Food Security in Egypt
Challenges & Opportunities
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Introduction
Egyptian agriculture is considered the backbone of economic and social structure where it represents a major role in comprehensive development of the country.

Its importance emerges from the fact that it is a profession, which is closely associated with more than half of the community either in the field of agricultural production or marketing and trading.
Recently, the importance of the Egyptian agriculture is crucial because of the large food gap existing in some strategic crops and still effective in the national economy, mainly in wheat, yellow maize, sugar, and oil crops and also in food legume and forage crops.

This imposes working on reducing the gap in such crops to accomplish higher percentage of food security throughout self sufficiency of those crops. This could be achieved through maximizing productivity of agricultural resources, especially land and water in order to attain reasonable stage of food security.
Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.
This definition introduces four main dimensions of food security:

1. Physical availability of food
2. Economic and physical access to food
3. Food utilization
4. Stability of the other three dimensions over time
Food insecurity, malnutrition and poverty are deeply interrelated phenomena.
Food Security Problems

- Self-Sufficiency
- High losses
- Low wastewater treatment
- Low cereal production
- Low irrigation efficiency
- Changing food habits
Challenges Facing Strategic Development
Disability of horizontal extension programs to cope with the sharp gradual growing population growth rate. Increasing arable land will increase opportunity for more jobs and also to give chances for vertical extension of crops and amplify productivity of both field crops and livestock.
There are still violations on the arable lands because of the extended urbanization and land drifting despite the powerful penalty laws against these violations. This violation phenomenon needs to be harshly treated and strict punishment laws to be applied instantly against those violators.
Disability of agricultural industry policies with serious participation in modernization of agricultural development and providing agricultural production requirements in a way that is costly appropriate and quantitatively suitable for the consumers.

These policies still represent a heavy load, not only on production, but also on lowering farmers' income. However, industrial development is the basis for agricultural progress.
Major Premises of Egyptian Agricultural Development
Three Major Themes Direct Egyptian Agriculture:

- Cropping structure pattern, which maximizes self-sufficiency of strategic crops, such as wheat as well as exporting and industrial crops.

- Advance production efficiency (productivity) of natural resources such as water and land, which are heavily invested in the field of agriculture (vertical expansion).

- Horizontal expansion through land reclamation of desert and un-arable land within the country's policies and available resources.
Major Goals to be Achieved by the Country
Create new production basis to participate in producing more food to reach enough food security necessary for peace and social development, and in the meantime conserving the environment.

Lessening population pressure, especially in the highly populated regions through establishing new outstanding and more attractive areas that help absorbing those crowded districts.
Splitted and scattered old land holdings to be monitored throughout enforcement of small holders to move to the new land and communities characterized by having the facilities and higher standard livelihood and attain higher production and consequently higher income.
Those new lands should be directed to growing higher value and exporting crops using modern technology in seed production and growing unconventional crops as well as new lines and focus on organic agricultural products.

Finding new job opportunities for current and next generations, especially for peasants and rural areas.
Implementation Mechanisms to Increase Self-Sufficiency in Major Food Crops

1. Developing physically and economically rational cropping systems, achieving maximum self-sufficiency possible in major food crops.

2. Improving the return of agricultural through guaranteed price, contract farming and protectionist policies.

3. Integrating marketing and production activities and reducing imports.

4. Disseminating marketing information relating to prices and production cost in the various regions.
5. Fighting monopoly in the production requirements by activating the role of cooperation and activating the role of the competition and antitrust.

6. Adopting the approach of national campaigns to speed the transfer of new technology.

7. Providing production inputs especially nitrogenous fertilizers and subsidizing their prices.

8. Returning to the agricultural crop rotation.
Towards Food Security of Some Value Crops in Egypt
### Wheat

#### 1.2 Cereal Crops:

<table>
<thead>
<tr>
<th>Current Status</th>
<th>Short-term Goal by 2016</th>
<th>Transitional Goal by 2018</th>
<th>Strategic Goal by 2030</th>
<th>Instrument to Achieve Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area:</strong></td>
<td><strong>3.469 mil. acre</strong></td>
<td><strong>3.6 mil. Acre</strong></td>
<td><strong>4.0 mil. Acre</strong></td>
<td><strong>Increasing self sufficiency to 80% through:</strong></td>
</tr>
<tr>
<td><strong>Productivity:</strong></td>
<td><strong>2.7 t/acre</strong></td>
<td><strong>2.8 t/acre</strong></td>
<td><strong>2.9 t/acre</strong></td>
<td>• <strong>Increasing area to 4.2 mil. Acre</strong></td>
</tr>
<tr>
<td><strong>Total Production:</strong></td>
<td><strong>9.37 mil. t</strong></td>
<td><strong>10 mil. t</strong></td>
<td><strong>11 mil. t</strong></td>
<td>• <strong>Increasing productivity to 3.6 t/acre</strong></td>
</tr>
<tr>
<td><strong>Total Consumption:</strong></td>
<td><strong>15 mil. t</strong></td>
<td></td>
<td></td>
<td>• <strong>Increasing total production to 15 mil. T</strong></td>
</tr>
<tr>
<td><strong>Importation:</strong></td>
<td><strong>5.6 mil. t</strong></td>
<td></td>
<td></td>
<td>• Escalating cultivated areas gradually in the newly reclaimed lands.</td>
</tr>
<tr>
<td><strong>Gap:</strong></td>
<td><strong>43%</strong></td>
<td></td>
<td></td>
<td>• Reducing yield losses which might increase yield by about 1 mil. t.</td>
</tr>
</tbody>
</table>
Raisedbed Combination Machine

Furrows irrigation  Flat bed irrigation  Raised bed irrigation
### Current Status

**Yellow maize:**
- Area: 0.5 mil. acre
- Productivity: 3.4 t/acre
- Total Production: 1.5 mil. t
- Total consumption: 8.8 mil. t
- Importation: 7.3 mil. t
- cost (US$1.6 milliard)
- Gap: 75%

**White maize:**
- Area: 1.7 mil. acre
- Productivity: 3.4 t/acre
- Total Production: 5.7 mil. t

### Short-term Goal by 2016

- Area: 1 mil. acre
- Total Production: 3.5 mil. t

### Transitional Goal by 2018

- Area: 2 mil. Acre
- Total Production: 7 mil. t

### Strategic Goal by 2030

- Area: 3.7 mil. acre
- Productivity: 5 t/acre
- Total Production: 18.5 mil. t

### Instrument to Achieve Goals

- Set a reasonable (competitive) price
- Encouraging Contractual farming.
- Increasing yellow maize cultivated area to reach 2 mil. acre on the expense of white maize and rice in the newly reclaimed lands.
- Scheduling of importation.
### 1.2 Cereal Crops: Rice

<table>
<thead>
<tr>
<th>Current Status</th>
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</tr>
</thead>
</table>
| The rice cultivated area is increasing violating the governmental laws. Must be gradually declined. | **Area:** 1.4 mil. acre  
Hybrid rice: 3,000 acre | **Area:** 1.1 mil. acre  
Hybrid rice: 0.25 mil. acre | **Productivity:** 5.2 t/acre in order to achieve self sufficiency as well as to satisfy some amount for exportation. | - Reduce rice cultivated area to 1.3 mil. acre which save some irrigation water and in the meantime conserve total production as well as some amount for exportation.  
- This could be accomplished by time plan aiming at increasing productivity of unit area through growing hybrid rice to reach 250,000 acre by year 2018. |
| **Productivity:** 4 t/acre | **Productivity:** 4 t/acre | **Productivity:** 4.2 t/acre |  |
| **Total Production:** 5.6 mil. t (paddy rice) gives 3.528 white rice. | **Total Production:** 5.63 mil. t | **Total Production:** 5.87 mil. t |  |
| **Total consumption:** 3.2 mil. t |  |  |  |
| **Exportation:** 328,000 t |  |  |  |
# 1.2 Cereal Crops: Barley

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Area: 200,000 acre (irrigated and rainfed)</td>
<td>Area: 230,000 acre</td>
<td>Area: 300,000 acre</td>
<td>Increasing barley cultivated area and productivity per unit area, especially in the rainfed areas and newly reclaimed lands.</td>
<td>- Developing new genotypes more tolerant to drought prevailing in the rainfed areas and salinity in some newly reclaimed lands.</td>
</tr>
<tr>
<td>Productivity: 1.02 t/acre</td>
<td>Total Production: 240,000 t</td>
<td>Total Production: 340,000 t</td>
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</tr>
<tr>
<td>Total Consumption: 270,000 t</td>
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</tr>
<tr>
<td>Importation: 70,000 t (cost US$ 13.1 mil.)</td>
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<tr>
<td>Gap: 30%</td>
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</table>
**1.2 Cereal Crops:**

**Grain Sorghum**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Area: 394,000 acre (Mostly in Upper Egypt).</td>
<td>Area: 420,000 acre</td>
<td>Area: 500,000 acre</td>
<td>Increasing sorghum cultivated area and yield per unit area, especially in the marginal and newly reclaimed lands.</td>
<td>- Activation of extension services to introduce the newly-released hybrids and cultivars to farmers along with their recommended packages of cultural practices.</td>
</tr>
<tr>
<td>Productivity: 2.1 t/acre</td>
<td>Productivity: 2.2 t/acre</td>
<td>Productivity: 2.38 t/acre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Production: 840,000 t (hybrids and new genotypes are not utilized by farmers)</td>
<td>Total Production: 920,000 t</td>
<td>Total Production: 1.2 t mil t</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2.2 Food Legume and Forage Crops

<table>
<thead>
<tr>
<th>Current Status</th>
<th>Short-term Goal by 2016</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Area:</strong> 120,000 acre&lt;br&gt;Productivity: 1,46 t/acre&lt;br&gt;Total Production: 168,000 t&lt;br&gt;Total Consumption: 450,000 t&lt;br&gt;Importation: 290,000 t (cost = US$223 mil.)&lt;br&gt;Gap: 63%</td>
<td><strong>Area:</strong> 130,000 acre&lt;br&gt;Productivity: 1.5 t/acre</td>
<td><strong>Area:</strong> 200,000 acre&lt;br&gt;Productivity: 1.6 t/acre&lt;br&gt;(This will increase self sufficiency to about 65%)</td>
<td><strong>Area:</strong> 400,000 acre&lt;br&gt;Productivity: 1.7 t/acre&lt;br&gt;Total Production: 680,000 t</td>
<td>- Intercropping faba bean on other crops such as sugarcane, tomato, and sugar beat.&lt;br&gt;- Horizontal expansion in the newly reclaimed areas.&lt;br&gt;- Vertical expansion using the new high-yielding cultivars.&lt;br&gt;- Set competitive price for the crop.&lt;br&gt;- Contractual farming encouragement.</td>
</tr>
</tbody>
</table>
### 2.2 Food Legume and Forage Crops

#### Soybean

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Area: 32,000 acre</td>
<td>Area: 40,000 acre</td>
<td>Area: 90,000 acre</td>
<td>- Cultivated area increase</td>
<td></td>
</tr>
<tr>
<td>Productivity: 1.4 t/acre</td>
<td>Productivity: 1.45 t/acre</td>
<td>Productivity: 1.5 t/acre</td>
<td>- Increasing yield per unit area</td>
<td></td>
</tr>
<tr>
<td>Total Production: 44,800 t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Consumption: 2,05 mil. t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importation: 2 mil. t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gap: 95%</td>
<td></td>
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</tbody>
</table>

- Set competitive price for the crop.
- Contractual farming encouragement.
- Increasing yield per unit area.
- Intercropping soybean on other summer crops such as maize.
- Vertical expansion using the new high-yielding cultivars.
### 2.2 Food Legume and Forage Crops

**Egyptian Clover**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Area: <strong>1.48 mil. acre</strong>&lt;br&gt;Productivity: <strong>29.6 t/acre</strong>&lt;br&gt;Total Production: <strong>43.8 mil. t</strong></td>
<td>Area: <strong>1.38 mil. acre</strong>&lt;br&gt;Productivity: <strong>33 t/acre</strong>&lt;br&gt;Total Production: <strong>45.5 mil. t</strong></td>
<td>Area: <strong>1.18 mil. acre</strong>&lt;br&gt;Productivity: <strong>41 t/acre</strong>&lt;br&gt;Total Production: <strong>48 mil. t</strong></td>
<td>- Developing improved clover cultivars yielding 60 t.&lt;br&gt;- Improving seed business and growing Barseem “Fahl”.</td>
<td>- Growing high yielding cultivars to narrow-down the gap between actual yield and potential yield of clover to reach 41 t/acre by year 2018.&lt;br&gt;- Improving seed cleaning and processing plants for forage crop cleaning.</td>
</tr>
</tbody>
</table>

Some clover seed are exported to India, Pakistan, Italy and Turkey.
## Current Status

<table>
<thead>
<tr>
<th>Total Area: 211,000 acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Groundnut:</strong> 134,000 acre</td>
</tr>
<tr>
<td><strong>Sesame:</strong> 62,000 acre</td>
</tr>
<tr>
<td><strong>Sunflower:</strong> 15,000 acre</td>
</tr>
</tbody>
</table>

**Productivity:**
- **Groundnut:** 1.4 t/acre
- **Sesame:** 588 kg/acre
- **Sunflower:** 1.2 t/acre

**Total Production:** 241,000 t
- **Groundnut:** 185,500 t
- **Sesame:** 36,500 t
- **Sunflower:** 19,000 t

**Total consumption of oils:** 2.65 mil. t.

**Total local production of oils:** 200,000 t.

**Importation:** 2.45 mil. t.

(Representing the biggest gap between consumption and production among field crops, about 95%)

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## Short-term Goal by 2016

<table>
<thead>
<tr>
<th>Total Area: 260,000 acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Groundnut:</strong> 146,000 acre</td>
</tr>
<tr>
<td><strong>Sesame:</strong> 68,000 acre</td>
</tr>
<tr>
<td><strong>Sunflower:</strong> 46,000 acre</td>
</tr>
</tbody>
</table>

**Total Production:** 300,000 t
- **Groundnut:** 204,000 t
- **Sesame:** 41,000 t
- **Sunflower:** 55,000 t

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## Transitional Goal by 2018

<table>
<thead>
<tr>
<th>Total Area: 400,000 acre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Groundnut:</strong> 170,000 acre</td>
</tr>
<tr>
<td><strong>Sesame:</strong> 80,000 acre</td>
</tr>
<tr>
<td><strong>Sunflower:</strong> 150,000 acre</td>
</tr>
</tbody>
</table>

**Total Production:** 466,000 t
- **Groundnut:** 238,000 t
- **Sesame:** 48,000 t
- **Sunflower:** 180,000 t

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## Strategic Goal by 2030

- Doubling the total area of oil crops to reach 525,000 acre.
- Enhancing yield potential
- Introduce new oil crops such as Canola.

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## Instrument to Achieve Goals

- **Yield improvement** by growing high-yielding cultivars and cultural practice application.
- **Set a competitive price of oil crops**
- **Application of contractual farming system.**
3.2 Oil Crops, Flax, and Onion:

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Area:</strong></td>
<td>150,000 acre</td>
<td>160,000 acre</td>
<td>200,000 acre</td>
<td>Developing high-yielding cultivars and application of cultural practices.</td>
</tr>
<tr>
<td><strong>Productivity:</strong></td>
<td>15.1 t/acre</td>
<td>160,000 acre</td>
<td>200,000 acre</td>
<td>Increasing cultivated areas to onion in the newly reclaimed lads to reach about 200,000 acre.</td>
</tr>
<tr>
<td><strong>Total production:</strong></td>
<td>2.28 mil. t.</td>
<td>2.4 mil. t.</td>
<td>3.2 mil. t.</td>
<td></td>
</tr>
<tr>
<td><strong>Consumption:</strong></td>
<td>1.8 mil. t.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(surplus for industry and exportation 400,000 t.)</td>
<td>(surplus for industry and exportation 600,000 t.)</td>
<td></td>
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</tr>
</tbody>
</table>
Reduce Food Losses and Waste (FL&W)
Food losses and waste (FL&W) refer to the edible parts of plants and animals produced for human consumption but are not ultimately consumed by people.

FL&W occur at all stages of the food chain, and have serious economic, social and environmental impacts.

Scarce resources embedded in food production are also lost, such as water, land, energy and labor, which reduce economic return for agri-business and farmers.
• FL&W deepens food insecurity for vulnerable countries who struggle to afford imported supplies to barely meet basic food needs.

• Reduction of FL&W is now recognized as a priority issue in the fight against hunger and threats to the ecosystem.

• FL&W reduction is acknowledged as the most efficient and feasible approach in economic and environmental terms to increasing food availability and security, in comparison to increasing food production.
Main Achievements
In 2014, national income resulting from cereal crops reached about 23.2 mil. t, whereas total consumption was about 36.2 mil. with a percent reduction of 13 mil. t compensated through importation of 7.3 mil. t of yellow maize and 5.7 mil. t of wheat. On the other hand, there was a quite surplus in rice and white maize.
Therefore, the Ministry of Agriculture and Land Reclamation with full conviction of the importance of cereal crops in achieving food security, directs all efforts and endeavors towards escalating national production of cereal crops, especially wheat crop as a priority in its strategic plans. Then trying to achieve higher percentage of cereal crops amount to not less than 75% for wheat and 100% for maize and rice.
Reducing cereal crop losses, especially during storage process by about 50%.

Saving irrigation water through increasing surface water irrigation efficiency in the old land, which can be partially used in the newly reclaimed lands that is predicted to maintain about 75-80% of cereal production in year 2030 with the expected increased population of about 110 mil. Thus, it should be planed to grow at least 5 mil. acres of wheat crop to meet people demands in 2030.
The Proposed Recommendation for Food Security in Egypt
➢ Strengthen regional cooperation among Arab, African countries, based on comparative advantage in agricultural and investable capital resources.

➢ Take the necessary actions to reverse the deteriorating state of agricultural resources and maintain their bio-capacity to regenerate their services and contribution to food security.

➢ Consider implementation of the available options for enhancing the self-sufficiency aspect of food security, including, among others, boosting crop and water productivity, improving water-use efficiency.
Allocate more investment in agricultural scientific research and development programs.

Develop the livestock production systems.

Develop response to cope with the threat of climate change on food security in the region through adaptation strategies, based on relevant and reliable climate forecasting models, crop tolerance to drought, heat and salinity.
Enable women to play their expected role in development.

Implement an awareness campaign to reduce food waste and losses.

Resolve differences and conflicts in order to enable capacities for action and human welfare and food security.
Thank you