Stone Pine & Pine Nuts Production in Lebanon

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Stone Pine forests in Lebanon

- Pinus pinea, a native species
- Planted between the 1930 and 1940 on sandy siliceous soils
- Grows in almost all the country ≤ 1200 meters elevation,
- Most forests are fairly open and even-aged
- Area of Pinus pinea in Lebanon: 7,943 ha
- The most dense: the lower mountains around Beirut and the Jezzine area (Southern Lebanon)
  - In Bkassine–Jezzine: The largest Stone Pine Forest in the Middle East → 220 ha & 120,000 trees

They are the most abundant coniferous forest in Mount Lebanon:
- 18% of total forest cover
- 36% of the coniferous forest cover which is equal to 14,000 hectares.
Stone pine forests in Lebanon

- Socio-economic importance for neighboring communities especially the highly valued nut production.
- The middle mountain zone villages depend on the pine nuts production for their main source of income.

- They adapt to a multipurpose management system
- They can be also used for:
  - grazing
  - recreational activities,
  - fuel wood: the harvested undergrowth, thus reducing the fire risk.

- Clearing the understory for an easier harvest may result in a higher soil erosion risk.

According to the FRA 2010

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<table>
<thead>
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<tbody>
<tr>
<td>Above-ground biomass</td>
<td>0.62 million</td>
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<tr>
<td></td>
<td>tons</td>
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<tr>
<td>Below-ground biomass</td>
<td>0.22 million</td>
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<tr>
<td></td>
<td>tons</td>
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<tr>
<td>Growing Stock</td>
<td>1.518 million</td>
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<td>m³</td>
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The Ministry of Agriculture is encouraging nut production through banning the import of pine nuts.

The pine area used for nut production is 6,277 hectares.

The distribution of Lebanese Pine nut production

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Area</th>
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<tbody>
<tr>
<td>80%</td>
<td>Mount Lebanon area</td>
</tr>
<tr>
<td>18%</td>
<td>South Lebanon</td>
</tr>
<tr>
<td>1%</td>
<td>North Lebanon</td>
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<tr>
<td>1%</td>
<td>Nabatiyeh</td>
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In the old times, pine production was a family business.

Nowadays, contractors are responsible for the harvesting and the nut processing, and they usually share the income with the owner.
The Pine cones are extracted by hand directly from the tree or from a distance using a pole.

The cones are collected and laid on the roof tops for sun drying.

The black seeds are later on extracted by hand or with specific machinery to separate the shell from the seed.

The black seeds are then soaked in water overnight, then peeled to get the edible nut.
Pine nuts production – The silvicultural practices

- The rotation period for pruning the pine trees is 4 years
  - Year 0: Pruning
  - Year 1: the forest gives 40% of its production,
  - Year 2: 60% of its production
  - Year 3: 70% of its production
  - Year 4: 100%

- New stands of Pinus pinea: 10% planted with Pinus brutia for proper pollination

- The understory cleaning:
  - In old times: Grazing was used
  - Recently: Fire is used
A single tree of stone pine produces 40 Kg of cones.

1 ha of stone pine forests comprises 260 to 200 trees.

8,000 Kg of cones

From which 320 kg of edible pine nuts are extracted.
- The pruned wood is used for firewood
- The cones shell and the nuts peel are used for heating as well.
- The resin is used for medicinal purposes for goats and as a snake repellent.
**Potential Threats**

- **Disease Outbreak**: Acceleration of insect outbreaks and fungi due to the prohibition of coniferous tree felling: (even in burned stands)
  - Tomicus spp. is widely affecting Pinus pinea.

- **Fire Outbreak**: loss of pine trees and mostly naturally replaced by the original species that used to occupy the land, like oak trees (Q. calliprinos, Q. infectoria, Olives.).

- **War Outbreak**: the total losses in woods and edible pine nut of a lost P. pinea forest are equal to 114,330 US$/ha. (including man labor cost from wood logging and pine nut extraction)
Some Production Numbers...

- Man-labor: 50$/day (= price of 1 kilo of nuts)
  
  “Since 50 years ago the peridium of the worker has been equal to the price of one kilo of pine nuts”

- Nut Production in 2005 was 1500 tons worth of 30$ USD/kg

- One ton of pine nut (white grain) harvesting requires 200 FTE-days.

- Pruning and cleaning the understory of one hectare of Pinus pinea (260 trees/ha) trees requires an average of 64 FTE-days every four years

- Stone pine exploitation, 1500t of pine nuts, requires 3,905,600 FTE-days. The total of 4,014,960 FTE-days/year equivalent of 1,784 man-years FTE.
Pine nuts contribute to the preparation of a variety of Lebanese dishes and sweets:

- Kebbeh
- Sfiha
- Tajine
- Nammoura
- Sfoof
A PICTURE WORTH OF THOUSAND WORDS