



Ministry of Environmental Protection

Agro-Ecology Department

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- **About 130 Olive mills in Israel.**
- **90 of them are located in the Northern region.**

110 OM are 3-phase producing:

About 40,000-70,000 m³/year of OMW

About 15,000-25,000 m³/year of OMSW

(Depending on the season)

20 OM are two-phase producing:

About 12,000-16,000 m³/year of Wet Husk

Land application/Spreading

It seems the easiest disposal method for OMW.

BUT, practically it is very complicated, mostly because:

- **conservative mentality.**
- **logistic considerations.**
- **topographic limitations.**
- **meteorological conditions.**
- **the need for reservoir facilities.**
- **high transportation costs.**

So, we searched for other alternatives.

Evaporation pond (2003-2005)

We have built an evaporation pond for OMW collection during the olive harvest, that included a fat separator in order to improve evaporation.

**The leftover was spread in the summer.
The state cover all the expanses.**

After three years it became an environmental hazard (unbearable odour source).

We destroyed it after 3 years.

Insights:

- **Evaporation cost less than spreading.**
- **Logistics is easier, no topographic and meteorological limitations.**
- **An unbearable odour source.**

Conclusions:

- **We need a solution for the odour problem.**
- **We need a responsible body for maintenance**
- **We need a decision who will pay for maintenance ?**

Evaporation pond in Mgar



Arabe Pond- out of use because of lack of maintenance costs



Unique DAF systems (2007-2015)

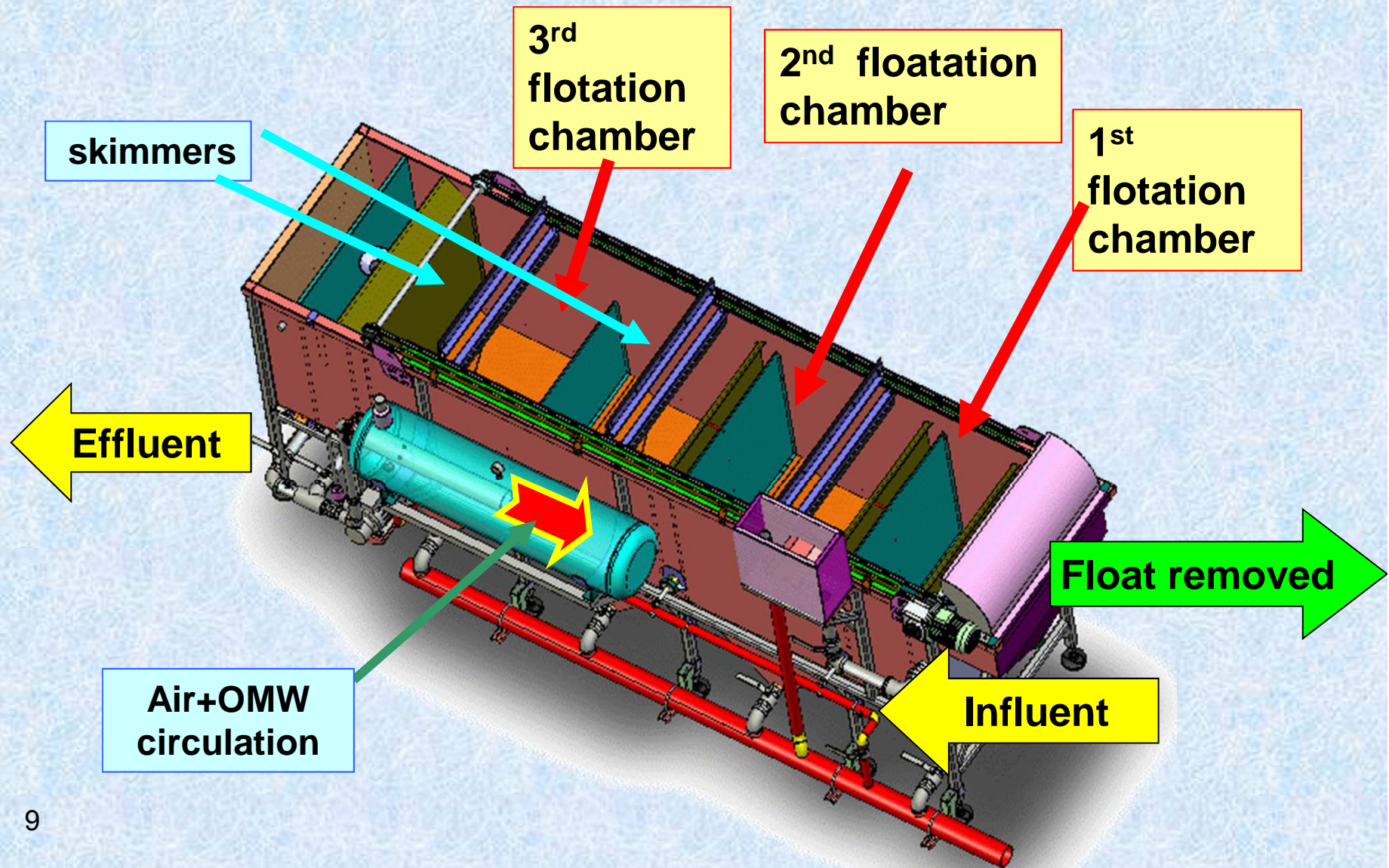
**We subsidized 10 unique DAF systems.
especially designed for OMW treatment,
to achieve at least 70% reduction.**

our main goals were to prevent:

- a) Collapse of the sewage piping systems.**
- b) Collapse of the sewage pumping stations.**
- c) Collapse of the WWTPs.**
- d) Pollution of Cabri & Ziv springs.**



Z-Qlean DAF



Z-Qlean DAF



results & conclusions

- **Up to 70% reduction in COD, BOD, TSS & Fats**
- **In 2010 laws changed and forced all industrial plants including OM to stand with maximum values.**

For example : MAX. COD 2000 mg/l.

- **The DAF systems are out of use because of new law stands.**

2017 season

The **presumption/axioms** for the suggested mechanism :

- **The available disposal is Spreading.**
- **Not depending on self-spreading**
- **inspection.**
- **Controlled quantities.**
- **Controlled spreading quality**
- **subsidize.**

The methodology

The operational mechanism done by the water & wastewater corporations as follows :

- 1. Every corporation operate a spreading contractor**
- 2. The pumping-spreading contractor should pass the requirements of the Ministry Of Environments (MOE) :**
 - On-line detection GPS,**
 - Suitable spreading machine ensuring uniform spreading.**
 - The driver should pass a training process.**

The methodology

- 3. Daily registration of OMW volume pumped from every OM.**
- 4. OMs should have a storing volume for 3 full working days (by law)**
- 5. Weekly reading of water meter.**
- 6. Weekly equalization between the water consumption and the OMW pumped.**
- 7. Implementation of On-line cellular alarmed Ph and conductivity meters on suspected OMs.**
- 8. Daily inspection on spreading quality by the MOE.**
- 9. 4 sewage monitoring for every OM during the season.**

The methodology

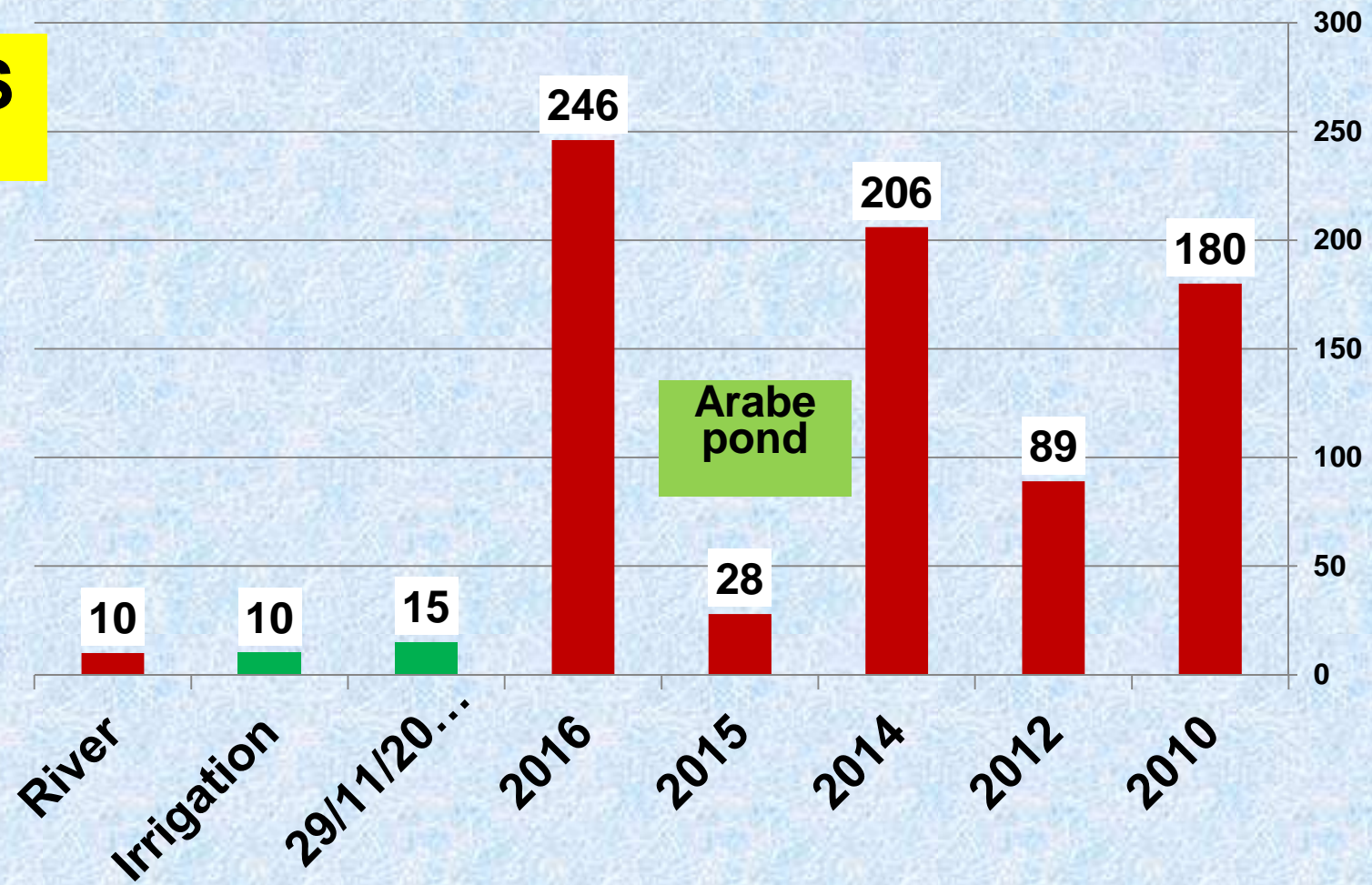
- 10. 3 inspection nights on OMs done by the corporation.**
- 11. 3 inspection nights on OMs done by the MOE**
- 12. Giving on-line fines for OMW flowing to the sewage network .**
- 13. Subsidizing ~9€ /m³ by the MOE and the water authority**
- 14. Subsidizing ~3.5 € /m³ by the corporations**
- 15. So that the OM owner pay just ~3.5 € /m³**

By side advantages :

- Obligation by the water bill**
- ¹⁵ Efficient inspection on spreading**

The results - Karmiel WWTP

TSS



Mediterranean sea near Acre painted in BLACK



**The first
year we do
not see
this scene**

Thank you!