

To Analyze the Future Perspectives of Agricultural Extension Services in Mango Production and Marketing with Special Reference to World Trade Organization (WTO) In District Multan, Pakistan

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Abstract

Mango is one of the main fruit crop of Pakistan but it is under the threat of WTO. For this purpose, the present study was conducted to analyze the agricultural extension services in mango production and marketing with special reference to world trade organization (WTO) in district Multan. The population of the study consisted of all mango growers, all Officers in Agriculture (Extension) Department, all Research Officers of Mango Research Station Shujabad, all Arhteas and all exporters of district Multan. Three union councils from each tehsil were selected through simple random sample technique. From each union council two villages were selected at random and five mango growers from each selected village were taken as study respondents by using simple random sample technique. Thus the study sample consisted of 90 mango growers as respondent, 15 middleman (arhteas), and 15 exporters were selected randomly with simple random sampling technique. From agricultural extension field staff all the Agricultural Officers (10), one Executive District Officer, one District Officer, three Deputy District Officer, one Horticulturist and four Research Officers in the selected tehsils were selected on census basis because according to the criteria of sampling the respondents comes out as nineteen (19) out of twenty (20). In this manuscript, researcher only presented the data regarding extension personals. The collected data were analyzed and tabulated by using Statistical Package for Social Sciences (SPSS) to draw results, conclusions and making pertinent recommendations. The research findings indicate

that an overwhelming majority of the respondents were aware of WTO i.e. 75.0 per cent and 93.7 per cent of the respondents were unaware of WTO. It was concluded that awareness level of the respondents about the various agreements related to WTO was low and in some cases it was zero. The positive impact of WTO as identified by the respondents was that it will be helpful in providing finished product at the doorsteps of consumer and safe to human and animal health but on the other hand the main threat of total command over markets by developed countries through their higher technology and well equipped industry especially related to mango fruit and its byproducts.

Key words: Extension Services, WTO, Mango, Market

Introduction

Agriculture is the mainstay of Pakistan's economy. Its contribution to GDP is nearly 22%, and 44.8% of total employment is generated from agriculture, also serves as major suppliers of raw materials to the industry as well as the market for the industrial products and contributes substantially to Pakistan's export earning (Govt. of Pakistan, 2006). The major policy elements of agricultural incentives include regulating the support and release prices for output and input subsidies, establishing regulations, and institutions that encourage or discourage the production, consumption, and export of particular commodities (Govt. of Pakistan, 2003).

In the ultimate analysis, the efficiency of the farm sector depends not only upon farm production, costs, and yields but, also upon the time the product leaves the farm to the time it reaches to the consumer. All these policies are not only helpful in increasing yields of various crops but also enhance their consumption by ultimate users. In Pakistan Mango (*Mangifera indica*) is one of the most favorite and liked fruit of the world. It has typical fragrance and delighted taste. Because of these typical qualities it bears the title of

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“King of fruits” and “Nectar of God”. It is a rich source of vitamin A and C, and other nutrients i.e. protein, sugar, carbohydrates, organic acids and minerals etc. are found in sufficient quantity. Mango was first reported to be born in Eastern India, Burma and Andaman Islands (Tasneem, 1989). It thrives best between 25⁰ N and 25⁰ S of the equator which means that main mango growing areas are Burma, India, Pakistan, etc. (Rajan, 2003). Having even the best range of agro-climatic conditions for fruit production, Pakistan ranked 5th in the world regarding mango production, whereas India and China had improved their production in past decade (FAO, 2000).

In Punjab, mango is cultivated mainly in the districts of Multan, Bahawalpur, Dera Ghazi Khan, Faisalabad, Lahore and Sargodha. There exist more than 100 varieties of mango which differ in characters such as taste, flavor, color, tinges, shape and size. Among these varieties, famous varieties are Chaunsa (Sammar Bahisht), Langra, Sindhri, Dusehri, Anwar Ratole, etc. Their quality and market value have been determined and recognized at home and abroad. There is a seasonal range for it i.e. some are early, mid & late varieties (Gardezi, 2003).

The potential yield per hectare of mango is 21.6 tons / hac as compared to its average yield of 9.96 tons/hac. (Jiskani, 2002). This shows a vivid difference which may be attributed to multifarious factors like insect/pests of mango like mealy bug, fruit fly, diseases like powdery mildew, anthracnose, die back, as well as weather hazards, defective marking system and poor post and pre harvest practices.

Agricultural extension services are mainly responsible for the dissemination of information and its adoption/diffusion. Extension services provide the basis for management of farmer crops and their produce. In this connection heavy responsibilities lie on the shoulders of Agricultural Extension Department to provide the necessary information to cope with the present situation as well as forthcoming challenges of different world pacts and decisions (Agunga and Singh, 2000).

World trade strategies and maneuvering of import/export may create conflict among different countries regarding business in global market. In some cases, the governments compensate their deficit of open market of the world by increasing the prices of the commodities in their own countries, by increasing tariff and subsidies, and other countervailing measures like quotas to save their domestic industry which create frustration among the customers. To minimize these disparities, international organization namely “World Trade Organization” (WTO) was established in 1995, which

deals with the global rules of trade between nations and will enforce its rules and regulations from the year 2005 (Deaton, 1999).

WTO replaced the GATT to boost the world trade. It was agreed to use the world resources efficiently to protect the environment. WTO is the only international organization which is dealing with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible. WTO rules set the basis for national, provincial and local laws, regulations and practices in over 175 countries (WTO, 2000). Virtually all decisions in the WTO are taken by consensus among all member countries and ratified by their parliaments. Trade friction is channeled into the WTO’s dispute settlement process where focus is on interpreting agreements and commitments and how to ensure that country’s trade policies conform to them. The goal of WTO is to improve the welfare of the people of member countries (WTO, 2001).

The WTO Agreement on Agriculture is the main international agreement dealing with the international trade in food products. There are three main area covered by the Agreement:

- Increase market access
- Reduction of domestic support for agriculture
- Reduction of export subsidies

Agreements related to agriculture e.g. custom valuation, Pre-shipment Inspection, Technical Barriers to Trade, Import Licensing Procedures, Sanitary and Phyto-Sanitary Measures, Safeguards, Subsidies and Countervailing Measures, Tariff and Trade, Anti dumping Laws etc. The agreement on services relates to banks, insurance firms, telecommunication companies, tour operations, hotel chains and transport companies looking to be business as on services paid by above said corporate. Agreement on intellectual property deals with the investment in ideas and creativity. Basic areas covered under this agreement are as follows e.g. Copyright, Trade marks, Patents, Geographical Indications, Industrial designs, Layout designs of integrated circuits, Trade Secrets etc.

The agriculture sector is largest one employing 48% workforce and 65% of total export earning or agricultural base products. As far as Pakistan is concern considerable expansion in agricultural output and trade may be anticipated with the full and uniform implementation of WTO negotiations by the developed and developing world economies. Under the agreement domestic for agriculture must ensure reduction of 20% in the developed and 13.3% in the developing countries in the total measure of support. Export subsidies on individual commodities should be reduced by 24% and expenditure on them by 36%

Future Perspectives of Agricultural Extension Services

in the developed and the corresponding 14 and 24% in developing countries. Tariffs are likely to be reduced on an average by 36% in the developed and 24% in case of developing countries (Ingco & Winters, 1996; and Singh, 2003).

WTO has brightened the prospects for Pakistan in the export of most major agricultural commodities. Pakistan has considerable potential in exporting leather and leather made-ups, spices, cut flowers, tropical nuts and fruits (Mango), where developed countries have promised to reduce tariff by some 42–50 % in this connection (Anonymous, 2003).

From all the above discussion, it is forecasting that the implementation of WTO in coming years will even worsen the situation. As WTO emphasized to implement its recommendations like sanitary and phyto-sanitary measures, impedance of hazardous chemicals, post and pre harvest practices, export and quarantine laws. This miserable situation especially related to mango will become more deplored and the mango growers may face the problems of profit returns. Therefore, it is necessary to conduct a study to explore the hindrances and problems faced by researchers, extension service and its providers, marketing personals and mango growers to cope with the forthcoming problems by the implementation of WTO agreements.

For this purpose, the present study was conducted to analyze the future perspectives of Agricultural Extension services in mango production and marketing with special reference to World Trade Organization (WTO) in district Multan.

Material and Methods

The population of the study consisted of all mango growers, all Officers in Agriculture (Extension) Department, all Research Officers of Mango

Research Station Shujabad, all Arhteets and all exporters of district Multan. Multan district comprises three tehsils namely Jalalpur Pirwala, Multan and Shujabad. All the tehsils were selected. Three union councils from each tehsil were selected through simple random sample technique. From each union council two villages were selected at random and five mango growers from each selected village were taken as study respondents by using simple random sample technique. Thus the study sample consisted of 90 mango growers as respondent, 15 middleman (arhteets), and 15 exporters were selected randomly with simple random sampling technique. From agricultural extension field staff all the Agricultural Officers (10), one Executive District Officer, one District Officer, three Deputy District Officer, one Horticulturist and four Research Officers in the selected tehsils were selected on census basis because according to the criteria of sampling the respondents comes out as nineteen (19) out of twenty (20). In this manuscript, researcher only presented the data regarding extension personals. The collected data were analyzed and tabulated on SPSS to draw results, conclusions and drawing pertinent recommendations.

Results and Discussion

The research findings indicate that an overwhelming majority of the respondents were aware of WTO i.e. 75.0 per cent and 93.7 per cent were unaware of WTO agreements.

Anonymous (2003) stated that agricultural scientists stressed on creating awareness about the WTO agreements among farmers, experts, traders, researchers and other segments of society to meet the Future challenges.

Table 1: Distribution of the respondents according to the awareness of main agreements WTO

Agreements	Aware		Unaware		Total	
	n	%	n	%	n	%
Agreement on Agriculture	12	75.0	4	25.0	16	100.0
Agreement on Intellectual Property Rights	2	12.5	14	87.5	16	100.0
Agreement on Goods	1	6.3	15	93.7	16	100.0
Agreement on Dispute Settlement	1	6.3	15	93.7	16	100.0
Agreement on Services	0	0.0	16	100.0	16	100.0

Table 1 depicts that 25.0-100.0 per cent of the respondents were unaware of the agreements like Agreement on Services, Agreement on Goods, Agreement on Dispute Settlement and Agreement on

Intellectual Property Rights, respectively. Besides this 75.0 percent of the respondents were aware of the Agreement on Agriculture.

FAO (1995) observed that as far as Pakistan was concerned, considerable expansion in agricultural output and trade may be anticipated with a full and

uniform implementation of WTO negotiations by all the developed and developing world economics.

Table 2: Distribution of the respondents according to the awareness of the agreements of WTO related to agriculture

Agreements	Aware		Unaware		Total	
	n	%	n	%	n	%
Agreement on Tariff and Trade	4	25.0	12	75.0	16	100.0
Agreement on Subsidies & Countervailing Measures	4	25.0	12	75.0	16	100.0
Agreement on Government Procurement	3	18.8	13	81.3	16	100.0
Agreement on Sanitary and Phyto-Sanitary Measures	1	6.3	15	93.8	16	100.0
Agreement on Trade Related Aspects of Intellectual Property Rights	1	6.3	15	93.8	16	100.0
Agreement on Anti Dumping Laws	0	0.0	16	100.0	16	100.0
Agreement on Trade Related Investment Measures	0	0.0	16	100.0	16	100.0
Agreement on Custom Valuation	0	0.0	16	100.0	16	100.0
Agreement on Pre-shipment Inspection	0	0.0	16	100.0	16	100.0
Agreement on Technical Barriers to Trade	0	0.0	16	100.0	16	100.0
Agreement on Import Licensing Procedures	0	0.0	16	100.0	16	100.0
Agreement on Safe guards	0	0.0	16	100.0	16	100.0
Agreement on Rule of Origin	0	0.0	16	100.0	16	100.0

Table 2 shows that 25.0 per cent, 18.8 per cent and 6.3 per cent of the respondents were aware of main agreements related to agriculture like Agreement on Tariff and Trade, Agreement on Subsidies, Agreement on Government Procurement and Agreement on Intellectual Property Rights, Agreement on Sanitary and Phyto-Sanitary Measures

by the respondents. Whereas, 100.00 per cent respondents were unaware of agreements like Agreement on Anti-Dumping, Agreement on Trade Related Investment Measures, Agreement on Custom Valuation, Agreement on Pre-shipment Inspection, Agreement on Technical Barriers to Trade, Agreement on Import Licensing Procedures, Agreement on Safeguards and Agreement on Rule of Origin, respectively. FAO (1995) observed that as far as Pakistan was concerned, considerable expansion in agricultural output and trade may be anticipated with a full and uniform implementation of WTO negotiations by all the developed and developing world economics.

Table 3 depicts that a poor to overwhelming majority (37.5-87.5 percent) of the respondents were agreed with all the statements regarding Sanitary and Phyto-Sanitary Measures given by WTO while only 6.2-31.2 percent of the respondents disagreed about all the statements. However, 12.5-43.7 percent of the respondents remained undecided about all the statements. Vijaysegaran (1994) concluded that infestation by fruit flies (Tephritidae: Diptera), common

in the tropics, was a major constraint to the production and export of tropical fruits. Current control procedures include cover sprays of insecticides, spot sprays of protein baits, orchard sanitation and fruit wrapping, all of which seek to prevent direct damage to fruits or were aimed to population suppression, mostly in individual plantations. These field control techniques enable fruit production of sufficient quality to meet the needs of domestic consumption as well as that for export to markets where fruit flies were not quarantine pests.

Segre (1998) concluded that maintenance of human and plant health were primary considerations in tropical fruits and vegetable-importing countries. The WTO's Sanitary and Phyto-sanitary (SPS) agreement sets and encourages the adoption of international standards, while at the same time offering the rights of countries to set their own health and safety standards of scientifically justifiable and not likely to result in an unreasonable barrier to trade. Diaz-Bonilla and Robinson (1998) concluded that genetically modified agricultural products and ensuring technological breakthrough offer a special challenge. It has been pointed out that public may block the development of important new technologies to feed the world in coming decades. If the policy makers do not handle the issues surrounding genetically altered food sensitivity, particularly through rigorous analysis of the risk to human health and biodiversity, it was harmful to mankind.

Future Perspectives of Agricultural Extension Services

Table 3: Distribution of the respondents according to their response to statements regarding Sanitary and Phyto-Sanitary Measures given in WTO

Statement	Agree		Disagree		Undecided		Total	
	n	%	n	%	n	%	n	%
No diseased mango i.e. completely free from the following: rotted, pre-mature, over-mature, injured, dry, spotted and anthracnose.	14	87.5	2	12.5	–	–	16	100.0
Standardization regarding pre-harvest and post-harvest, grading, time of harvesting, packing, storage and transportation should be maintained.	14	87.5	–	–	2	12.5	16	100.0
Preventive measures have been suggested to produce a commodity with such a manner that should not affect human, plant and animal health.	11	68.7	–	–	5	31.2	16	100.0
Prevention of attack of fruit fly (a quarantine pest) on mango and mango products	9	56.2	1	6.2	6	37.5	16	100.0
Prevention of transit fungi	9	56.2	–	–	7	43.7	16	100.0
Pesticides which have long residual effects have been strictly prohibited to use on all edible crops.	7	43.7	5	31.2	3	18.7	16	100.0
Prevention from soft rot (storage and transit bacteria)	7	43.7	2	12.5	7	.7	16	100.0
Quality control of perishable products(mango) i.e. use of calcium carbide to mature fruit is toxic and have residual effects	6	37.5	3	18.7	7	43.7	16	100.0

Table 4: Distribution of the respondents according to their response regarding positive aspects of WTO on mango industry

Positive Aspects	Agree		Disagree		Undecided		Total	
	n	%	n	%	n	%	n	%
Finished standardized product seems to be reached at the door of consumer	15	93.7	–	–	1	6.2	16	100.0
Priority has been given to human, plant and animal health in WTO policies	14	87.5	–	–	2	12.5	16	100.0
Consumer has variety of choices	14	87.5	–	–	2	12.5	16	100.0
Sub standard product will be excluded from the market	13	81.2	–	–	3	18.7	16	100.0
Developing countries are promised to be given technical assistance regarding modern know how	12	75.0	4	25.0	–	–	16	100.0
Within WTO policies no compromise on quality, quantity and hygienic conditions	10	62.5	3	18.7	3	18.7	16	100.0
40 to 50% tariff has been promised to reduced regarding fruits and perishable products	9	56.2	2	12.5	5	31.2	16	100.0
Decision would be made on consensus basis regarding dispute settlement	7	43.7	2	12.5	7	43.7	16	100.0
World human society would seem to be a global village	6	37.5	4	25.0	6	37.5	16	100.0

Table 4 reveals that a fair to overwhelming majority (37.5-93.7) of the respondents were agreed with the positive aspect of WTO while only 12.5-25.0 of the respondents disagreed as well as 6.2-43.7 percent with the various positive aspects of WTO on mango industry. Khan and Mahmood (1996) showed that

Table 5: Distribution of the respondents according to their response to statements regarding negative impact of WTO on mango industry

Negative Impact	Agree		Disagree		Undecided		Total	
	n	%	n	%	n	%	n	%
Developed countries have better resources hence they can capture the global market by their patent products	15	93.7	1	6.2	—	—	16	100.0
Developed countries assist their farmers other than subsidy scheme to secure their domestic industry	13	81.2	1	6.2	2	12.5	16	100.0
There is no match of economic competition between developed and developing countries because of the huge difference between the resources available	12	75.0	4	25.0	—	—	16	100.0
Through monopolistic multinational corporations developed countries may command over the economy and policies of the developing countries	11	68.7	3	31.2	2	12.5	16	100.0
They can disturb global market by the application of child labour laws	10	62.5	3	18.7	3	18.7	16	100.0
The process to get intellectual property rights for the developing countries is so lengthy that it can create problems to patent their products timely	10	62.5	6	37.5	—	—	16	100.0
Political involvement to capture the resources of the developing countries is another reason	7	43.7	3	31.2	6	37.5	16	100.0
Sanitary and Phyto-Sanitary measure might be used as weapon against developing countries to deteriorate their economy and commodity status	7	43.7	5	31.2	4	25.0	16	100.0
Developing countries are not in position to compel the developed countries to abide the rules.	7	43.7	5	31.2	4	25.0	16	100.0

Table 5 shows that fair to over-whelming majority (43.7-93.7) of the respondents agreed with the statements regarding negative impact of WTO on mango industry while 6.2-37.5 percent of the respondents disagreed with the negative impact of WTO. However, 12.5-37.5 percent of the respondent remained undecided about the negative impact of WTO. Govt. of Australia (2003) described that developing country producers were effectively being pushed out of agricultural production- the WTO,s World Trade Report 2003 stated that “between 60-80% of the exports of countries such as Burkina Faso, Burundi, Chad, Malawi, Mali, Rwanda, Sudan, Tanzania, Uganda and Zimbabwe are affected by domestic support granted by members”.

Table 30 depicts that 37.5-100.00 percent of the respondents were agreed with the suggestions given to overcome the negative impact of WTO. Whereas, 6.2-25.0 percent of the respondents were disagreed with the statement like, the government intervention in agricultural commodity markets is against the spirit of trade liberalization and must be replaced by regulated private marketing system and developing countries and underdeveloped as a joint venture should pressurize the developed countries to comply with tariffication, tariff reduction, de-escalation of tariffs on perishable products and demand financial and grant assistance for

Pakistan has considerable potential to get benefit from export of leather made ups, spices, cut flowers plants, tropical nuts and fruits where developed countries have promised to reduce tariffs by 40 – 50 per cent.

agricultural developments and food imports, respectively . However, 18.7-37.5 percent of the respondents remained undecided about suggestions pertaining to Pakistan can join hands with other developing countries to lobby for extracting maximum possible benefits from the arrangements (WTO) and Pakistan would be well advised to curtail illicit trade practice and ensure quality of its products in terms of purity of the product environmental considerations and labour standards for satisfactory compliance of WTO’s emerging requirements, respectively.

Conclusions

From above it was concluded that awareness level of the respondents about the various agreements related to WTO was low and in some cases it was zero. The positive impact of WTO as identified by the respondents was that it will be helpful in providing finished product at the doorsteps of consumer and safe to human and animal health but on the other hand the main threat of total command over markets by developed countries through their higher technology and well equipped industry especially related to mango fruit and its byproducts.

Future Perspectives of Agricultural Extension Services

Table 6: Distribution of the respondents according to their response regarding the suggestions to overcome the negative impact of WTO

Suggestions	Agree		Disagree		Undecided		Total	
	n	%	n	%	n	%	n	%
Awareness should be increased about the agreements of WTO among the farming community	16	100.0	—	—	—	—	16	100.0
Developing countries should take immediate step to upgrade the products	16	100.0	—	—	—	—	16	100.0
Pakistan should increase the cultural, mechanical and post harvest practices according to international standards	16	100.0	—	—	—	—	16	100.0
Pakistan in collaboration with other developing countries should strive to strengthen such regional trade association as SAARC and ECO	16	100.0	—	—	—	—	16	100.0
The government intervention in agricultural commodity markets is against the spirit of trade liberalization and must be replaced by regulated private marketing system	12	75.0	1	6.2	3	18.7	16	100.0
Developing countries should introduce biological control system hence to minimize the use of pesticides	9	56.2	3	18.7	4	25.0	16	100.0
Government should take step to patent their products as per rule	9	56.2	—	—	7	—	16	100.0
Pakistan can join hands with other developing countries to lobby for extracting maximum possible benefits from the arrangements (WTO)	9	56.2	4	25.0	3	18.7	16	100.0
Developing countries and underdeveloped as a joint venture should pressurize the developed countries to comply with tariffication, tariff reduction, de-escalation of tariffs on perishable products and demand financial and grant assistance for agricultural developments and food imports, respectively	8	50.0	4	25.0	4	25.0	16	100.0
Pakistan would be well advised to curtail illicit trade practice and ensure quality of its products in terms of purity of the product environmental considerations and labour standards for satisfactory compliance of WTO's emerging requirements	7	43.7	3	18.7	—	37.5	16	100.0
For an effective entry into the export market, Pakistan needs to concentrate on commodities with high comparative advantage and invest heavily in storage, packaging, grading, procurement and delivery system technologies	6	37.5	—	—	—	—	16	100.0

Recommendations

On the basis of conclusions the following recommendations were formulated:

Government should organize seminars and workshops for both public and private sector, for creating awareness about the agreements of WTO. Different communication channels should be utilized for creation of awareness among various players. More advanced and sophisticated production technology related to mango should be evolved by the researchers to meet the WTO requirements.

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