302 acres. Under the privatisation policy of Government of Pakistan, Pakarab Fertilizer Limited was acquired by Fatima Group and Arif Habib Group in July 2005.

After acquisition, a Clean Development Mechanism (CDM) plant was installed solely for the purpose of environment conservation. Basic aim is to reduce N<sub>2</sub>O and NO<sub>x</sub> emissions from the stack gases of Nitric Acid plant. Our management is committed towards a cleaner environment with reduced greenhouse gases. The Complex has an annual designed (metric Tons) production capacity of, Urea 92,400, Calcium Ammonium Nitrate 450,000 and Nitrophos 304,500.

Sarsabz: In 2011, we launched our brand "Sarsabz", a representation of the quality products being produced at Fatima Fertilizer Limited and Pakarab Fertilizer Limited. With our "Sarsabz" revolution, we aim to promote the balanced usage of fertilisers to increase productivity and play an important role in the economic prosperity and sustainable development of Pakistan.

Our brand "Sarsabz" has steadily built a reputation of quality and reliability among our dealers and farmers. Fatima fertilizer has consistently undertaken farmer promotions with a specific focus on Nitrophos fertilizer. As a consequence, recent independent farmer research reveals a significant increase in brand awareness, which in a short span of five years has reached 90 per cent and a consistent increase in the usage of our specialty products NP and CAN. Farmers have testified the increase in productivity using our products and it has helped us in gaining market share of the Phosphate category.

Moreover, we have strategically expanded the product line to meet the growing needs of our soils. Now, Fatima Fertilizer Company provides all main nutrients under the umbrella brand "Sarsabz" mainly Sarsabz Urea, Sarsabz Nitrophos, Sarsabz CAN (Calcium Ammonium Nitrate), Sarsabz DAP (Di-Ammonium Phosphate), Sarsabz Zinc Sulphate, Sarsabz MOP (Muriate of Potash) and Sarsabz SOP (Sulphate of Potash).

Sarsabz Nitrophos and Sarsabz Calcium Ammonium Nitrate are our special products due to their differentiated benefits ideal for soil conditions in Pakistan. We have made a conscious effort through awareness campaigns to educate our farming community and dealers about benefits of CAN & NP.

Farmer Outreach Programme is an initiative of our technical services team whereby through frequent farm visits, meetings and field demonstrations, the team educates the farmers about our balanced nutrient product portfolio that is suitable for all type of soils and crops. We are the only fertiliser company to produce a television programme in collaboration with PTV, featuring top agricultural experts and scientists to share their knowledge with the community. These series were geared

towards increasing the knowledge of farmers which enabled them to improve yields and profitability in a sustainable manner.

We have collaborated with the government and private agricultural institutions to facilitate researches. We remain in constant liaison with University of Agriculture (Faisalabad) and Ayub Agriculture Research Institute for ongoing initiatives that facilitate balanced fertiliser usage and improved fertiliser efficiency. Our goal is to harness latest technologies and facilitate transfer of knowledge to our farmers.

We have also collaborated with the Soils sciences society of Pakistan for the publication of Soil and Environmental Sciences Journal and for the organisation of conferences to share recent developments with respect to the plant nutrition.

In addition to that we have undertaken a few projects with the Rice Research Institute, KSK and Dhokri, Potato Research Institute and the Central Cotton Research Institute to introduce NP and CAN as a preferred source of phosphorous and nitrogen for the potato, rice and cotton crop in particular.

"Sarsabz" Call Centre is an unprecedented initiative in the fertiliser industry to help farmers resolve issues related to fertiliser usage. Its aim is to provide one stop digital solution for our end consumers and dealers. The Call Centre ensures customer loyalty by providing one-stop solution for query handling and complaint resolution.

Farmer Advisory Services: We are the first Fertilizer Company in Pakistan to launch a Farmer Advisory Service and Helpline to provide guidance and advice to farmers on improved farm operations.

Fatima is also the first fertiliser company to launch a comprehensive Product Stewardship Programme, under the Protect & Sustain Programme of International Fertilizer Association (IFA). This programme envisages safe handling of the product through its lifecycle, ensuring proper storage of the product at the plant sites, in-transit safety, record keeping at warehouses and dealer shops, avoiding misuse of product in compliance with government regulations and finally, the balanced and efficient use of fertiliser through proper dosage and timely application.

Fatima Fertilizer has successfully laid a strong foundation in terms of product quality and portfolio. Increased farmer and dealer awareness has led to higher yields throughout the country. Similarly, initiatives for channel development, improved logistics and warehousing are leading to better service for all stakeholders. Now with a solid base, we are about to embark on a journey that will make "Sarsabz" the first choice for farmers and dealers.

## GROUPE OLEAPLANT

Our modern nursery fields located in Morocco (Agadir) and dedicated to the production of olive plants are some of the most potential nurseries in North Africa.

With the expertise and the proficiency of our Spanish and Italian engineers and the professionalism of the technical staff, our modern fields have currently managed to reach an annual production capacity that ranges from eight to 10 million olive trees.

Moreover, the company has managed to meet customers' requests and requirements from different parts of the world including Spain, Portugal, Italy, Libya and Algeria.

Our mission is to help clients distinguish plantings through quality and productivity by providing them with turn-key guidance and support.

Oleaplant is a specialist olive nursery, producing the largest range of olive varieties in Morocco. In our olive nursery there is a motherstock collection of over 20 varieties of olive trees such as Arbequina, Arbosana, Picual, Picholine Longdoc, Kalamata, Chalkidiki, Menara, Haouzia.

This collection represents some of the most productive oil and table varieties that have been imported into Morocco from Spain, Italy and Greece.

Our olive plants are produced under the highest standards of nursery hygiene and horticultural practice.

## HOLSTEIN, AUSTRALIA

Holstein cattle make up about 70 per cent of Australia's 1.6 million dairy cows. The breed is renowned for its adaptability to a wide range of environmental conditions and Holsteins are found throughout Australia.

Australia exports more than 50,000 quality Holstein heifers to China, Japan, Pakistan, Mexico, Indonesia, Russia and other countries each year. Australian Holsteins have proven themselves to be highly adaptable under a range of climates and production systems.

Industry data shows milk recorded Holstein cattle produce an average of 7,087 litres of milk, 278 kg fat (3.93 per cent) and 232 kg (3.27 per cent) protein. The overwhelming majority of Holstein cows have been artificially bred using genetics sourced from throughout the world.

Almost half of Australian dairy producers participate in voluntary milk recording schemes. This data shows that the overwhelming majority of milk-recorded Holstein cows have been artificially bred using genetics sourced from throughout the world.

Buyers of Australian Holstein cattle can be provided with comprehensive documentation confirming the identity, pedigree, ownership and breed standard compliance of every animal. Registered heifers are also provided a Holstein Australia Certificate of Registration.

Holsteins can be found in every Australian state and Victoria has the most. For more information on Holstein please visit <http://www.holstein.com.au> -- By Imran Saeed Khan, Australian Trade Commission, Lahore, Pakistan.

## MAGTECH PAKISTAN (PVT.) LTD

MagTech Pakistan (Pvt.) Ltd is the pioneer of introducing Russian-based chemical-free Mag Technology namely Mag Green and Mag Life Devices designed to improve quality of water (normal and brackish) for agriculture and consumption

for human, animals and birds in Pakistan.

Mag Technology is the outcome of more than 30 years of constant research, observation and implementation. Our principle company is Magnetic Technologies LLC, Dubai, led by Chairman, the Honourable Sheikh Junaid Khoory, and his scientific associate, the world-renowned scientist and international award winner, Prof Dr Yuri Tkachenko.

Water, the elixir of life and the most vital nutrient for human and animals to grow and survive has been facing pollution and contamination. As a consequence, all living creatures including plants and trees are indiscriminately affected and deteriorating with time in terms of environment and health.

Mag Technology is the answer to all water-related problems. Our devices deal with water (normal and brackish). This state-of-the-art technology naturally structures the water and transforms into biologically-active and functionally available liquid. As a result, using our Mag Devices, high TDS salty water can be used for agriculture, irrigation and horticulture etc with amazing results.

How this technology works can be explained by the phenomenon called "Magnetic-Hydro-Magnetic-Resonance" under the direct action of Lorentz's force. The key parameters that influence the magnetic treatment are the velocity of water flow in the pipe and the intensity of Magnetic induction. The water passes through Mag Device is influenced by the Lorentz Force ( $F_L = q \times [V \times B]$ ), which is the resonance with the oscillations of water molecules and its clusters. This leads to a change in water structure, which alters the water properties in particular like solubility, viscosity, density and surface tension resulting enhancement in nutrient mobility in soil, increase extraction and uptake of phosphorus, nitrogen, potassium and iron by plants and increasing the efficiency of fertiliser. These changes in water results in increased ability of soil to get rid of salt and get better assimilation of nutrients and fertilisers in plant during vegetation period.

In other words, what we are offering is the proven scientific solutions to every water related problem with guaranteed results in Pakistan.

Website: [www.magtech.com.pk](http://www.magtech.com.pk)

## MDF

The Market Development Facility (MDF) is Australia's flagship private sector development programme at the forefront of developing new thinking and strategies to improve outcomes for the poor through working with businesses. MDF works in dairy and meat, horticulture and leather sectors in Pakistan.

MDF is particularly focussed on also reaching poor women by catering to their specific needs. The role of women in agriculture is poorly understood in Pakistan. It is a challenge for agribusinesses to realise the contribution of women to the sector and cater to them as part of their strategy. MDF helps businesses see the massive potential of women's contribution to the economy.

Women in Chitral are now earning new streams of income by cultivating onion seeds in their kitchen gardens. This is made possible by MDF supporting Magnus Kahl Seeds including women in onion seed cultivation. MKS realises now that women follow recommended practices and produce better quality seeds. With this new understanding, MDF is supporting MKS in expanding their network of seed suppliers.

"Date on the role of women is useful for businesses but businesses have major blind spots - they don't understand women and how they can interact with a business", Vicky Carter, MDF's Results Manager remarked.

In the livestock sector, businesses tend to underrate or overlook the role of women in animal rearing. Men usually sell milk and meat animals, hence dairy and meat companies usually only target men with information and trainings. MDF is helping change that by supporting businesses in involving female extension workers so that women are not excluded from opportunities to improve their production. Businesses also benefit as they are able to source required quality and quantity of milk and meat produce.

MDF works with a wide range of different business models that help women as suppliers, producers, traders, employees, business owners, entrepreneurs and consumers. To date the MDF Pakistan has agreements with 18 businesses. It aims to work with 40 businesses by 2017.

## MAK

MAK Pumps Company (Pvt.) Limited was established in 1995, and since then it is working with government and non-government organisations in the field of drinking water supply, irrigation and industrial applications of pump-sets. The company has supplied thousands of pump-sets to government and private clients all over Pakistan. MAK is a specialised company dealing with the pumping systems and the application of PV power to pumping system. The company has all the engineering facilities, staff, equipment and resources required for the accurate design and implementation of any kind of pumping system.

The financial as well as the technical feasibility turns even more appealing when it comes to battery-less applications of PV power. A solar PV module last for almost 25 years whereas battery life does not exceed three years. For 25 years service life the cost of batteries dominates the total project cost but still the batteries cannot be excluded from a stand-alone PV power system due to the intermittent and varying nature of PV output except for inductive loads such as pump-set. This makes the application of PV power to pumping system the most feasible and advantageous use of this renewable source of energy. Electric tube wells consume over 4000 megawatt of our total consumption. Thus switching the irrigation tube wells to PV power will have a significant impact on our energy situation as well as on agriculture sector.

The designer's goal should be to extract maximum water with minimum installed PV modules. This means that highly efficient pump-sets should be selected. Usually pump-sets are manufactured in standard sizes, which may not exactly meet your requirements. In such case the pump-set should be customised in order to exactly match your site requirements. Customisation of pump-sets means bringing minute changes to the impeller geometry through machining process which results in modified characteristics. The process requires adequate expertise in the design of pumps and also the pump-set should be tested at test bed after such modifications in order to verify the modified characteristics.

Another important thing to consider is whether to use an AC pump-set or DC pump-set? The straight answer is to go for an efficient AC pump-set because the variety of sizes, repair-ability



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Pioneer has about 4,500 researchers operating in over 100 research sites, across 25 countries and six continents, to bring new ideas and innovations to life. Using conventional, molecular and biotechnology approaches, superior products are developed to meet farmers' local growing and market conditions.

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of an AC pump-set in case of failure and the possibility of dual supply (Solar and Grid) makes it a better choice.

The output of a PV module will vary from morning to evening if it is installed at a fixed position. This variation in power output of the modules will be reflected in the output of the pump as well. In summer this effect is very prominent as the sun remains at a useful height while travelling more than 200 degree azimuthally. In such case solar trackers can maximise the output of a PV array by facing it towards the sun throughout the day. The figure shows the behaviour of a 15 HP pump-set when installed with tracker and fixed mountings.

Sun tracking system guarantees maximum solar irradiation all the time by making sun ray normal to the solar PV surface. Sun tracking makes the PV installed produce 20 to 30 per cent more energy than a fixed PV installed system. A good tracking method must be reliable and able to track sun at right angle all the time even if the conditions are cloudy. Tracking can be achieved with Single-Axis and Dual-Axis System depending upon the type of applications e.g. CPV (concentrated Photo Voltaic) application requires dual-axis system for its higher tracking accuracy while for normal PV applications (Solar pumping, On-Grid Micro systems) single-axis can be very cost effective provided the elevation is adjusted for summer / winter Solstice or setting it up for equinox.

With sun tracker mounting you can increase the pumping hours and have uniform output discharge from the pump. For high head pumping, direct pumping in the municipalities without an overhead reservoir, the drip and sprinkle irrigation system requires a constant pressure to be maintained in the pipeline, which is not possible with fixed installation of PV modules.

A pump-set is not a simple load like an LED; it requires special attention and adequate expertise in hydraulics for sizing the system. You may sometime need to customise the pump for your specific site requirements. It is also helpful to test the pump before you purchase. Especially for larger system, pre-supply testing of the system at test bed in controlled environment can be very helpful to decide and assess your plans. – By Ali Muhammad, Senior Design Engineer, MAK.

#### NESTLÉ PAKISTAN

Nestlé Pakistan Ltd. Milk Collection and Dairy Development (MCDD) operations are spread over a vast area of 110,000 sq.km. We engage with 150,000 farmers (directly or indirectly) on a daily basis. Nestlé is committed to develop and grow the farming communities, which is also a key pillar in its Creating Shared Value strategy.

Nestlé Pakistan has deputed a dedicated team of qualified veterinarians and agronomists in MCDD department. Through this network of professionals, Nestlé has been leading the key initiatives and playing a key role in development of dairy industry in Pakistan.

Since 2007, the trend of commercial dairy farming has been evolved and today more than 3,000 commercial farms are associated with Nestlé's value chain. Nestlé has established two training farms for capacity building of dairy farmers along with on-farm technical support through experts, helping farmers transform from suppliers to professional and responsible agripreneurs.

Nestlé also believes that capacity building of rural women will help improve availability of livestock healthcare facilities for dairy farmers, create gender empowerment and boost income generation for rural communities. As a result, Women Agripreneurship is one of the many initiatives under which more than 10,000 rural women have been trained on best Dairy Farm Practices.

#### PAEC

Pakistan Atomic Energy Commission was established in 1956 with the aim of using nuclear in the domains of health, agriculture, industry, most importantly environmental-friendly, economical and reliable energy generation for the socio-economic uplift of the country.

The utmost assignment of PAEC is generation of electricity as there are scant conventional resources for energy generation. So it is duty of PAEC to install more and more nuclear power plants across the country and operate them safely to resolve the energy crisis prevalent in the country since long. At start we began power generation with the operation of our first Nuclear Power Plant (KANUPP), Karachi, in 1972 and we were only the 15th country in the world to have an operating nuclear power plant.

It is a fact that despite international restrictions and embargos imposed on Pakistan regarding the transfer of nuclear technology, Pakistan successfully operated a nuclear power plant KANUPP indigenously and without vendor support. Two more nuclear power plants having the generation capacity of 325MWe each have been set up at Chashma, Mianwali and another two with the capacity of 340MWe are nearing completion at the same site and hopefully will be connected to the grid by 2016. Two more nuclear power plants K-2 and K-3 are under construction at Karachi near KANUPP. Groundbreaking of these two nuclear power plants was performed on 26th November 2013 by the Prime Minister. These plants are now under construction and when connected to the grid, will provide 2200MWe electricity. Presently, C-1 and C-2 are operating very successfully with the highest capacity factor in all power plants of the country and generating electricity at a affordable and economical cost. Over the last 40 years, PAEC has on its credit impeccable safety record.

PAEC has also accomplished achievements in other areas regarding the peaceful use of nuclear technology. It has 18 cancer treatment hospitals operating across the country, offering state-of-the-art diagnostic and treatment facilities to cancer patients. More than 80 percent patients in the country are being treated at these hospitals, most of them either free of charge or at nominal rates.

In the agriculture sector, four PAEC's agricultural centres, namely NIA in Tando Jam, NIFA in Peshawar, NIAB and NIBGE in Faisalabad, are actively engaged in developing new varieties through the use of nuclear technology. The crop varieties developed by these centres resulted in enhancement of crop productivity and overcoming the problem of salinity and drought.

Pakistan Institute of Nuclear Science & Technology (PINSTECH) is the premier R&D institute of the country. Pakistan's first research reactor, PARR-1, has been functioning since 1965 at PINSTECH.

Pakistan Institute of Engineering and Applied Sciences (PIEAS) is the prestigious and top-ranking engineering university of the country. It offers study of PhD, MS, and BS levels in a number of academic disciplines.

The credit of all these achievements and successes ultimately goes to the dedicated work of a highly accomplished and talented workforce that PAEC has trained and nurtured over the years.

# Partners in progress

Since the inception of PAEC, the importance of selection of workforce purely on merit was realised and has been adhered to with perseverance. The highly sophisticated and technically demanding nature of the work requires these talented people to undergo further specialised education and training, and today PAEC has network of in-house educational and training institutions that encompass all major facets of nuclear science and technology.

For the last 60 years, PAEC has served the nation and will continue the work for the socio-economic uplift of the masses and prosperity and development of the country. – By Shahid Riaz Khan, Director SI&PR, PAEC.

**STRIVING FOR FOOD SECURITY AND SAFETY:** Pakistan Atomic Energy Commission (PAEC) is one of the founding members of International Atomic Energy Agency (IAEA) and considered among the leading international organizations that have significant contributions in the peaceful utilization of nuclear energy in all aspects of economic and social development. PAEC's first agriculture centre was fully functional within six years of its inception. In next three decades three more centers were developed to excel in all fields of agriculture and biotechnology. These centers not only contribute through product development but provide man power for recent and future needs through human resource development. In 50 years of its history PAEC has developed 88 different crop varieties, millions of hectares are being treated through Integrated Pest Management (IPM) to reduce crop losses, and it has improved the environment and reduced per-acre costs. Techniques have been developed for the utilization of salt affected lands and most importantly technology is being transferred to the farming community through specialized trainings and seminars along with the plant material. In cotton 24 varieties have been contributed by the Agri & Biotech Division. NIAB-78 through Cotton Revolution in 1983 increasing production from 4.5 M bales to 7.8 M bales and providing additional Income of Rs.90 billion

Molecular and biotechnological techniques have been developed for disease diagnostics, therapeutics and drug discovery. Bioremediation, bioremediation and nanotechnology are being utilized to eliminate concerns about industry and environment. PAEC is the organization that introduced R&D culture in Pakistan and train human resource for present and future requirements of the country. It is the leading organization in terms of competence and productivity.

First Agriculture Institute of PAEC Inaugurated as Atomic Energy Agriculture Research Centre in 1962 and upgraded in 1998 as Nuclear Institute for Agriculture (NIA). Although development of new varieties, plant soil nutrient management and stress physiology are the main areas of research but it has the strongest programme in bio-control of insect pests. NIA has contributed significantly in the agriculture sector by developing 31 varieties of different crops and the wheat varieties developed by NIA covered around 40% of wheat area in Sindh. Bio-control technique for sugarcane borer developed at NIA is effectively being utilized on more than 108,000 hectares in Sindh province significantly reducing the environmental hazards and providing economic benefits of about 370 million to farmers. Well developed labs for mass rearing of beneficial insects have been established at the Institute and nine other locations of Sindh province through transfer of technology to progressive farmers and industrialists. Soil science laboratory at NIA has been declared appellate laboratory for soil and fertilizer analysis by the Sindh Government Bio-control of sugarcane borer by NIA and affiliated laboratory resulted in savings of Rs.370 million.

NIAB was established in 1972 in the province of Punjab considering the importance of agriculture in this area and its impact on socioeconomic development of the country. Development of crop varieties with special reference to environmental stresses and animal production and health are the focused areas of research. NIAB has developed 33 crop varieties contributing billions of rupees to the economy. Development of animal vaccines and feed blocks are also contributing to the lively hood of farmers and small cattle growers. Technology has been developed for beneficial utilization of saline lands and transferred through farmers participatory programmes. More than 1000 acres of saline land have been developed demonstrating the effectiveness of this technology.

The third agriculture institute of PAEC got functional in 1982 in the province of Khyber Pakhtoonkhwa. The main project objectives are to enhance per acre yield of various crops and preserve the cereals, fruits and vegetables produced in the province. Target areas of R&D are genetic improvement of field crops for high yield, stress (biotic & abiotic) tolerance and quality characters through Induced mutations and classical breeding methods. Enhancement of crop production and soil productivity through integrated water and nutrient management techniques. NIFA has specialized in the development of applicable technologies to reduce rather eliminate post-harvest losses through Gamma Irradiation and other contemporary techniques. It developed Integrated Pests Management (IPM) technologies to reduce losses caused by insect pests of agricultural and medical importance through environment friendly tactics. NIFA has developed 14 different crop varieties and biological control of stone fruit insects. Specialised feed has been developed for immuno-compromised patient and irradiation technology developed to increase the shelf life of food and feeds.

NIBGE, the only biotechnology institute of PAEC was formally inaugurated by the president of Pakistan in 1994. Research programmes include biotechnological improvement of crops, environment, health and industry. It also has the largest M.Phil and PhD biotechnology programme in Pakistan. Identification of genes, assembly of gene constructs and transformation of crop plants has been achieved. State of the art facilities for microscopy, molecular diagnostics and nanotechnology are available. Five cotton varieties have been developed by marker assisted breeding. Successful transformations in cotton, wheat, sugarcane and rice have been achieved to improve virus resistance and tolerance to other biotic and a-biotic stresses. NIBGE is also involved in diagnostics, therapeutics and drug discovery while industrial liaisons are in the fields of bioremediation, bioremediation and phyto-remediation of wastewater treatment. Floating wetland technology indigenously developed at NIBGE is successfully being utilized for sewage water treatment. DNA based testing of basmati rice, human and animal diseases have contributed significantly both in economic and social development. A bio-fertilizer is developed that promotes yield even under low fertilizer applications. – By Dr. Nayyer Iqbal, Director Agri&Bio, PAEC

#### PTB

Pakistan Tobacco Board (PTB) is a statutory body set up in 1968 through an Ordinance (Ordinance No.1 of 1968) by the Federal Government for specified purpose, mainly to promote tobacco cultivation on scientific lines so as to meet the domestic demand and export needs. The Board, as per assigned functions, is regulatory-cum-research body and is not engaged in any commercial or trading business.

Pakistan Tobacco Board is dedicated to the promotion and development of tobacco production and exports through improved agronomic practices, education of tobacco growers, efficient curing techniques and reducing cost of production, with a view to benefit the tobacco growers to improve their living standards and contribution to the economic development of the country.

The Board has established the following research stations; two each in the Province of Punjab and Khyber Pakhtunkhwa: Tobacco Research Station, Khangarhi, Mardan, Tobacco Research Sub-Station, Mansehra, Tobacco Research Sub-Station, Kunjah (Gujrat) and Tobacco Research Sub-Station, Okara.

Besides this, model farms have been established in Hazro (Attock), Pishin (Balochistan), Buner and Swabi (Khyber Pakhtunkhwa) while acquisition of 400 kanal state land for Tobacco Research Station at Jampur (Punjab) is in process.

The Extension service has been located at pivotal points in tobacco growing area for quick dissemination of new technology to the tobacco growers in order to increase the per hectare yield, introduce new varieties possessing greater resistance against pests/diseases as well as capable of yielding better quality leaf and improving the curing techniques so as to bring about desirable chemical changes in tobacco leaf to be consumed for manufacture of cigarettes.

Pakistan Tobacco Board intends to extend tobacco cultivation in FATA and others area of Punjab as well as KP.

#### PIONEER PAKISTAN

By the year 2050, it's predicted that the world's population will exceed nine billion people. That's 150,000 new mouths to feed every single day. To address that, we need to double our food production in the next 40 years. No company is more uniquely qualified to meet this complex challenge than DuPont with its portfolio of businesses, products and services that span the food value chain.

DuPont Pioneer is the world's leading developer and supplier of advanced plant genetics, agronomic support and services to farmers. Pioneer is focused on delivering integrated seed solutions that include elite genetics, native and biotech traits and seed treatment options coupled with agronomic advice and services to help farmers manage their production risks and plant the right product on the right acre or hectare. We're proud of our people, our history, our innovations and our successful customers across the more than 90 countries we serve. Together, we're closer to meeting the challenge of achieving global food security.

Pioneer Pakistan Seed Ltd. is striving to increase per-acre yield, while decreasing the overall impact of farming on the environment and society. We're actively developing products and traits that enable more efficient fertilizer and water use and the reduction of pesticides and fossil fuels. And we work with governments, local organisations, schools and communities around the world to develop local and sustainable agriculture skills and knowledge for growers of all ages.

#### RAVI AGRIC

Pakistan has an agriculture-based economy, but the numbers and statistics of this sector's development are below the line. In the past few years, the growth rate of agriculture stood at an average of 2.5 per cent, where its neighbourhood countries like Bangladesh and Nepal are prospering with agriculture growth rates above four per cent. Last but not the least, countries with deficient irrigation water resources are harvesting growth rates above eight per cent and five per cent such as Qatar and Oman. It seems that there is a serious need to consider the sector's twisted loops and solve the puzzle. One of the vital factors considered in concluding the agriculture sector to be progressive, is the farm mechanisation level. It is unfortunate that despite having an increased number of educational institutes that spread agricultural engineering assets all over the country's map, we are sustaining with farm power at 1.4KW/Ha which is still behind the desired mechanisation level for an agricultural state. However, light only comes after the darkness and in the recent years, the farm mechanisation industry has achieved some milestones. Thanks to the Government for its farmer-friendly policies.

Realising the role and responsibility of private sector for the Pakistan's agricultural sector, RAVI AGRIC, under the esteemed patronage of Mr Iqbal Khalid (Chairman – RAVI GROUP), began its services in 2009 as high-tech and premium quality agricultural equipment supplier in collaboration with the leaders in global agricultural market and has successfully equipped the segment with mechanisation solutions from CLAAS - Germany, dairy farm equipment from FIMAKS - Turkey and hay making balers from KAHYAN ERTUGRUL - Turkey. More to name in its portfolio are famous name of BEREKET - Turkey, SEKO - Italy, CHECCHI & MAGLI - Italy and KEMPER - Germany.

With the support of our well-known principals and their technologies, RAVI AGRIC is stepping ahead each day for the prosperity and establishment of the farming sector of Pakistan.

#### SOYPAK PAKISTAN

For almost five years, the American Soybean Association's World Initiative for Soy in Human Health programme (ASA/WISHH) has implemented the U.S. Department of Agriculture (USDA) funded FEEDING Pakistan project. The goal of the project is to improve capacity, productivity and quality in the Pakistani aquaculture sector through the active participation of public and private stakeholders. ASA/WISHH is a trade-development organisation, which works to develop viable agriculture value chains in emerging markets in order to improve health, nutrition and food security.

FEEDING Pakistan has assisted approximately 3,000 Pakistani

fish farmers and helped increase the market value of fish produced – tilapia – from zero at the beginning of the project to an estimated Rs.450 million (\$4.5 million) in 2015. The project demonstrated improvements in fish growth and survival through the use of soy-based, floating fish feed produced in Pakistan with US soybean meal. Feed produced with high quality soy protein not only supports growth and healthy development of fish but also reduces costs and supports healthy environment initiatives.

A variety of stakeholders have collaborated throughout FEEDING Pakistan including the Pakistan Fisheries Developments Board, Provincial Departments of Fisheries of Sindh and Punjab, the University of Veterinary and Animal Sciences, Kansas State University, University of Arizona, World Aquaculture Society, Lahore College for Women University, local fish farmers, Pakistani government representatives, and a variety of private-sector Pakistani companies.

Successes under the project include the establishment of Pakistan's first extruder dedicated to the production of soy-based floating fish feed; support to Pakistan's first private-sector tilapia hatchery which sold approximately 1.8 million young tilapia farmers in 2015, with plans to produce up to 10 million per year in the coming years; and the production of the Aquaculture Handbook - Fish Farming and Nutrition in Pakistan, and A Manual of Tilapia, which will serve as a lasting resource for stake-holders.

The advances made under FEEDING Pakistan are due primarily to the integral participation and dedication of Pakistani fish farmers, academics, members of the private sector and government officials. Participants' desire for increased knowledge led to the rapid adoptions of new technologies and best management practices. The subsequent private investments of time and resources by both individuals and institutions have created a framework for continued growth of the Pakistani aquaculture sector for years to come promising to ultimately reduce the per-acre gap in Pakistan and improve food security.

#### TETRA PAK

Tetra Pak is the world's leading food processing and packaging solutions company and one of the largest suppliers of packaging systems for milk, fruit juices and drinks. Working closely with our customers and suppliers, we provide safe, innovative and environmentally sound products that each day meet the needs of hundreds of millions of people in more than 170 countries around the world. With more than 23,000 employees based in over 80 countries, we believe in responsible industry leadership and a sustainable approach to business. Our motto, "PROTECTS WHAT'S GOOD™" reflects our vision to make food safe and available everywhere.

Our commitment extends far beyond protecting the contents in a package. It includes supporting our customers' businesses, a responsibility to reduce our environmental footprint and shape a better future for all our stakeholders — from our employees, to our suppliers and the communities in which we operate.

Innovation and entrepreneurship is at the heart of what we do. At Tetra Pak, innovation is the result of the total process of developing an idea into a product or a new way of working which adds value to the business. Innovation embraces everything from hatching an idea to reaching the marketplace with a new or improved product.

Today, we are the only international company in the world able to provide integrated processing, packaging and distribution line and plant solutions for food manufacturing. This means that our customers enjoy the advantage of being able to get multi-product solutions from a single source, with matching equipment at every stage.

Our environmental commitment is embedded in every aspect of our products' life cycle — to enable our customers and to do our part in protecting our precious natural resources.

#### UAF

The University of Agriculture Faisalabad (UAF) has emerged as first ever Pakistani institution ranked among world's top 100 universities in any category. Under the blazing leadership of UAF Vice Chancellor Prof Dr Iqbal Ahmad Khan (SI), the University has secured 86th position worldwide in the subject of Agriculture and Forestry as per QS ranking. The National Taiwan University Global Ranking also places the UAF as 87th best varsity at global level and 20th in Asia Pacific in the agricultural sciences. It has become 25th best green university as per UI GreenMetric World University Ranking in the category of specialised higher education institutions. In recognition of the tremendous services for education and agricultural research, French government has bestowed French Civil Award upon the Vice Chancellor.

The institution was established in 1906 as the first-ever Agricultural College and Research Institute in the subcontinent and elevated as the University in 1961. It has produced 65000 graduates including 1387 PhDs. The institution is meant for food security and rural development that is UAF's top agenda. UAF believes in internationalisation as a core function. We have paced up our outreach programme to address the issues of farmers at their doorstep. The UAF has developed an action plan Vision 2030 to achieve a sustainable agriculture through three cornerstones: learning, discovery and outreach.

#### YASEEN LIMITED

Yaseen (Private) Limited was found in 2008. The journey was started with vast experience of the YPL management in the fabrication industry under which we fabricate and manufacture commercial, industrial and specialised vehicles which includes fabrication / manufacturing of buses, containers, trailers, firefighting vehicles, municipality vehicles, dump trucks, self-loading trucks, dry bulk carrier, etc.

The management took a diversify initiative towards the agriculture machines and related parts manufacturing with the help of engineering background. During the last six decades the management successfully launched the Wagon Mixture for dairy and cattle farms in 2015 which is now the leading existing machine in the market due to its performance.

In continuation of the successful launched and results of Wagon Mixture, the company also launched the Italian Color Sorting Machine from ASM in 2016, a very famous Italian brand to add value in your exports of seeds, rice, sugar, plastic etc.

YPL management is well-known for its After Sales Services and commitments, as we always focus on the comfort of our valued customers and provide services at their doorstep with complete after sales service and spares.

For further information: sales@yaseen.com.pk, info@yaseen.com.pk

## University of Agriculture Faisalabad-Pakistan

UAF has been ranked among **TOP 100** Universities of the World

### Highlights

- Sustainable Agriculture through learning, discovery and outreach
- First Pakistani institution ranked among the world's Top 100 universities in any subject category.
- Extramural research funding exceeds to Rs. 10 Billion including 50% Int competitive grants
- Produced more than 65000 graduates including 1380 PhDs
- Offering Degree Programs in 165 Disciplines
- Disbursed Billions of Rupees in Students' Financial Assistance
- After BSc (Agri. Sciences), UAF Offers further Higher Education opportunities at Dalhousie University, CANADA
- Offering split/double degree programs with foreign universities
- Creating Gender Mainstreaming Eco-System at Campus
- Houses US Pakistan Center for Advanced Studies (USPCAS, AFS)
- Houses Chinese Confucius Institute, and Punjab Bio Energy Institute
- Houses Punjab's second and Faisalabad's first State-of-the-art Expo Centre
- Striving hard for agricultural development, poverty alleviation and women empowerment.
- Imparting Entrepreneurship led Education and Spawning Agro-based business opportunities
- Enhancing rural-urban interface through value chain system
- Striving hard for developing a knowledge based economy
- Regional Centres/Sub-Campuses in various Climatic Zones

together we harvest | together we grow

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# اب کوئی مقابلہ نہیں



## ہر کھاد ملے سر بسبز کی چھت تلے

- نائٹروجن کھادوں میں کیلیشیم امونیم نائٹریٹ (گوارا) اور یوریا
- فاسفیٹ کھادوں میں نائٹروفاس اور ڈی اے پی
- پوٹیش کھادوں میں ایم او پی اور ایس او پی
- دیگر کھادوں میں زنگ سلفیٹ