grapes under mulching (Dalal Sary)

mulched-grapes (Egypt)

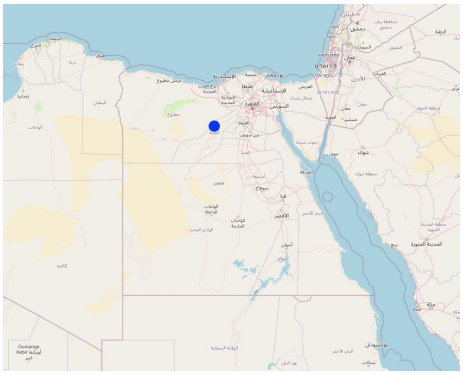
covered-grapes

DESCRIPTION

old grape tree (30 years old) grow under drip irrigation, each plant have 4 dripper with discharge about 2L/hr. plant grow on terraces which covered with plant residues at November to reduce water evaporation and for weed control. grape trees covered with plastic sheet for early production. control of plant diseases is doing under specific regulation for importation

the technology applied in frames and are related to nature and human environment that there are about 200 permanent agriculture engineers and managers control and about 500-4000 temporal workers depends on the time of the season , this technology applied only for grapes grown under drip irrigation, where terraces covered with plant residues and the trees covered with plastic sheet like plastic tunnels. the purpose of the technology are to reduce water evaporation, minimize GHGs, weed control, early production, controlling salinity, increase soil fertility and may be to increase soil carbon biomass. the major activities are covered plant with plastic sheet and covered the soil with rice straw and with the crushed pruned grapes branches, hence the inputs are plastic sheet, rice straw residues, pruned grapes branches, irrigation and fertigation system, this technology can play good role in minimizing water requirements, increase fertilizer use efficiency, increase grapes quality for importation and improvement of soil properties. this technology is good for obtain high quality for grapes but have high costs for establishment and maintaining.

LOCATION



Location: Egypt

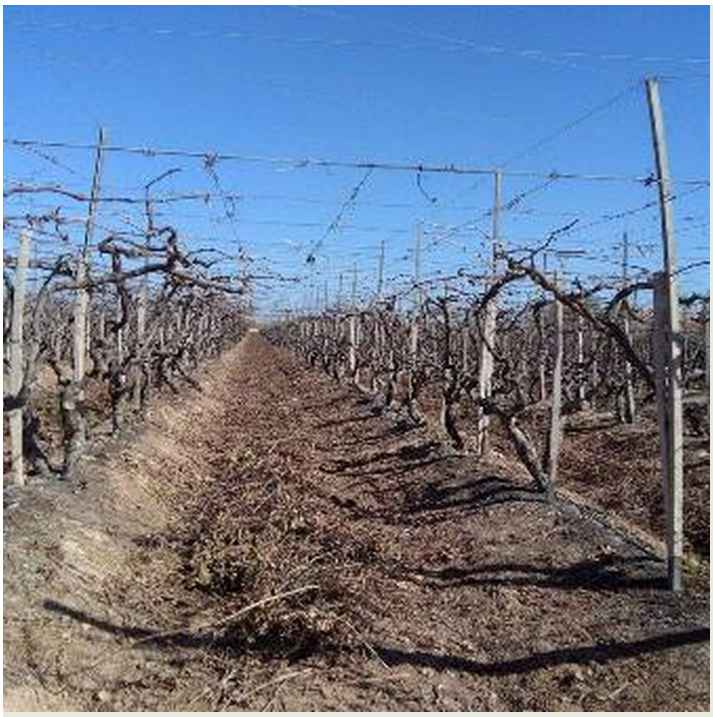
No. of Technology sites analysed: single site

Geo-reference of selected sites
- 29.39941, 29.30556

Spread of the Technology: evenly spread over an area (approx. 1-10 km2)

Date of implementation: 1986; 10-50 years ago

Type of introduction
- [x] through land users' innovation
- [ ] as part of a traditional system (> 50 years)
- [ ] during experiments/ research
- [ ] through projects/ external interventions



(Ahmed)

CLASSIFICATION OF THE TECHNOLOGY

Main purpose

- [x] improve production
- [x] reduce, prevent, restore land degradation
- [x] conserve ecosystem
- [ ] protect a watershed/ downstream areas – in combination with other Technologies
- [ ] preserve/ improve biodiversity
- [ ] reduce risk of disasters
- [ ] adapt to climate change/ extremes and its impacts
- [x] mitigate climate change and its impacts
- [x] create beneficial economic impact
- [ ] create beneficial social impact

Land use

Cropland - Tree and shrub cropping

Water supply

- [ ] rainfed
- [ ] mixed rainfed-irrigated
- [x] full irrigation

Number of growing seasons per year: 1
Land use before implementation of the Technology: n.a.
Livestock density: n.a.

Purpose related to land degradation

- [ ] prevent land degradation
- [x] reduce land degradation
- [ ] restore/ rehabilitate severely degraded land
- [ ] adapt to land degradation
- [ ] not applicable

Degradation addressed

chemical soil deterioration - Cs: salinization/ alkalinization

physical soil deterioration -

biological degradation -

water degradation - Hq: decline of groundwater quality

SLM group

- minimal soil disturbance
- integrated soil fertility management
- integrated pest and disease management (incl. organic agriculture)

SLM measures

agronomic measures - A1: Vegetation/ soil cover, A2: Organic matter/ soil fertility, A3: Soil surface treatment, A4: Subsurface treatment

vegetative measures - V1: Tree and shrub cover

structural measures - S1: Terraces

management measures - M2: Change of management/ intensity level, M3: Layout according to natural and human environment, M6: Waste management (recycling, re-use or reduce)

TECHNICAL DRAWING

Technical specifications
terraces: height 0.4 m , width 1 m
spacing between terraces =3 m
distance between plant on the same terraces = 3 m

ESTABLISHMENT AND MAINTENANCE: ACTIVITIES, INPUTS AND COSTS

Calculation of inputs and costs
- Costs are calculated: per Technology area (size and area unit: **4200 m2**)
- Currency used for cost calculation: **US Dollars**
- Exchange rate (to USD): 1 USD = 25000.0
- Average wage cost of hired labour per day: 50

Most important factors affecting the costs
n.a.

Establishment activities
1. pruning (Timing/ frequency: November)
2. mulching (Timing/ frequency: November)
3. irrigation (Timing/ frequency: November-November)
4. fertilization (Timing/ frequency: November-Apri)
5. pest control (Timing/ frequency: January to April)
6. Terraces maintenance (Timing/ frequency: November)
7. Covering with plastic sheet (Timing/ frequency: December)

Establishment inputs and costs (per 4200 m2)

Specify input	Unit	Quantity	Costs per Unit (US Dollars)	Total costs per input (US Dollars)	% of costs borne by land users
Labour					
pruning	USD	5.0	5.0	25.0	100.0
Mulching	USD	2.0	5.0	10.0	100.0
covering with plastic sheet	USD	10.0	5.0	50.0	100.0
irrigation	USD	15.0	5.0	75.0	100.0
Equipment					
irrigation system	USD	1.0	2500.0	2500.0	100.0
Plant material					
seedling	USD	500.0	0.75	375.0	100.0
Fertilizers and biocides					
NPK	USD	30.0	20.0	600.0	97.0
humic	usd	2.0	10.0	20.0	100.0
Construction material					
	usd				
Total costs for establishment of the Technology				**3'655.0**	

Maintenance activities
1. irrigation (Timing/ frequency: 15)
2. fertigation (Timing/ frequency: 112)

NATURAL ENVIRONMENT

Average annual rainfall
- < 250 mm
- 251-500 mm
- 501-750 mm
- 751-1,000 mm
- 1,001-1,500 mm
- 1,501-2,000 mm
- 2,001-3,000 mm
- 3,001-4,000 mm
- > 4,000 mm

Agro-climatic zone
- humid
- sub-humid
- semi-arid
- arid

Specifications on climate
n.a.

Slope
- flat (0-2%)
- gentle (3-5%)
- moderate (6-10%)
- rolling (11-15%)
- hilly (16-30%)
- steep (31-60%)
- very steep (>60%)

Landforms
- plateau/plains
- ridges
- mountain slopes
- hill slopes
- footslopes
- valley floors

Altitude
- 0-100 m a.s.l.
- 101-500 m a.s.l.
- 501-1,000 m a.s.l.
- 1,001-1,500 m a.s.l.
- 1,501-2,000 m a.s.l.
- 2,001-2,500 m a.s.l.
- 2,501-3,000 m a.s.l.
- 3,001-4,000 m a.s.l.
- > 4,000 m a.s.l.

Technology is applied in
- convex situations
- concave situations
- not relevant

Soil depth
- very shallow (0-20 cm)
- shallow (21-50 cm)
- moderately deep (51-80 cm)
- deep (81-120 cm)
- very deep (> 120 cm)

Soil texture (topsoil)
- coarse/ light (sandy)
- medium (loamy, silty)
- fine/ heavy (clay)

Soil texture (> 20 cm below surface)
- coarse/ light (sandy)
- medium (loamy, silty)
- fine/ heavy (clay)

Topsoil organic matter content
- high (>3%)
- medium (1-3%)
- low (<1%)

Groundwater table
- on surface
- < 5 m
- 5-50 m
- > 50 m

Availability of surface water
- excess
- good
- medium
- poor/ none

Water quality (untreated)
- good drinking water
- poor drinking water (treatment required)
- for agricultural use only (irrigation)
- unusable

Is salinity a problem?
- Yes
- No

Occurrence of flooding
- Yes
- No

Species diversity
- high
- medium
- low

Habitat diversity
- high
- medium
- low

CHARACTERISTICS OF LAND USERS APPLYING THE TECHNOLOGY

Market orientation
- subsistence (self-supply)
- mixed (subsistence/ commercial
- commercial/ market

Off-farm income
- less than 10% of all income
- 10-50% of all income
- > 50% of all income

Relative level of wealth
- very poor
- poor
- average
- rich
- very rich

Level of mechanization
- manual work
- animal traction
- mechanized/ motorized

Sedentary or nomadic
- Sedentary
- Semi-nomadic
- Nomadic

Individuals or groups
- individual/ household
- groups/ community
- cooperative
- employee (company, government)

Gender
- women
- men

Age
- children
- youth
- middle-aged
- elderly

Area used per household
- < 0.5 ha
- 0.5-1 ha
- 1-2 ha
- 2-5 ha
- 5-15 ha
- 15-50 ha
- 50-100 ha
- 100-500 ha
- 500-1,000 ha
- 1,000-10,000 ha
- > 10,000 ha

Scale
- small-scale
- medium-scale
- large-scale

Land ownership
- state
- company
- communal/ village
- group
- individual, not titled
- individual, titled

Land use rights
- open access (unorganized)
- communal (organized)
- leased
- individual

Water use rights
- open access (unorganized)
- communal (organized)
- leased
- individual

Access to services and infrastructure

IMPACTS

Socio-economic impacts

Socio-cultural impacts

Ecological impacts

Off-site impacts

COST-BENEFIT ANALYSIS

Benefits compared with establishment costs

Benefits compared with maintenance costs

CLIMATE CHANGE

-

ADOPTION AND ADAPTATION

Percentage of land users in the area who have adopted the Technology

- single cases/ experimental
- 1-10%
- 10-50%
- more than 50%

Of all those who have adopted the Technology, how many have done so without receiving material incentives?

- 0-10%
- 10-50%
- 50-90%
- 90-100%

Has the Technology been modified recently to adapt to changing conditions?

- Yes
- No

To which changing conditions?

- climatic change/ extremes
- changing markets
- labour availability (e.g. due to migration)

CONCLUSIONS AND LESSONS LEARNT

Strengths: land user's view

Strengths: compiler's or other key resource person's view

Weaknesses/ disadvantages/ risks: land user's viewhow to overcome

Weaknesses/ disadvantages/ risks: compiler's or other key resource person's viewhow to overcome

REFERENCES

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Full description in the WOCAT database
https://qcat.wocat.net/en/wocat/technologies/view/technologies_3289/

Linked SLM data
n.a.

Documentation was faciliated by

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Project
- n.a.

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