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Green Technology Investments and Access to Sustainable Financing in the Arab Region
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Olive mills wastewater (OMW) treatment for biogas production and re-use in agricultural irrigation

Challenges???

- **OMW production:**
  - ❖ Mediterranean countries: 7 -30 million m^3/year.
  - ❖ Syria: one million m^3/year.

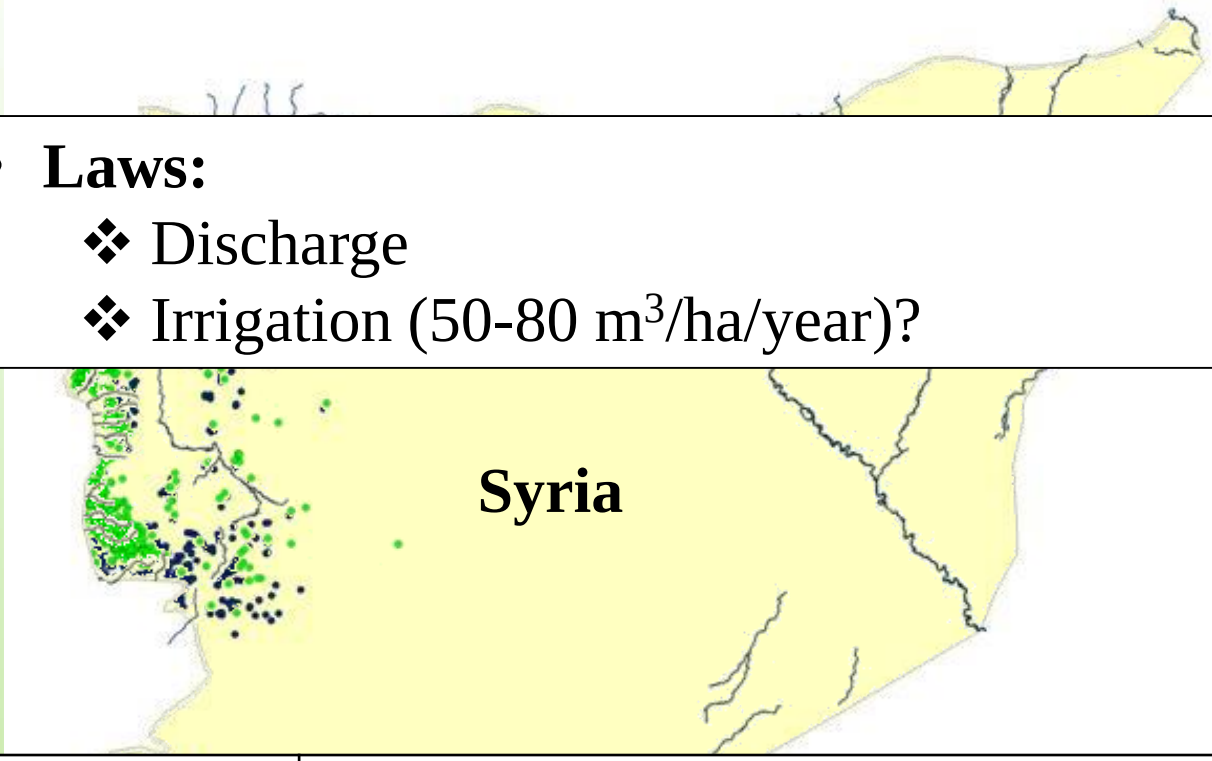
- **Discharge:**

- **Treatment**

  Effectiveness , Complexity, and Cost.

Challenges in Syria???

- **Laws:**
  - ❖ Discharge
  - ❖ Irrigation (50-80 m^3/ha/year)?

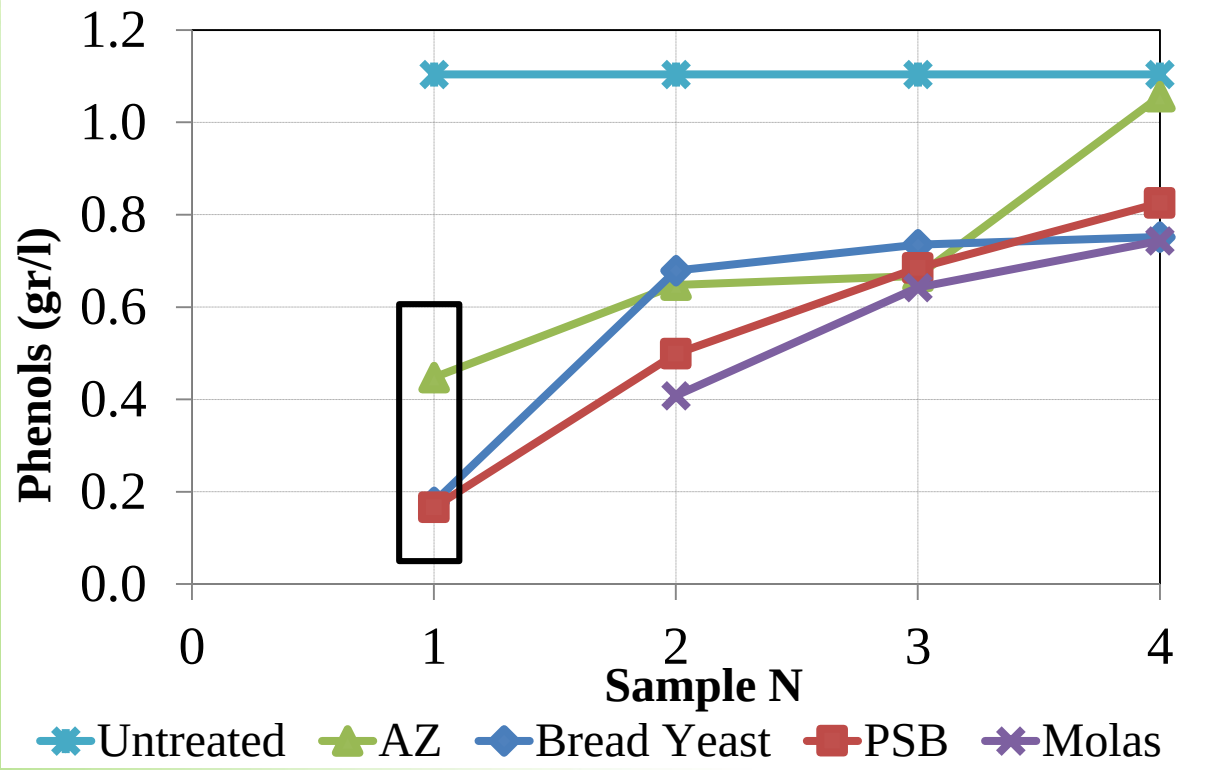


Phenols (mg/l)	Requirement
400-14300	OMW
2	Water allowed for treatment plants
0.002	Irrigation water

$10^5 - 10^6$ **Water dilation (L)**

Action

- **Experiments:**
  - ❖ 4 Mills in Latakia.
  - ❖ Aerobic treatement.



Phenol reduction 85% using PSB and no dilation

Anaerobic treatment
Fermenting unit

Fermenting unit

3 m^3/month biogas
85% Phenol reduction

Biogas

- Anaerobic treatment
- Contain (50-70% CH_4, 20-40% CO_2, 1-10% H, N, O_2, CO, H_2S).
- Methane (CH_4):
  - ❖ No smoke.
  - ❖ Blue flame.
  - ❖ Higher thermal energy (2-3 times) compared to the gas currently used in our homes.
  - ❖ Theoretically:

OMW		**CH_4**		**Electricity**
1 m^3	→	35 m^3	→	70 kWh
1 M m^3/year		35 M m^3/year		70 M kWh/year
				70 M S.P/year

Quinoa seed germination

Quinoa growing

Higher production (number and weight) for 5% Treated OMW compared to the other treatment.

%8.7 and 14% higher compared to using Water

Perspective

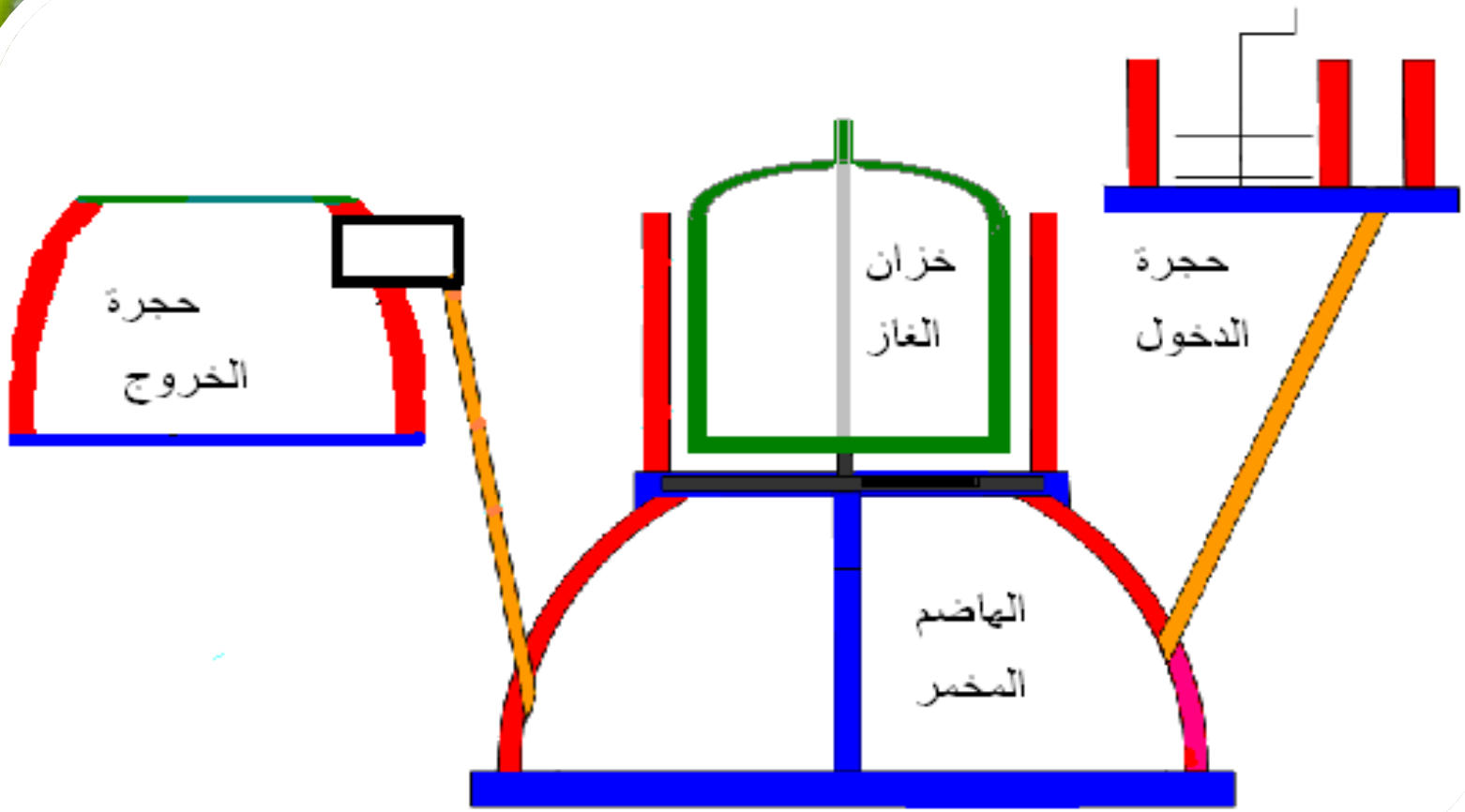
- Consider revising the government laws, so that it could reflect the scientific results.
- Consider Full/partial Financing of unit distribution for local use in the villages.

Research

- Modifications and improvement of fermentation unit.
- Study characteristics of biogas.
- Study the response of different crops to OMW use in irrigation.
- Factors affecting aerobic and anaerobic fermentation.

Climate change and you?!

Thank you for your attention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كانون الأول / ديسمبر

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الحاشمية

8.00

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11.00

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