

# FLW M&E Unit Policy Brief No. 2

## Food Loss and Waste Across Food Value Chains in Egypt, Can Efficient Performance Be Achieved?



### Food Loss and Waste Reduction for Better Food Security, Exports and Agricultural Development: What Can Be Done?

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## Vegetable Crops

### Background

**V**egetable crops occupy a distinguished position in Egypt's Economy. In 2016, vegetable crops accounted for 11% of total value of agricultural production, estimated at LE 364.845 billion <sup>(1)</sup>.

**T**omatoes ranks on top of the vegetable crops grown in Egypt for domestic consumption and exports. It is available all year round, where it is cultivated 4 times per year: in February, May, July and August, and harvested after 3 to 4 months of cultivation. In 2016, tomatoes accounted for 59% and 51.5% of the total quantity and value of vegetable production, while accounted for 17.2% and 20.3% of the total quantity and value of vegetable exports <sup>(2), (3)</sup>, indicating that high losses in the crop leads to negative impacts on resource use efficiency, food security and exports thus national income, and economic development as a whole.

It is therefore important to identify the different types of losses encountered along the value chains of tomatoes, main causes and ways to minimize such losses to achieve better levels of food security, exports and agricultural development.

### How Much Losses in Tomatoes and Why?

Many studies evaluated average loss in tomato production and equivalent losses in resources, in addition to losses during marketing. A study conducted in 2013 revealed that average marketing loss over the period 2001-2011 reached 18%. The same study estimated equivalent losses at: 87 thousand acres of farmland, around LE 315 million in production cost and 415 million m<sup>3</sup> in irrigation water. Another study found that loss in tomatoes during 2015 reached as high as 2.3 million tons or 30% of tomato supply, quite a high percent.



At the level of production governorates, a field study that was conducted in **Dakahlia** in 2017 estimated pre-harvest losses (unseen loss or lower yield than expected) at 51.5% or 29.2% of the total loss. According to farmers, main causes include sharp fluctuations in temperatures that negatively affects tomato yield, in addition to ineffective pesticides and infection with Tuta Absoluta.

In **Sharkia**, losses in winter tomato have been estimated in three districts at the level of farmers, wholesale and retail traders. At the farm level, loss amounted to 5.25%, of which 2.05% is due to infestation with insects and 3.2% is due to mechanical injuries. Loss during marketing accounted for 5.09% of the marketable quantity, of which 1.82% is lost during harvesting, 2.23% is lost during sorting and grading and 1.04% is lost during packaging. At the level of wholesale and retail traders, losses have been estimated at 3.95% and 12.20%, respectively.

FAO-Egypt also carried out a study in 2017 to analyze the levels and main causes of loss in tomato value chain in Nubaria district and Sharkia Governorate. Quantitative and qualitative assessment of losses using sampling method revealed that qualitative losses at the farm level in Sharkia and Nubaria followed similar trends and magnitude. Quantitative and qualitative loss averaged to 35% and 12%, respectively. However, main causes of quantitative loss differed. In Sharkia, main causes include sun scald, mechanical injuries and blossom end rot, whereas in Nubaria main causes include insect injuries, sun scald and mechanical injuries.

At the level of wholesale markets, quantitative loss reached 40%, while qualitative loss reached 19% as average of the four studied wholesale markets. It was also found that the longer the distance between production areas and wholesale market, the greater the damage, especially in case of unpaved roads. In addition, over packing, bad stacking, open vehicle transport with rough handling while loading and unloading all lead to high percentage of loss in wholesale markets.

At the level of retail markets, hypermarkets recorded the lowest quantitative and qualitative losses (34%), followed by supermarkets (41%), whereas informal markets recorded the highest level of loss, which reached as high as 61%.

<sup>1</sup>CAPMAS; Annual Bulletin of Estimates of Income from the Agricultural Sector, 2015/2016  
<sup>2</sup>CAPMAS; Annual Bulletin of Estimates of Income from the Agricultural Sector, 2015/2016  
<sup>3</sup>CAPMAS; Annual Bulletin of Production, Foreign Trade, and Total Supply of Agricultural Commodities, 2016

Results of the survey method revealed that farm-level loss reached 18.04% in Nubaria and 18.68% in Sharkia. Main causes from farmers' perspectives include bad weather followed by loss during harvesting in both sites. Loss at level of wholesale markets ranged between 5.7% and 16% in case tomatoes remain unsold for 3 days. The main reason of loss in this stage is time elapsed between harvesting and delivery to wholesalers. At the level of retail markets, average loss reached 7.4%, mainly due to rough handling by consumers and exposure to weather conditions in open-air markets.

In Assiut Governorate, losses in winter tomatoes and causing factors have been studied during production and marketing stages in two locations. Total loss at the production stage was estimated at 11.19%, mainly due to bad weather (63.95%) and poor agricultural practices (36.05%). Total loss at the marketing stage reached 4.41%, mainly due to rough harvesting and poor packaging (66.44%); improper transportation (17.93%) and problems in wholesale markets (15.63%). In terms of quantity, total loss in tomatoes has been estimated at 24856 tons. Equivalent losses in resources have been estimated at 1490 acres of farmland (around 15.60% of the cultivated area), 4309 thousand m<sup>3</sup> of irrigation water, in addition to LE 4377.6 thousand loss in production cost and LE 13621.1 thousand loss in farmers' income.

In Beni Suf and Fayoum, losses in tomatoes have been evaluated at the farm level, during harvesting and packaging in the growing season 2012/2013. Loss at the level of the study sample accounted for 16.3% of the total quantity produced. It was found that 78% of the farmers leave tomatoes in the field without harvesting at the end of the growing season (the last two harvests) due to sharp drops in farm-gate price, and about 45% of them delay harvesting when farm price is too low to cover the harvesting cost.

### *Any Hope to Reduce Losses in Tomatoes?*

Researchers at the Agricultural Research Center carried out an exploratory study of losses in wheat, tomato and citrus crops from a social perspective<sup>4</sup>. They found that losses in tomatoes can be reduced by harvesting in early morning or in the evening, gradual harvesting of the crop, harvesting every 4 - 5 days in hot weather, and every 7 - 10 days in cold weather, hiring skilled labor to perform harvesting and packaging operations, and intercropping tomatoes with maize.



## *Implications and Recommendations for Decision-Makers*

In order to reduce losses and waste in tomatoes, the following set of recommendations is offered to help achieve this top priority goal:

- Encourage contract farming with processing and exporting companies.
- Promoting cooperative marketing.
- Organizing training programs for farmers on proper harvesting, sorting and packaging, in addition to arranging periodic meetings between extension agents and farmers.
- Provide transplants from reliable sources.
- Provide high quality inputs and guaranteed pesticides for reasonable prices.
- Provide loans to establish tomato processing plants near main production areas.
- Provide information on market needs.
- Provide Information on expected climate changes should be easily available to farmers.
- Provide supervision and control over pesticides.
- Organize integrated control programs to combat tomato diseases.
- Establish more wholesale markets.
- Promote the adoption of crop rotation, providing extension service to farmers.
- Promote tomato cultivation under cover.
- Expand in the establishment of tomato producers' Unions and marketing societies.
- Use high yielding varieties with extended harvest season to allow stage-harvesting.
- Select varieties with longer shelf-life, suitable for processing, and tolerant to adverse climate conditions
- Ensure the application of GAP in crop management (fertilization, irrigation, etc.)
- Promote intercropping tomatoes with maize to protect the crop from heat in the summer.

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<sup>4</sup> <https://alfallahalyoum.news/الفلح-اليوم-ينشر-نتائج-دراسة-استطل/>