

Ministry of Agriculture and Agrarian Reform

**NAPC**

National Agricultural Policy Center

**OUTLOOK NO 6**

**Agricultural Commodity Outlook of  
Syrian Potato**

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**September, 2008**



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## Summary

Potato is one of the main vegetable crops in Syria, in terms of production, productivity and calorie supply. This makes it important as seed, food and processing input.

This outlook aims at presenting the following:

- Importance of Syrian potato in agriculture, economic & social development and foreign trade.
- Pricing, marketing, finance and foreign trade policies.
- Environmental needs like soil and climatic factors.
- Description of the commodity chain of potato from producer of potato to the final destination.
- Economic factors including production cost, intermediate cost, prices and others.

### 1. Background and Justification

Potato is one of the major vegetables in both the Arab country and the world, because it is planted in more than 140 countries overall the world. The total cultivated area is more than 20 million hectares. World production exceeds 300 million tons<sup>1</sup>. In Syria, the cultivated area of potato at three seasons was 29 thousand hectares and the production 609 thousand tons in 2005 (National Agricultural Policy Center (NAPC)).

Potato is also very important because it is very rich in energy and nutrients; therefore it is considered a main food for Europe, America, and Africa as for wheat in the east Mediterranean countries. Hence, Asian countries attempt to increase potato production by expanding the planted area and improving yield to cover the increasing food needs of the population. Potato contains the same amount of calories as bread.

Agriculture has an important role in the economic and social development because of its contribution not only to GDP and employment but also to the development of nonagricultural activities like marketing and processing. In 2005 and 2006, the agricultural sector contributed to 23 and 25% of the total GDP (at constant price) respectively. In this regard, the vegetable and fruit sectors increasingly play a crucial role. During the last three decades, vegetable and fruit production has significantly improved due to the expansion of the cropped area and the intensification of cropping practices. Therefore, in 2004 and 2006 the vegetable sector recorded a good share amounting to 7% and 7.2% respectively of the value of total agricultural production in current prices and 10.7% and 11.1% respectively of the value of plant production in current prices.

From the economic point of view, potato plays a crucial role in income generation. Its share in the value of agricultural production and plant production amounted to 2.1% and 3.2% respectively in 2000 and to 3.2% and 5.1% respectively in 2006.

From the manufacturing side, potato is a raw material for many industrial products like starch and alcohol. Also, it is a raw material for a lot of food industries such as chips, frozen fingers, half industrialized potato (Belet), and powders of different industrial uses.

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<sup>1</sup> Agricultural Magazine- issue No.19-2006 and FAO statistics 2002.

Sine 1970s, Syria has started to plant and expand two varieties. By 1980s, new varieties have been imported into Syria adapting with the climatic conditions of the regions to be expanded by the means of the agricultural scientific research.

Finally, this outlook aims at assisting the process of decision making by giving an idea about production and consumption trends of this crop through providing:

- ❖ A description of the policies that affect on the potato sector.
- ❖ An overview of environmental needs and planting techniques.
- ❖ An investigation of the potato commodity system.
- ❖ An idea about the components of production costs.

## **2. Policies**

The Syrian Government aims to enhance agricultural production by its both sub-sectors namely plant and animal production, its economic growth and performance to achieve an overall economic development of rural areas, to contribute to the improvement of producers' income, to reduce poverty, and to improve the food security situation. These goals have to be achieved by:

- Developing plant production through providing its requirements and improving its competitiveness.
- Improving the productivity of plant production and its products including potato by providing the needed services and requirements like modern technology and improving varieties.

### **2.1. Production Policies**

It is the first time in Rural Damascus that the Union of Syrian Agricultural Chambers (USAC) imports potato seeds without the approval of the General Establishment of Seeds Multiplication (GESM) which is the administrative institution responsible for importing seeds. In 2006, the USAC imported seeds of potato to plant them in rural Damascus. This Union imported 650 tons while the demanded quantity was 700 tons. The import price differs from local price by the 9% finance tax and 5% commission for the GESM (source: The Agriculture Magazine, issue No.6, 2006).

### **2.2. Manufacturing Policies**

Private exporters of vegetables and fruits are allowed to import used lines of packing and waxing provided that the year of manufacturing does not exceed 4 years. Export is opened to private exporters; exported agricultural products, with their containers, are exempted from export taxes; exporters are confined to label their products explaining product characteristics, name of the company and the address of the factory. In addition, exporters are committed to declare that all the exported products are controlled according to the standards of destination countries.

### **2.3. Transportation Policies**

The Ministry of Transportation issued the Decree no. 17854 dated September 24, 2001, which declares that Turkish trucks are permitted to enter Syria to ship Syrian vegetables and fruits to Europe.

The Ministry of Economy and Trade issued the Decision no. 672 on May 18, 2002, that all private importers are allowed to import used refrigerated vehicles regardless of their origin. This allowance is however subject to several conditions, namely: age of the vehicle (less than 5 years

old), the carriage must be an articulated unit (head of engine with its body), and the value of imported goods with refrigerated trailers has to be paid from foreign currency earnings of vegetable and fruit exports.

There are many facilities that are given to exporters to enhance and encourage the industrial sector and to reduce the transportation cost; such as legislative Decree no. 48 of August 4, 1998 that marks Syria's signature of the Transit International Agreement (TIR). As a result, fees on Syrian trucks and refrigerated carriages have decreased leading to a reduction of the transportation cost of exported vegetables and fruits.

#### **2.4. Trade Policies**

Since 1998, traders have had the permission to ship vegetables and fruits according to the Agriculture Calendar of the Great Arab Free Trade Area (GAFTA) with a tariff reduction of 5%, 10% and 20% in the last years before the full implementation of the GAFTA agreement. The full implementation has been early 2005.

Many official actions and facilities related to Syrian export promotion, which substantially impact potato, have been issued as follows:

- Legislative Decree no. 15 on the third of July 2001 declared that all kinds of agricultural exports are excluded from production and income tax.
- Decree no. 1100 dated July 15, 2003 eliminated the obligation to finance imports through export earnings.
- The Ministry of Economy and Trade issued the Decision no. 244 on February 2, 2007 to modify the list of Ministry of Economy and Trade no. 1041 dated August 10, 1997 by adding potato to the list of exported prohibited materials with traveler.
- The MAAR submitted to the Agricultural Directorates of Damascus Rural, Homs, and Tartous the Decision no 900 dated March 25, 2007 that banned the entry of potato from Lebanon between 1 February and 25 April and postponed this procedure until 6 May because of the attacked Lebanese potato (Safer Newspaper, issue no.10691 dated 5 May, 2007).
- The Ministry of Economy and Trade issued a decision in 2007 that permits importing the chips potato Bota Tomlex Crisp from the custom item no. 1905 excluded from the prohibition laws according to the applied regulations, but the value of imported commodities has to be paid according to the Decision of the Ministry of Economy and Trade no. 245 on 2007.
- In February 2007, the MAAR issued a decision that permits to import ten thousand tons of Egyptian potato (electronic website Syriasteps on 15 August, 2007).

#### **2.5. Financial Policies<sup>2</sup>**

Agricultural activities are financed by the Agricultural Cooperative Bank (ACB), which provides short, medium and long-term loans to public, cooperative and private agents.

Short-term loans are provided in-kind -seeds and fertilizer– and in-cash to finance agricultural operations. The interest rate varies according to the volume of the loan and differs between cooperative members and individuals: 4% for cooperative members and 5.5% for individuals, when the loan is less than SP 50 thousands, and 6% and 7.5% respectively, for the loans exceeding SP 50 thousands.

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<sup>2</sup> For more information refer to AlAmmouri Nouman 2007. *Comparative Advantage of Potato*. NAPC.

Medium term loans (maximum duration of 5 years) are used for the construction of irrigation channels, land reclamation and other uses. These loans bear an interest rate of 5.5%.

Long-term loans have a duration not exceeding 10 years. They are granted for land development and improvement, storage buildings and fruit trees crops. These loans are subject to an interest rate of 5.5%.

The last adjustment of interest rate was on 7/1/2007 as follows:

- Institutional public and cooperative sectors pay 5% for all credit terms.
- Cooperative members pay 7% for short and medium-term credits and 8% for long-term grants.
- Private and joint sectors pay 8% for short and medium-term credits and 9% for long-term grants.

## 2.6. Laws and Regulations

The major regulations governing the potato sector can be summarized as follows:

- **Law of Agricultural Relations No. 134 in 1958 and its updating by the Law No. 56 dated 29/12/2004:** This law regulates the agricultural relations among the various economic activities related to agricultural production (land owners, workers and enterprise owners).
- **Law of Land Reform No. 161 in 1958 and its adjustments:** This law focuses on the distribution of agricultural lands to farmers and the determination of the upper bound of the land ownership. There are no limitations to invest in large holdings. This law underwent several adjustments especially regarding the private investments in agricultural companies.
- **Decree No. 59 dated 20/7/2005:** This decree regulates the investment of agricultural holdings relying on the indicative Annual Agricultural Production Plan (AAPP) of the MAAR and the available resources. The AAPP is established complying with the available water resources in order to supply the agricultural production requirements, credits and agricultural governmental services.
- Other **regulations:** Potato is exempted from agricultural production tax by export and from income tax.

## 3. Environmental Needs

### 3.1. Soil

#### *Constitution and Porosity of Soil*

Potato plant succeeds in all types of soil namely: light sandy, heavy bolar and organic lands. The best land is loam soil characterized for good physical and chemical qualities. In sandy soil and heavy bolar, care should be taken of irrigation, fertilizing process, and drainage. Planting is not recommended in heavy lands.

#### *Acidity*

It is recommended planting potato in lands of PH varying between 4.8 and 5.4 because it is the best acidity range in which the potato resists scabies sickness. Potato grows also in an acidity ranging between 5.2 and 6.4. The rate of scabies disease decreases at PH equal to 4.8, and gradually increases until 7.5 then it starts again to decrease if the PH increases above this level.

#### *Salinity*

Potato can not resist salinity in soil or water and excess salinity causes the following effects:

- ❖ Decrease of plant branches, leaves, and growth.
- ❖ Weakness of root growth.
- ❖ Yield drop.
- ❖ Reduction of starch rate, and an increase of sodium and chlorate rate.

It is advisable not to have a salinity of more than 2 milimoz in soil.

### **3.2. Weather Conditions**

Potato grows in a moderate weather since it can not resist cold, and matures in cold and hot climates. The best temperature to develop is 18-22°, and the growth is weak below these temperatures. Potato requires stable high temperatures and long days at the beginning of the growing season low temperatures and short days at the second half of its life cycle. The former conditions encourage potato to form green leaves. Little light helps potato to form nodules; low temperatures increase the size of nodules, raise the yield gradually and decrease the breathing rate in all parts of the plant resulting in surplus nutrients in nodules. The night temperature is more important than that of the day because low temperature at night does not affect the breathing rate while it affects the photosynthesis rate at day time. Potato is damaged in the high cold especially at frozen temperature or at temperatures below 4 grades for some days.

### **3.3. Planting and Harvesting Time**

Planting and harvesting potato differ according to season. Planting of spring potato occurs from January to February, while harvesting starts in June. The area and production of this product are estimated to be 13 thousand hectares and 250 thousand tons respectively and distributed in most governorates.

Autumn potato is planted from mid July to mid August, whereas harvesting starts early November and continues until the end of February. Autumn potato is considered the main potato season in terms of area. It is cultivated on 14 thousand hectares with a production of 240 thousand tons. The yield is subject to extreme climatic conditions such as high temperatures and frost. Therefore, the seeds have to be treated with disinfection material. Autumn potato consumes more water than spring potato.

The area of summer potato is very limited, and does not exceed one thousand hectares. The production concentrates in Rural Damascus. Planting occurs from April to mid May. The production of this product amounts to about 25 thousand tons.

## **4. Commodity Chain Organization and Coordination**

### **4.1. Supply Chain Organization and Coordination**

The supply chain organization and coordination of potato are performed mainly by open market operation and price coordination. There is also an evidence of contracting, even the trader transfer potato to the chips factory each period according to factory needs or buy potato still in land. The organizational and coordinating activities are conducted by the public sector, the private sector, the cooperative sector and the non-governmental organizations.

### **4.2. Institutional Framework**

There are many public and private agents involved in the coordination and management of the supply chain such as the MAAR and its institutions, Ministry of Economy and Trade (MET) and its institutions, Ministry of Irrigation, General Peasant Union (GPU), State planning

Commission (SPC), General Establishment for Customs, Agricultural Chambers, Chambers of commerce, Agricultural Cooperative Bank (ACB), Central Bureau of Statistics and General Commission for Standardization.

## 5. Agents of the Potato Sector

The commodity chain of potato describes the various paths the potato follows from its origin as raw product, undergoing several transformations, up until its final form (final product or final consumption). This chain comprises four agents. The first agent is the farmer who produces the raw material of potato along three production seasons namely: spring, summer and fall potatoes. The second agent is the middleman who sells the farm product for a commission. The third agent is the packer who sorts, grades, and packages the product to be ready for export. The fourth agent is the trader or exporter who markets the potato product.

## 6. Self-sufficiency and Evolution of the Commodity Balance

Table 1 shows the evolution of the potato commodity balance, self-sufficiency ratio, and import dependency ratio over the period 2000-2005. It is noticed that there is an increase in the production and availability of potato, an export boost in the last two years simultaneous with an increasing import over the last three years. While the self-sufficiency ratio decreased between 2000 and 2005. The fluctuations of the commodity balance are small to moderate during 2000-2005. The variations of the production and availability are small indicating good performance.

**Table 1.** Evolution of the commodity balance of potato, 2000-2005 (000 tons, %)

Item	Production	Import	Export	Availability	Self-sufficiency ratio %	Import dependency ratio %
<b>2000</b>	484.8	5.2	23.3	466.7	104	1.1
<b>2001</b>	453.4	10.8	11.6	452.6	100	2.4
<b>2002</b>	513	16	17	512	100	3.1
<b>2003</b>	486.6	36.9	17	506.5	96	7.6
<b>2004</b>	542	22	17	547	99	4.1
<b>2005</b>	608.5	44.2	23.9	628.8	97	7.3
<b>CV%*</b>	6	26	25	5	2	32
<b>AGR%*</b>	4.65	53.42	0.51	6.14	-1.41	46.60

Source: Elaborated from the NAPC Database.

CV: Coefficient of variation

AGR: The simple annual growth rate.

\* Calculated for the period 2000- 2005 (base year 2000).

### 6.1. Production and its Indicators

#### 6.1.1. Production Systems

There are three seasons to produce potato giving opportunity to export.

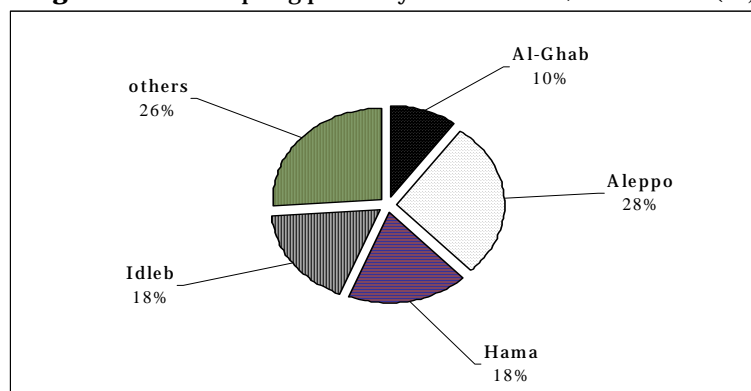
##### 6.1.1.1. Spring Potato

The major spring potato producing governorates are Aleppo, Idleb, Hama, Homs and Al-Ghab where the suitable soil and climatic conditions are available resulting in a high yield (3.5 ton/dunum). The average yield is 2.5 tons/dunum making the spring potato the main season from production point of view. 30% of the production of this season is devoted to seeds. The GESM imports annually about 5000 tons of potato seeds (Elet type) to be distributed to

farmers via contract of high quality standards and conditions. After sorting and grading, the remaining potato seeds are sold in the market.

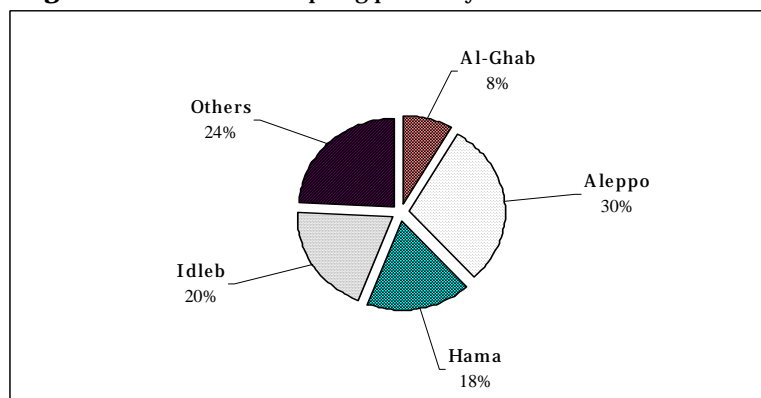
Spring potato area concentrates in Aleppo (28% of total), Idleb (18% of total) and, Hama (18% of total), see Figure 1. The production concentrates also in the same governorates (Figure 2).

**Figure 1.** Area of spring potato by Governorates, 2000-2005 (%)



Source: Elaborated from NAPC Database

**Figure 2.** Production of spring potato by Governorates, 2000-2005 (%)



Source: Elaborated from NAPC Database

### 6.1.1.2. Autumn Potato

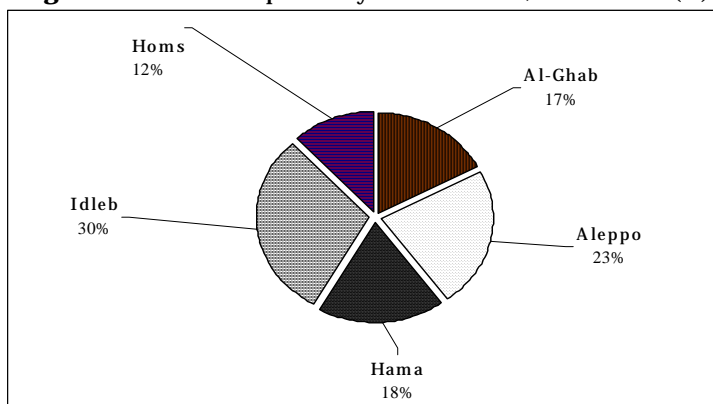
The production of autumn potato concentrates in Aleppo, Idleb, Hama, Homs and Al-Ghab. The final product is sold in the local market or exported.

Concerning governorates, the area and production vary due to crop rotation and water availability. Idleb occupies 30% of the cropped area of autumn potato in Syria, followed by Aleppo (23%), Hama (18%), and Al-Ghab (17%); see Figure 3. Regarding production, these shares are 30% for Idleb, 23% for Aleppo, 19% for Al-Ghab and 18% for Hama (Figure 4).

### 6.1.1.3. Summer Potato

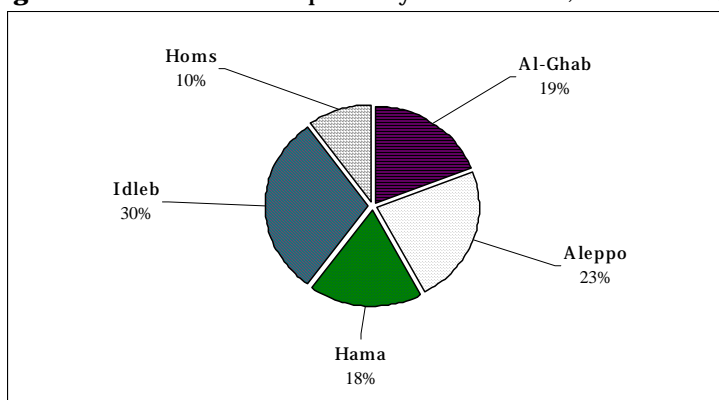
The summer potato area and production concentrate in Rural Damascus (Table 2). The average share of this season in total production during 2000-2005 attained 26% in Aleppo, 24% in Idleb and 18% in Hama (Figure 5).

**Figure 3.** Area of fall potato by Governorates, 2000-2005 (%)



Source: Elaborated from NAPC Database

**Figure 4.** Production of fall potato by Governorates, 2000-2005 (%)



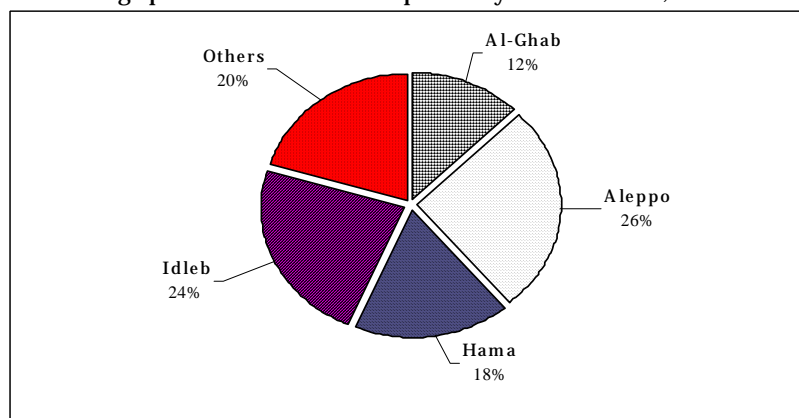
Source: Elaborated from NAPC Database

**Table 2.** Evolution of the average share of summer potato in area and production, (2000-2005) & 2005

Item	Average 2000-2005 (%)		2005 (%)	
	Damascus Rural	Other Governorates	Damascus Rural	Other Governorates
Area	79	21	93	7
Production	84	16	96	4

Source: Elaborated from NAPC Database.

**Figure 5.** Average production of summer potato by Governorates, 2000-2005 (%)



Source: Elaborated from NAPC Database

## 6.1.2. Production Indicators

### 6.1.2.1. Area

The cultivated area of potato in the world amounts to 8 million ha in Europe, 8 million ha in Asia, 1.2 million ha in Africa and 783 thousand ha in America.

The main vegetable crops are potato, watermelon, tomato and cucumbers (Table 3) forming 47% of the total area of vegetables. In 2005, the cultivated area of potato occupied 17% of the total area of vegetables having the first order; therefore it forms an important income source for farmers.

**Table 3.** Area and share of the main Syrian vegetables, 2005 (thousand hectares, %)

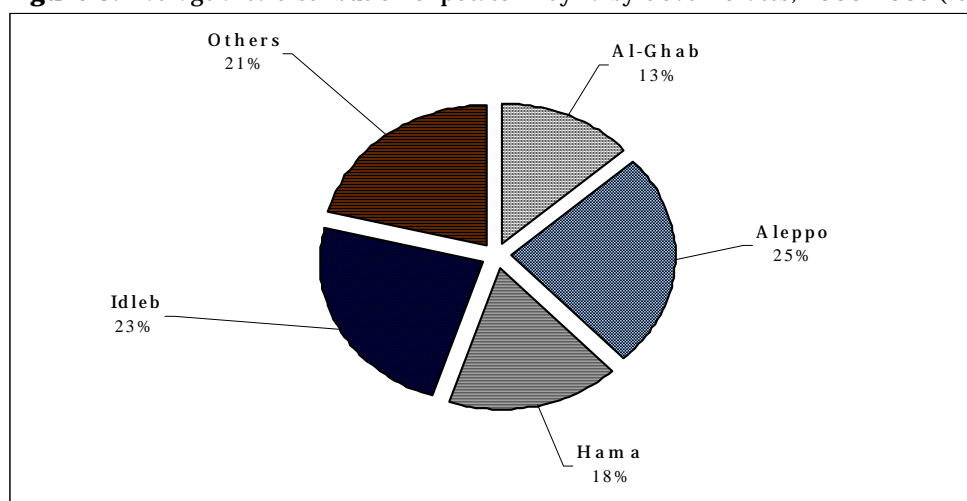
Item	Area	Share
<b>Potato</b>	<b>29.5</b>	<b>17</b>
<b>Watermelon</b>	23.5	14
<b>Tomato</b>	14.6	9
<b>Cucumbers</b>	12.9	8
<b>Other vegetables</b>	90	53
<b>Total vegetables</b>	<b>170</b>	<b>100</b>

Source: Elaborated from the Annual Statistical Abstract (2005).

In 2005<sup>3</sup> the cultivated area of Syrian potato amounted to 29 thousand hectares. This area differs among governorates. The average area (2000-2005) indicates that the share in total area of potato can be disaggregated at governorate level as follows: 25% Aleppo, 23% Idleb and 18% Hama (Figure 6). Most of these areas are irrigated (98%), whereas the rain-fed area is 2% concentrating mostly in Lattakia (37%) and Tartous (12%).

Table 4 shows the evolution of the cultivated area of potato by governorates during 2001-2006 indicating considerable progress in the major producing governorates and a declining trend in the other governorates.

**Figure 6.** Average area distribution of potato in Syria by Governorates, 2000-2005 (%)



Source: Elaborated from NAPC Database

**Table 4.** Evolution the total area of potato by governorates, 2001-2006 (Hectare)

<sup>3</sup> According to MAAR Statistics, 2006.

Item	2001	2002	2003	2004	2005	2006	AGR %
Al-Ghab	2,857	3,343	2,946	4,061	4,190	3,240	2.5
Aleppo	5,799	6,123	6,623	6,830	6,733	6,863	3.4
Dair-Ezzor	60	100	800	750	1,425	1,331	85.9
Hama	3,522	4,145	4,722	5,179	5,612	5,421	9.0
Al-Hassakeh	151	378	23	103	2	50	-19.8
Al-Rakka	14	75	16	27	7	3	-26.5
Damascus Rural	520	532	571	652	884	703	6.2
Dar'a	618	633	687	778	827	882	7.4
Homs	1,701	2,062	1,676	1,990	2,456	2,667	9.4
Idleb	4,757	5,497	5,705	6,050	6,204	5,729	3.8
Lattakia	251	195	121	84	130	76	-21.3
Quneitra	46	19	8	1	0	0	
Tartous	946	1,000	892	798	877	801	-3.3

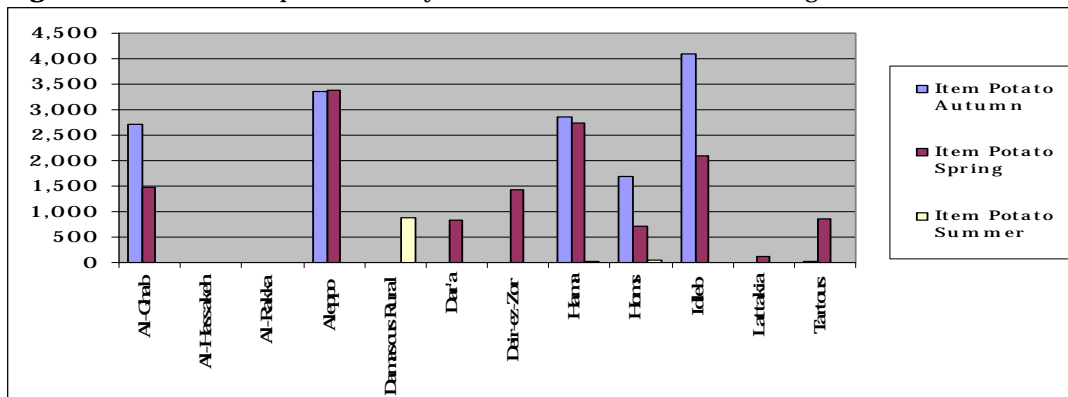
Source: Elaborated from the NAPC Database.

Figure 7 illustrates the evolution of potato area by governorates according to seasons. The respective share of the seasons in total potato area is 51% for autumn, 46% for spring and 3% for summer averaging the period 2000-2005.

#### 6.1.2.2. Yield

The yield per hectare of potato differs according to season, climatic conditions, services, and the type of used seeds. Table 5 shows that there are fluctuations in yield from 2001 to 2006. Summer potato is considered better than the other seasons in terms of yield. Table 6 shows the yield fluctuations by governorates which are induced by the prevailing climatic conditions and the type of seeds used.

**Figure 7.** Evolution the potato area by seasons and Governorates, average 2000-2005 (hectare)



Source: Elaborated from NAPC Database

**Table 5.** Evolution the yield of potato in Syria by seasons, 2001-2006 (ton/hectare, %)

Item	2001	2002	2003	2004	2005	2006
Average yield (ton/ha)	21.34	21.29	19.63	19.84	20.73	21.73
Share %	100	100	100	100	100	100
Irrigated spring potato (ton/ha)	27.06	27.23	24.14	24.91	25.72	26.24
Share %	127	128	123	126	124	121
Rainfed spring potato (ton/ha)	10.72	11.78	13.13	12.08	11.11	12.76
Share %	50	55	67	61	54	59
Irrigated summer potato (ton/ha)	21.77	22.38	21.27	22.36	28.44	31.93
Share %	102	105	108	113	137	147
Irrigated autumn potato (ton/ha)	16.68	16.62	15.45	15.36	15.94	16.80
Share %	78	78	79	77	77	77

Source: Elaborated from NAPC Database.

**Table 6.** Evolution the yield of potato by Governorates, 2001-2006 (ton/ha)

Item	2001	2002	2003	2004	2005	2006	AGR %
<b>Al-Ghab</b>	23.93	19.27	15.39	16.72	19.05	18.88	-4.6
<b>Aleppo</b>	21.14	22.62	20.85	21.71	21.62	21.62	0.5
<b>Dair-Ezzor</b>	22.96	12.96	20.94	14.93	20	20.58	-2.2
<b>Hama</b>	18.48	22.84	19.9	20.57	20.11	21.77	3.3
<b>Al-Hassakeh</b>	20.5	47.98	2	25	20	3.00	-31.9
<b>Al-Rakka</b>	18.57	22.27	31.19	13.3	17	19.00	0.5
<b>Damascus Rural</b>	24.2	24.43	22.47	23.94	29.26	32.80	6.3
<b>Dar'a</b>	30	25	25	24.52	31.9	30.45	0.3
<b>Homs</b>	16.33	16.5	15.78	13.1	15.01	17.23	1.1
<b>Idleb</b>	21.95	18.72	19.58	20.41	21.1	22.67	0.6
<b>Lattakia</b>	16.73	16.58	16.07	16.96	17.54	15.37	-1.7
<b>Quneitra</b>	20	25	22	20	0		
<b>Tartous</b>	25.58	25.07	24.32	24.08	22	26.70	0.9

Source: Elaborated from NAPC Database

### 6.1.2.3. Production

The production of potato in the world amounts to 132.8 million tons in Europe, 122.3 million tons in Asia, 27.9 million tons in America and 12.5 million tons in Africa.

A substantial progress in potato production diversified by seasons was achieved during 2001-2006. In 2006, the respective shares amounted to about 59% of total (356 thousand tons) for spring potato, 37% for fall potato (223 thousand tons), and 4% for summer potato (25 thousand tons); see Table 7.

**Table 7.** Evolution of potato production by governorates, 2001-2006 (ton, %)

Item	2001	2002	2003	2004	2005	2006
<b>Total potato (ton)</b>	453,435	513,153	486,605	541,743	608,480	603,411
<b>Share %</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Irrigated spring potato (ton)</b>	253,089	282,480	278,260	306,567	343,042	352,129
<b>Share %</b>	<b>56</b>	<b>55</b>	<b>57</b>	<b>57</b>	<b>56</b>	<b>58.4</b>
<b>Rainfed spring potato (ton)</b>	3,772	4,819	4,582	3,574	3,733	3,981
<b>Share %</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.7</b>	<b>0.6</b>	<b>0.7</b>
<b>Irrigated summer potato (ton)</b>	17,369	17,554	15,410	18,484	27,050	24,535
<b>Share %</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4.1</b>
<b>Irrigated autumn potato (ton)</b>	179,205	208,300	188,353	213,118	234,655	222,737
<b>Share %</b>	<b>40</b>	<b>41</b>	<b>39</b>	<b>39</b>	<b>39</b>	

Source: Elaborated from NAPC Database

Table 8 clarifies that the production of potato increased considerably in the major producing governorates during 2001-2006.

**Table 8.** Evolution of potato production by governorates, 2001-2006 (ton, %)

Item	2001	2002	2003	2004	2005	2006	AGR %
<b>Al-Ghab</b>	68,354	64,403	45,343	67,907	79,808	61,168	-2.2
<b>Aleppo</b>	122,603	138,479	138,062	148,248	145,587	148,399	3.9
<b>Deir-Ezzor</b>	1,389	1,296	16,750	11,195	28,500	27,387	81.5
<b>Hama</b>	65,102	94,667	93,939	106,557	112,869	117,976	12.6
<b>Al-Hassakeh</b>	3,092	18,118	46	2,575	40	150	-45.4
<b>Al-Rakka</b>	260	1,670	496	359	119	57	-26.2
<b>Damascus Rural</b>	12,589	12,996	12,831	15,610	25,869	23,055	12.9
<b>Dar'a</b>	18,540	15,825	17,175	19,078	26,379	26,860	7.7
<b>Homs</b>	27,776	34,012	26,447	26,072	36,857	45,958	10.6
<b>Idleb</b>	104,395	102,911	111,712	123,477	130,876	129,855	4.5
<b>Lattakia</b>	4,200	3,230	1,944	1,425	2,280	1,168	-22.6
<b>Quneitra</b>	920	475	176	20	0	0	
<b>Tartous</b>	24,215	25,071	21,684	19,220	19,296	21,378	-2.5

Source: Elaborated from NAPC Database.

## 6.2. Trade

### 6.2.1. Imports

Table 9 indicates an increase of the imported potato quantity of all types over 2001-2006. The important countries that Syria imports potato from are Europe, Lebanon, Egypt, and Saudi Arabia.

**Table 9.** Syrian imports of potato, 2001-2005 (000 tons, %)

Item	2001	2002	2003	2004	2005	AGR %
<b>Imports</b>	11	16	37	22	44	41.4

Source: Elaborated from NAPC Database.

### 6.2.2. Exports

Table 10 illustrates the measures of potato exports during 2001-2005 indicating an increase in the exported quantity, moderate boost in the value and a decline in the unit value.

**Table 10.** Syrian imports of potato, 2001-2005 (ton, million US\$, US\$/ton, %)

Item *	2001	2002	2003	2004	2005	AGR %
<b>Exported Quantity ( ton)</b>	11,629	17,634	17,094	16,798	23,188	18.8
<b>Exports Value ( million US\$ )</b>	4.6	6.0	3.1	3.2	5.4	4.1
<b>Unit Value (US\$/ton)</b>	395.2	339.6	183.2	189.2	234.2	-12.3

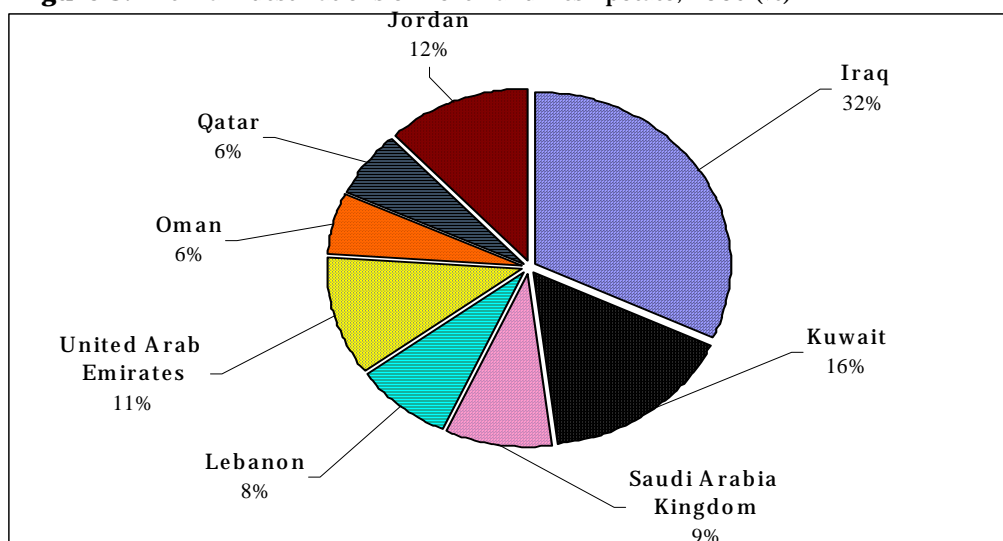
Source: Elaborated from NAPC Database.

\* Potato (Strach, fried, frozen).

These are places at the wholesale market where the potatoes are cleaned, sorted and graded. This process causes a loss of 5% in the product (foreign matters and evaporation). The good quality potato is packed in boxes for export. The remaining potatoes, i.e. those that don't reach the export specifications, are sold in the local market. Potatoes exported to Iraq, however, are sold directly from the local market without any need for cleaning, sorting and grading.

Figure 8 depicts the destinations of fresh and frozen potato exports in 2005 to Arab countries. The highest share was to Iraq (32%), Kuwait (16%), Jordan (12%), and United Arab Emirates (11%).

**Figure 8.** The main destinations of frozen and fresh potato, 2005 (%)



Source: Syrian Agriculture Trade 2005

### 6.2.3. External Trade Performance

The performance of foreign trade complies with the open economic policies since the ratio of external trade (imports+exports/local production) increased from 5.9% in 2000 to 11.19% in 2005 which refers to an improved performance of foreign trade. Also, the number of trade partners increased from 15 countries in 2004 to 18 countries in 2005 indicating an improved export.

### 6.3. Consumption and Local Market

Potato plays a crucial role in the nutritional programs of the countries. The annual per capita consumption of potato amounts to 14 kg in Egypt, 4 kg in Iraq, 47 kg in USA, 52 kg in Italy, 88 kg in England, 90 kg in Holland, 100 kg in France, 124 kg in Spain, 131 kg in Germany, and 250 kg in Poland<sup>4</sup>. In Syria, the annual per capita consumption of potato increased in urban and rural areas between 1996-1997 and 2003-2004 from 19.32 and 25.56 kg respectively to 26.4 and 36.36 kg respectively (Table 11).<sup>5</sup>

**Table 11.** Annual per capita consumption of selected vegetables, 96-97 and 2003-2004 (kg)

Item	1996-1997		2003-2004	
	Urban	Rural	Urban	Rural
<b>Potato</b>	<b>19.32</b>	<b>25.56</b>	<b>26.4</b>	<b>36.36</b>
<b>Tomato</b>	47.52	50.88	48.36	55.44
<b>Eggplant</b>	17.52	15.69	18.96	21.96
<b>Cucumber</b>	15.72	14.28	23.28	25.56
<b>Dry Onion</b>	7.32	9.36	8.52	9.48

Source: NAPC, SOFAS 2002, and Central Bureau of Statistics (CBS), Household Survey 2003-2004.

Vegetables and fruits are marketed freely in the local or central wholesale markets. Farmers deliver their productions to traders directly or ask middlemen to sell their outputs for a commission of 5% of the total value.

<sup>4</sup> Agriculture Magazine- issue No.19-2006.

<sup>5</sup> Comparative Advantage of Tomato- NAPC 2005.

The cooperatives market the products of their members especially to processing companies. The cooperatives seldom transport the products directly to the market. Therefore, the farmers sell their products individually.

In Souk Alhal (wholesale market), farmers sell their products including potato to the middlemen or wholesalers or retailers. Sometimes the traders meet the farmers at their farms to purchase the products directly relying on contracts, trust and the assistance of the traders.

The middleman sells the potato of the farmer at Souk Alhal for a commission of 5%. This commission can amount to 20-30% in case of the provision of credits to farmers. These credits can be in-cash or in-kind (fertilizer, seeds, etc) or both. A deduction of 3% of the product is applied to account for foreign matters. The middleman sells the products to wholesalers or to other unspecialized middlemen.

## **7. Processing and Grading**

In addition to its importance as seed and fresh food, potato is considered crucial as both processing and fodder inputs. The processing firms (that produce chips) purchase potato from traders. These potatoes undergo manual sorting, four stages of cleaning, mechanical peeling, manual controlling, slicing, oil frying, manual controlling, flavoring, mechanical filling, manual packaging and storage. The processed product is shipped locally to all governorates or exported (mostly to Arab countries like Saudi Arabia, Iraq and Jordan).

## **8. Economic Outlook**

### **8.1. Production Cost**

The production cost consists of fixed cost, agricultural operation cost, inputs' cost and other costs<sup>6</sup>.

#### *8.1.1. Fixed Cost*

Fixed costs are the type of costs that are paid independent of production volume. In this study, they comprise the costs of well establishment, irrigation net, building and equipment.

#### *8.1.2. Agricultural Operation Cost*

Agricultural operations cost is carried out manually or mechanically. It includes tillage, leveling, planting, fertilizer application, irrigation, weeding, pest control, harvesting, sorting and transport.

#### *8.1.3. Inputs' cost*

The ACB is the major but not the unique supplier of production requirements. Potato seeds are imported by the GESM of the MAAR. The other inputs are either produced locally, such as fuel (a large portion is imported) and fertilizer, or imported, like fertilizer and control materials. The import of these production requirements occurs by the General Establishment of Chemical and Food Products of the Ministry of Economy and Trade, which doesn't deal with farmers directly but through the ACB<sup>7</sup>. These inputs include fertilizers, packing materials, seeds, water, and chemical control. The other costs include land rent, interest on capital, and incidental expenses.

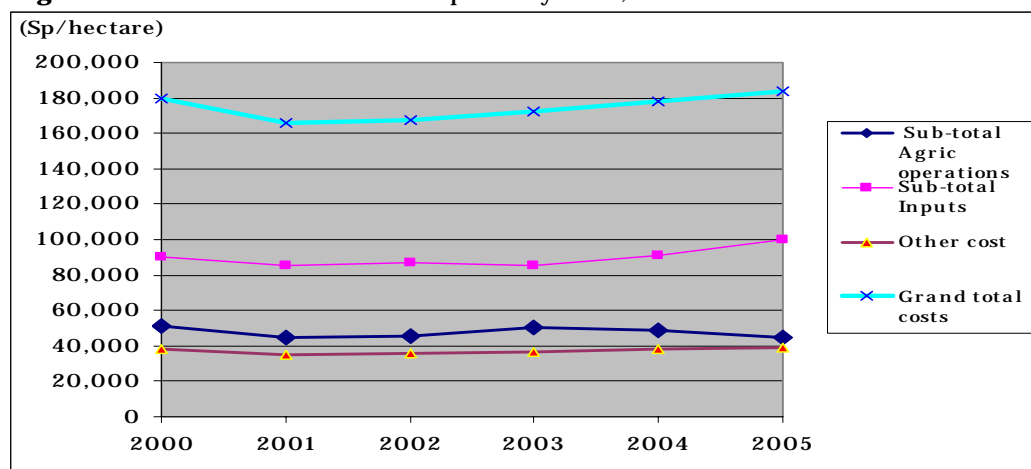
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<sup>6</sup> Ministry of Agriculture and Agrarian Reform- NAPC Database.

<sup>7</sup> Rama 2000. *Agricultural Marketing and Processing*. NAPC

Figure 9 shows the evolution of total cost of potato disaggregated by items during 2000-2005. The total cost increased because of the enhancement in agricultural operations and the other costs.

**Figure 9.** Evolution of the total cost of potato by items, 2000-2005



Source: Elaborated from NACP Database.

Sub-total Agric: Agricultural. Sub-total Inputs: Inputs.

Table 12 illustrates the evolution of the potato cost by items during 2000-2006. It indicates that all cost items are decreasing in absolute value, while in relative term the decline is maintained only for the cost of agricultural operations.

## 8.2. Prices

The price of potato varies from season to season according to supply, demand, export and import. The price of one kg of potato reached 17 SP in 2004 while it was 14 SP in 2003. Figure 10 illustrates the fluctuations of the retail price of potato during 1998-2005.

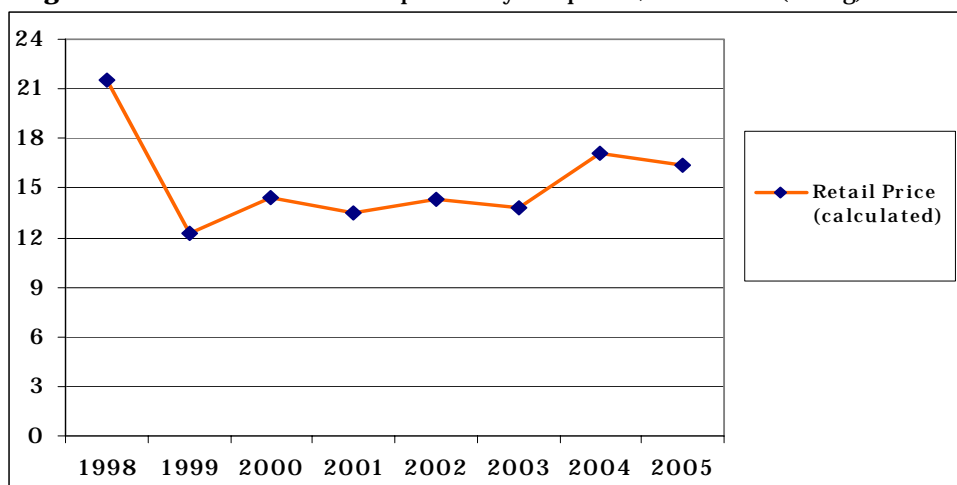
The retail price of potato for one kg reached 30 SP in September 2006, so the Ministry of Economy and Trade issued the Decision No.2305 dated September 25, 2006 to stop potato export until further notice (currently is not more in place).

**Table 12.** Evolution of potato costs by items, 2000-2006 (SP/hectare, %)

Item	Total cost	Cost of agricultural operations	Inputs' cost	Other costs	Share of agricultural operations %	Share of Inputs %	Share of the other costs %
<b>2000</b>	179,865	51,153	90,539	38,173	28.44	50.34	21.22
<b>2001</b>	165,669	44,871	85,551	35,247	27.08	51.64	21.28
<b>2002</b>	167,747	45,308	86,746	35,693	27.01	51.71	21.28
<b>2003</b>	172,401	50,100	85,742	36,559	29.06	49.73	21.21
<b>2004</b>	178,222	48,969	91,354	37,899	27.48	51.26	21.27
<b>2005</b>	184,075	44,567	100,125	39,383	24.21	54.39	21.40
<b>2006</b>	169,791	43,564	89,995	36,232	25.66	53.0	21.3
<b>AGR %</b>	-0.96	-2.64	-0.10	-0.87	-1.70	0.86	0.09

Source: Elaborated from NACP Database

**Figure 12.** Evolution of the retail price of Syrian potato, 1998-2005 (SP/kg)



Source: Elaborated from NAPC Database.

### 8.3. Returns

The selling price and yield of potato impact considerably the revenue of one hectare. The revenue increased from 2001 to 2005. As a consequence, the profit also enhanced (Table 13). These measures witnessed a substantial drop in 2003 due to the decrease in both the yield and the price.

**Table 13.** Evolution of potato returns, 2001-2005 (SP/hectare)

Item	2001	2002	2003	2004	2005	AGR %
<b>Yield (kg/ha)</b>	21,340	21,290	19,630	19,840	20,730	-0.72
<b>Price (SP/Kg)</b>	10.3	11	10.5	12.9	12.3	4.54
<b>Cost (SP/ha)</b>	165,669	167,747	172,401	178,222	184,075	2.67
<b>Revenue (SP/ha)</b>	<b>219,802</b>	<b>234,190</b>	<b>206,115</b>	<b>255,936</b>	<b>254,979</b>	3.78
<b>Profit (SP/ha)</b>	54,133	66,443	33,714	77,714	70,904	6.98

Source: Elaborated from NAPC Database.

### 8.4. Performance Indicators

Table 14 compares between the evolution of cost and returns related to potato during 2001-2005 in both absolute and relative values. These measures increased during the considered period in absolute values. The relative measures witnessed also an increase excluding cost/revenue indicating improved performance (cost decrease and profit increase).

**Table 14.** Some performance indicators of potato, 2001-2005 ( SP/ha, %)

Item	Total cost	Revenue	Profit	Cost/Revenue	Profit/Cost	Profit/Revenue
<b>2001</b>	165,669	219,802	54,133	75	33	25
<b>2002</b>	167,747	234,190	66,443	72	40	28
<b>2003</b>	172,401	206,115	33,714	84	20	16
<b>2004</b>	178,222	255,936	77,714	70	44	30
<b>2005</b>	184,075	254,979	70,904	72	39	28
<b>AGR %</b>	2.67	3.78	6.98	-1.07	4.20	3.08

Source: Elaborated from NAPC Database.

## 9. Syrian Standard of Potato

The Ministry of Industry issued in 12/10/2002 the resolution No. 312 that adopts the standard No. 60 about potato as a compulsory national standard specification. This standard focuses on classes of potato that follow the types of *Solanum Tuberosum*, marketing and consumption. It indicates quality conditions, size grading, packaging, and others. It does not comprise the required qualities of potato for processing. The aim of this standard is to determine the conditions of required qualities in the stage of export and import supervision after setting up and packaging stages.

### Quality Required

The early and stored potato that specified for marketing should have these qualities:

- ❖ normal;
- ❖ free of any mechanical damages, spoilage, insects, fungus, and diseases;
- ❖ clean, solid, and no external & internal defects;
- ❖ covered with complete peel;
- ❖ residues of control material should not exceed the limits settled internationally or nationally.

Also, there are some requirements concerning transport, circulation, grading, and classification according to quality and label.

## 10. Concluding Remarks

The potato crop is considered important in Syrian agriculture for the following reasons: It

- ❖ is a major vegetable crop;
- ❖ plays a foremost role in the social and economic development of the country as both food and a processing input;
- ❖ improves the economic development of rural areas leading to income enhancement, poverty reduction and amelioration of food security situation;
- ❖ enjoys comparative advantages<sup>8</sup> inducing an export boost.

Hence, the focus should be on improving the supporting services of this crop, supplying the quantity demanded of seeds in time and reasonable prices and enhancing the yield due to the limited possibility of horizontal expansion.

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<sup>8</sup> ALAmouri Nouman. *Comparative Advantage of Potato*. NAPC, 2007.



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