

Foreword

This report is one of the series of reports on kitchen items including Potato, Onion, Tomato, Chili and Garlic, prepared on the direction of Mr. Fayyaz Bashir, Secretary Agriculture, Punjab, to identify problems prevailing in the supply chain of these items of daily use. The national data has been sorted out and comparison is made with the international situation to assess the gap. Secretary agriculture has been kind enough to spare time to discuss these reports in detail.

Onion is grown on an area 315 thousand acres with a total production of 1765 thousand tones. Per acre yield is far less as compared to the major producers. Punjab which is the major consumer contributes only 15 percent of total production and its production is concentrated to a span of 2 months. Prices are lowest when the Punjab's crop comes in market which is a disincentive for the growers to increase its area. Introduction of short day, medium day and long day varieties can be helpful to increase production and lengthen the supply period of Punjab crop. Erratic price fluctuations both cyclical and seasonal are observed every year. Onion dehydration and improvement in the storage of onions can help to stabilize prices and provide incentive for increase in onion production as well as its yield. Per acre yield of onions in Pakistan needs to be enhanced. There is a great need for production of good quality onion seeds and to evolve new high yielding varieties. Post harvest management is another area which can bring positive changes. The Suggestions to Regularize Supply and Prices are only to give line for new research and the detailed measures may be planned by the experts of pertinent field.

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Munir Ahmad
Project Manager
Agriculture Marketing Information Service
Directorate of Agriculture
(Economics and Marketing)
Punjab Lahore





Interpretive Summary

Onion has been cultivated for 5000 years or more. Since onions grew wild in various regions, they were probably consumed for thousands of years and domesticated simultaneously all over the world. Onions may be one of the earliest cultivated crops because they were less perishable than other foods of the time, were transportable, were easy to grow and could be grown in a variety of soils and climates. In addition, the onion was useful for sustaining human life.

It is estimated that annually about 57 million tons of onions are produced all over the world. In many parts of the world it is staple condiment of the people. Onion cultivation has steadily grown at the pace of about 3.9 per annum during the last 10 years. Whereas the production of onion has been increasing at the rate of 3.1% during this period. Overall onion production is increasing. It has reached 1765 thousand tones in 2005 with 30% increase from 808 million tones in 1991. There is a considerable diversity in sowing period of onion crop on Pakistan. The commodity keeps coming throughout the year from one ecological region or the other into various markets of the country. Sindh is the largest contributor in onion production having a share of about 40 % followed by Balochistan, Punjab and NWFP with a share of 33, 15 and 12 percent respectively. Sindh is the leading onion producing province in Pakistan followed by Balochistan, Punjab and NWFP.

Over all objective of Agriculture Sector is to increase farm productivity and ensure increased incomes for the farmers, especially small holders. With the expected increase in the country's population and per capita income, marketing is set to play a crucial role in ensuring that consumers obtain food at reasonable prices and farmers get returns remunerative enough to keep them involved in agricultural activities. To obtain this objective a comprehensive report entailing information about problems and prospects of production, marketing, pricing and processing of Onion is prepared.

Problem in Onion Marketing

- Short period of supply from Punjab.
- Little contribution of Punjab in overall production.
- Low and stagnating yield of onion.
- Severe price fluctuations.
- Lack of value addition.

Suggestions to Regularize Supply and Prices

- In short run import from neighboring countries.
- Increasing supply from Punjab.
- Production of onion seed and introduction of new varieties.
- Time period enhancement by introduction of short day varieties, medium day varieties, long day varieties and varieties for green consumption.
- Improvement in farm management practices leading to better quality and more yields.
- Balanced use of fertilizes along with micronutrients.
- Collection and dissemination of market information.
- Timely release of area and production estimation.
- Promotion of onion dehydration especially small plants for cottage industry.



Introduction and Importance

Onion (*Allium cepa* L) is one of the important condiments widely used in all households all the year round. The green leaves and immature and mature bulbs are eaten raw or used in preparation of vegetables. Onions are used in soups, sauces and for seasoning foods. The small bulbs are pickled in vinegar. Recent research has suggested that onions in the diet may play a part in preventing cardiac disease and other ailments. Onion bulb is rich in phosphorus, calcium and carbohydrates. The pungency in onion is due to a volatile oil known as allyl-propyl disulphide.

Many archaeologists, botanists and food historians believe onions originated in central Asia. Other research suggests that onions were first grown in Iran and West Pakistan.



Most researchers agree that the onion has been cultivated for 5000 years or more. Since onions grew wild in various regions, they were probably consumed for thousands of years and domesticated simultaneously all over the world. Onions may be one of the earliest cultivated crops because they were less perishable than other foods of the time, were transportable, were easy to grow and could be grown in a variety of soils and climates. In addition, the onion was useful for sustaining human life. Onions prevented thirst and could be dried and preserved for later consumption when food might be scarce.

The onion is a bi-annual herb, usually grown as an annual. All its parts produce a strong onion odour when crushed. It has superficial root system, a very short flattened stem at the base of the plant, which increases in diameter as growth continues. Leaves are long, linear and hollow. A bulb is formed by thickening of the leaf bases when the plant reaches a certain stage of growth. The fruit is a globular capsule.

Onions are mentioned to have been eaten by the Israelites in the Bible. In Numbers 11:5, the children of Israel lament the meager desert diet enforced by the Exodus: "We remember the fish, which we did eat in Egypt freely, the cucumbers and the melons and the leeks and the onions and the garlic."

In India as early as the sixth century B.C., the famous medical treatise Charaka - Sanhita celebrates the onion as medicine - a diuretic, good for digestion, the heart, the eyes and the joints.

Origin and Cultivation

Onion is believed to have originated in Central Asia, possibly in the Iran-Pakistan region. It has been cultivated since ancient times in the Middle East and India. It was a popular food in ancient Egypt, where it is depicted on tombs as early as 3200 B.C. and has been found in mummies. The Sanskrit equivalent for onion is palandu which has been mentioned in the Garuda Purana.



The great Indian sages, Maharishi Atreya and Lord Dhanwantri have described the use of onions in details. It is referred to in the *Bible*, when the Israelites complained of their hardships while being led by Moses from Egypt to the land of





Canaan about 1500 B.C. remembering the onions that they ate in Egypt.

Onion is frequently referred to in the literature from Hippocrates, 430 B.C. down to the present time. It is on record that the Jews loved onions so much that they named a city after it -Onion. This city was built in 173 B.C. near the Gulf of Suez. The man who built it was called Onions. The city existed for 343 years.

Onion is now cultivated in most parts of the world, including India, Malaysia, Indonesia, Burma, Philippines, China, Egypt, West and East Africa, tropical South and Central America and the Caribbean.

Nutritional Composition Amount / 100 g edible portion

Compared with other fresh vegetables, it is relatively high in food value, moderate in protein content and is rich in calcium and riboflavin. There is considerable variation in composition between different varieties and it also varies with the stage of maturity and the length of storage. The odour in onion is due to organic sulfur compounds, and is produced only when the tissues are cut or injured.



Dried onions contribute carbohydrates and minerals to the human diet but are not a good source of other nutrients and are used primarily as a flavoring. Green onions are higher in vitamins and minerals than onion bulbs. Garlic is much better nutritionally than either green or dried onions.



| Components | Onion (dry) | Onion (fresh) | Garlic |
|--------------------|-------------|---------------|--------|
| Water (%) | 91 | 92 | 59 |
| Energy (Kcal) | 34 | 25 | 149 |
| Protein (g) | 1.2 | 1.7 | 6.4 |
| Fat (g) | 0.3 | 0.1 | 0.5 |
| Carbohydrate (g) | 7.3 | 5.6 | 33.1 |
| Fiber (g) | 0.4 | 0.8 | 1.5 |
| Ca (mg) | 25 | 60 | 161 |
| P (mg) | 29 | 33 | 153 |
| Fe (mg) | 0.4 | 1.9 | 1.7 |
| Na (mg) | 2 | 4 | 17 |
| K (mg) | 155 | 257 | 401 |
| Ascorbic acid (mg) | 0 | 5,000 | 0 |
| Vitamin A (mg) | 8.4 | 45 | 31.2 |

Per Capita Consumption (Kg per person per year)

| Sr. No. | Countries | 2000 | 2001 | 2002 | 2003 | 2004 |
|--------------------------|------------------------|-------|-------|-------|-------|-------|
| 1 | Libyan Arab Jamahiriya | 32.21 | 31.98 | 31.48 | 30.82 | 39.43 |
| 2 | United Arab Emirates | 21.85 | 22.09 | 24.48 | 25.72 | 38.99 |
| 3 | Korea, Republic of | 16.95 | 20.56 | 17.70 | 15.50 | 30.24 |
| 4 | Turkey | 25.91 | 22.67 | 21.92 | 17.75 | 25.46 |
| 5 | Morocco | 11.36 | 17.13 | 19.22 | 21.25 | 24.22 |
| 6 | Greece | 19.27 | 19.03 | 19.26 | 19.90 | 22.16 |
| 7 | Kyrgyzstan | 26.42 | 28.23 | 15.19 | 18.49 | 20.75 |
| 8 | Spain | 16.71 | 17.78 | 17.53 | 16.53 | 20.44 |
| 9 | Tajikistan | 15.60 | 17.98 | 17.27 | 17.61 | 20.39 |
| 10 | Niger | 25.51 | 18.52 | 16.99 | 16.51 | 19.69 |
| Top Ten Countries | | 21.18 | 21.60 | 20.11 | 20.01 | 26.18 |
| 63 | Pakistan | 25.51 | 18.52 | 16.99 | 16.51 | 19.69 |
| World | | 6.83 | 6.96 | 6.71 | 6.71 | 7.85 |

*Includes processed onions.

World Cultivation of Onion

It is estimated that annually about 78 million acres of onions are cultivated all over the world. China and India contribute almost half of world onion cultivation. The world market for onion is expanding with the increase in global population. Therefore, dire need is to increase in the onion cultivation.

| Sr. No. | Countries | 2003 | 2004 | 2005 | %age share |
|----------------------------|--------------------------|---------------------|----------------|----------------|---------------|
| | | Area in '000' Acers | | | |
| 1 | China | 1978.40 | 2102.50 | 2226.04 | 28.36 |
| 2 | India | 1309.68 | 1309.68 | 1309.68 | 16.69 |
| 3 | Russian Federation | 291.91 | 313.83 | 321.24 | 4.09 |
| 4 | Pakistan | 266.93 | 269.18 | 315.56 | 4.02 |
| 5 | Indonesia | 217.53 | 219.20 | 211.36 | 2.69 |
| 6 | Turkey | 202.63 | 192.75 | 192.75 | 2.46 |
| 7 | Viet Nam | 187.80 | 187.80 | 187.80 | 2.39 |
| 8 | United States of America | 166.08 | 168.95 | 161.54 | 2.06 |
| 9 | Myanmar | 144.41 | 144.56 | 145.79 | 1.86 |
| 10 | Ukraine | 128.74 | 140.61 | 143.32 | 1.83 |
| Sub total: | | 4894.13 | 5049.06 | 5215.09 | 66.45 |
| Others124 Countries | | 2579.32 | 2612.96 | 2633.01 | 33.55 |
| Grand Total: | | 7473.45 | 7662.01 | 7848.10 | 100.00 |

Source: FAO





Top Producing Countries of Onions in World

It is estimated that annually about 57 million tons of onions are produced all over the world. In many parts of the world it is staple food of the people. China and India contribute almost half of world onion production. The world market for onion is expanding with the increase in global population. The statistics reveal that exporting countries are almost maintaining their share with of course some bad years due to bad crop.

| Sr. No. | Countries | 2003 | 2004 | 2005 | %age share |
|-----------------------------|--------------------------|--------------------------|--------------|--------------|---------------|
| | | Production in '000' Tons | | | |
| 1 | China | 17536 | 18047 | 19047 | 33.15 |
| 2 | India | 5500 | 5500 | 5500 | 9.57 |
| 3 | United States of America | 3328 | 3765 | 3346 | 5.82 |
| 4 | Turkey | 1750 | 2040 | 2000 | 3.48 |
| 5 | Pakistan | 1427 | 1449 | 1765 | 3.07 |
| 6 | Russian Federation | 1565 | 1673 | 1748 | 3.04 |
| 7 | Iran, Islamic Rep of | 1500 | 1450 | 1450 | 2.52 |
| 8 | Egypt | 686 | 895 | 1302 | 2.27 |
| 9 | Japan | 1172 | 1128 | 1083 | 1.88 |
| 10 | Brazil | 1230 | 1158 | 1059 | 1.84 |
| Top Ten Total: | | 35694 | 37105 | 38300 | 66.66 |
| Others 124 Countries | | 17841 | 19875 | 19159 | 33.34 |
| World: | | 53535 | 56981 | 57459 | 100.00 |

Source: FAO



Yield and Productivity

As for as onion production is concerned Pakistan is at 5th position in the whole world, but for yield the situation is not worth cheering about and our position is 75th in the community of 124 onion producers.

