

“Development of palm and dates technologies”
During last three decades with forecast for coming (SDG2) Decade

By

Dr. Samir Alshakir

Consultant

Palm and dates Technology

Amman- Jordan

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Definitions :

- Science and Research: refer to process of Exploring new technology, methodically through observations and experiments.
- Technology: refers to the process of applying scientific knowledge and research for out- come in practical applications for various purposes and also to the continuous process of implementing knowledge covering, engineering and Machines.
- Innovaion in Agriculture: it is Technology and practice or product handling that will bring increased yield and income to the farmer- modern improved or superior production technique used to improve production or Quality and Quantity.

Value chain stations in Agricultural technology (1990-2020)

- (A) Pre-harvest:

1- Tissue culture of palm tree (Phoenix dactylifera)

- Commercial production, via ; organogenesis and embryogenesis

- Genome Map (Identification of variety)

2- Irrigation: Drip, bubbler, underground ,etc.

+ Fertilization (organic+ chemicals).

3- Pollination: Mechanical process + Machines process, liquid pollination, and pollination by ribbon.

4- Thinning: package process of, thinning of (6 ty pes) + pollination+ casing.

5- Protection: Comprehensive-Integrated-biological, chemical and physical process, for eradication of pests in the Date palm orchards

- Methods of red- weevil early detection in the date palm orchards
- Methods and machines for injection technology for red-weevil infection.

6- Harvesting:

- Using fully mechanization tools and process palatiform, special ladders, Mechanical climbing technique.
- Service from the ground, by pumping pollens, pesticides, cutting midribs, with shredding.

B- post- harvest: “Derived Dates & Date products

1. Fully automation of processing line A- Z Receiving from farmer _____ packed retail pack.
2. Deep freezing technology of processed dates replacing chemical for fumigation.
3. Replacing process of fumigation via using (, by using ethyl format & sulfhydryl group instead of Mbr.
4. Cleaning the raw dates without using water
5. Microfiltration technology for using high quality juice for carbonated soft drinks
6. Continuous chromatographic simulated moving bed technology, for separation sugars (glucose & fructose) from invert liquid syrup then production of (HFDS) high fructose date sugar.

7- Application of – laser, IR, and high resolution sophisticated programmed camera. Technologies for sorting dates.

C- Technologies & processing used. For New products.

- 1. New Technology for date powder, heat + vacuum**
- 2. (Five in one), Technology to produce high Quality Date- paste**
- 3. Automation of chopped Date production line**
- 4. Production of Choco- dates.**

C- Date – By – products:

- **Production of pit- powder/ animal feed.**
- **Processing of pellets For animal feed**
- **Snack- Food from Flakes after juice filtration.**
- **Nutrition yeast for children food.**
- **Bakery yeasts for bakeries.**
- **Fodder yeast (Torula) animal feed .**

Forecast for SDG2

- For – preharvest:
- Tissue culture:
 - Easy Technology and process for commercial production of tissue culture plants of various known commercial varieties
 - Genome identification of flaking (puffing) in most high Quality date varieties
 - Technology required for increasing the size of small date varieties
 - Advanced methods needed for decreasing water consumptive used .
 - Pollination by drones.
 - Advanced programming for early worming system for innovation timing as well as quantity required in addition to fertilization.

FOR POST- HARVEST:

- **Simple, easy and low cost technologies and process. For small farmers**
- **Technology to produce low cost derived date sugar products ((crystallization of liquid sugars) (glucose, fructose)**
- **Application of robot for final packing of high quality dates in Retail packages**
- **Technologies for utilizing derived dates to produce new food products**
- **Automation of most derived dates lines**
- **Improving present process of conditioning of both dry dates or high moisture dates .**