

UK Biobed/biofilter practice, adoption levels, regulatory controls and challenges. Future alternatives



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Timeline – lots of UK experience

Biobeds – Interest from 1996,
2000 trials ex Sweden

Biofilters – from 2008 ex Belgium

Heliosecc – 2010 ex France
Syngenta

Phytobac – 2013 ex France –
Bayer CropScience

UK biobed background

- > 450 commercial biobeds / biofilters – Biofilters particularly of interest.**
- Many enthusiastic farmers**
- Farm scale 5 year ‘commercial use’ project plus further studies 2002 - 2007. 2013-2016 (Cooper et al) further study all confirm biobed performance**
- Biofilters, from Ghent 2007, UK trial 2008 approved.**
- 13 years general farm system experience**
- Good practice only with lined biobeds or Biofilters, Phytobac and Heliosecc**

Safe operation

- Collect all liquids on bunded fill area

Options

- Dispose of by spraying out on permitted area
- By waste disposal contractor
- To Chemical treatment plant
- To Biobed or Biofilter, evaporation system

Filling site review

- Where in farm yard, other traffic, yard water influence, cross contamination, local drains, vulnerability
- Water courses near site
- Boreholes
- Work routines
- Sprayer condition
- Chemical store
- Size of filling area
- Roof possible?



Get the site right 50-75% of problem resolved

Many improvements possible



What is a UK biobed

- **Lined** hole in the ground
- Filled with biomix and turfed over
- Receives the liquid draining from sprayer filling area.
- The impermeable liner allows draining of treated liquid for disposal as irrigation / re-use.
- Classic mix (Sweden) by volume
 - 50% straw, 25 % soil, 25% peat free compost
 - Grass - turfed over
 - Interest in all other 'composts'
 - Biobed mix content – 1m³ for 1000l total water
- Biobed leachate irrigated (drip) over vegetative area

OFFSET LINED with irrigation area

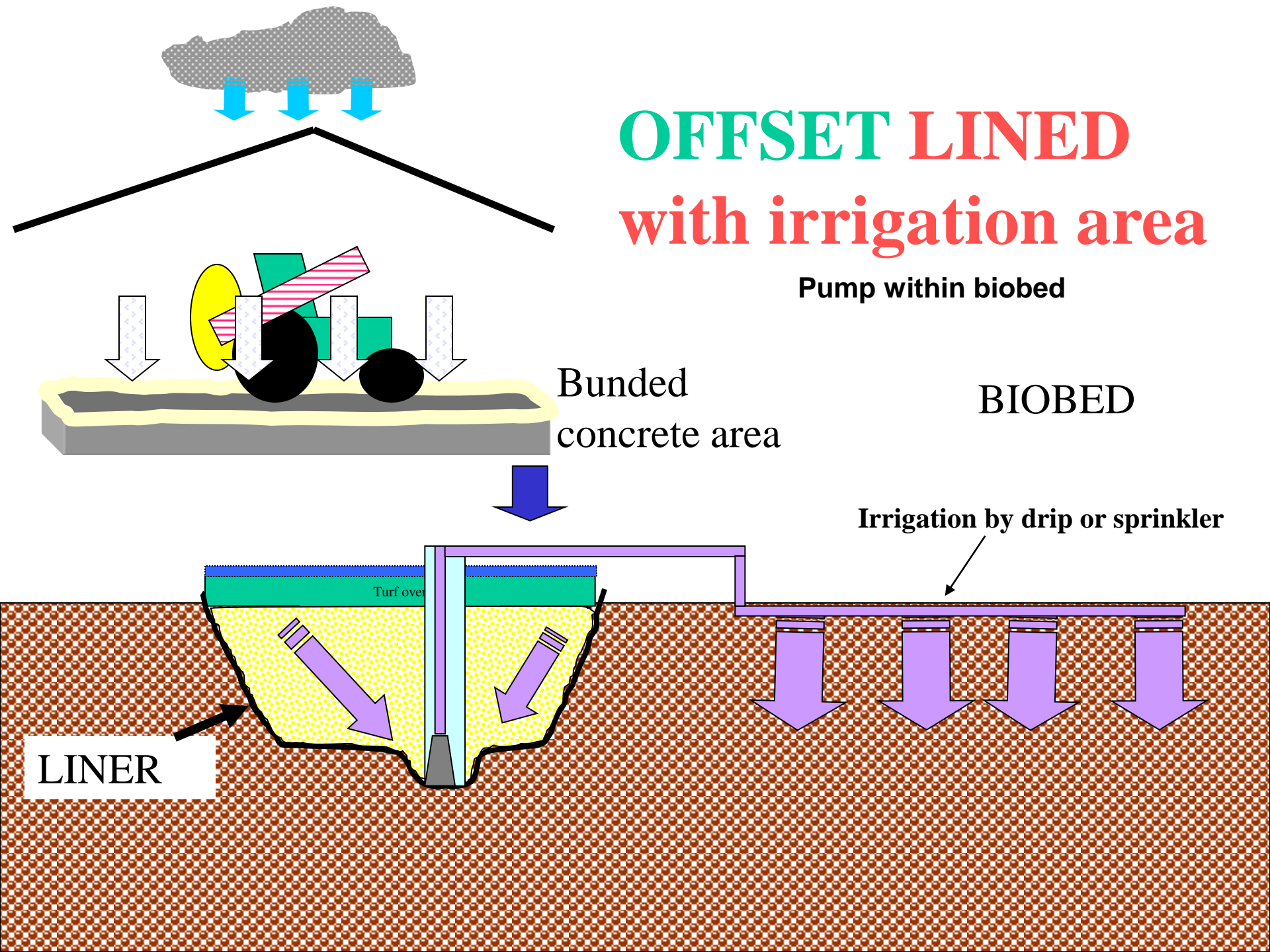
Pump within biobed

BIOBED

Bunded
concrete area

Irrigation by drip or sprinkler

LINER





Offset Biobed - Dec 2007, emptying, contents and wildlife



Regulation Summary

- UK Government Dept. – Environment Agency (EA)
Responsible for protecting UK waters
- Water supply companies have to deliver water to EU standard
- Under Agricultural Waste Regulations (EU) all biobeds/biofilters need registering with EA.
- Exemption T32 for biobed or biofilter and U10 for spreading material post biobed /biofilter to land.
- Message – Biobeds/biofilters **Best Practice**

Regulations

- 15,000 l spray washings annually etc, not counting rainfall per biobed, same for biofilter but not suited to rainfall flow

Biobeds / Biofilters may not be sited within

- 10 m watercourse
- 50 m where borehole used for non domestic / food purposes
- 250 m where borehole used for domestic / food purposes
- Special Ground water protection zone. Environmental permit needed. Local EA check options with Groundwater and Contaminated Land Team. Follow Best practice within T32 guidance.

BIOFILTERS



2007 Belgium, Ghent
University – Fruit
orchards



- System in use from 2012, No problems, well meets requirements
- Limited waters produced.
- Facility also includes potential for sprayer washdown
- Essex & Suffolk Water regularly sampling biofilter influent and effluent



Fill area bunded below access level, building includes and biofilter & chemical store

Rinsed container storage



Biofilter within sprayer store / fill area



Future – other products

HELIOSEC - Syngenta



**UK evaluation by Syngenta –
12 farms**

**Evaporation variation,
geographical south to North
and farm siting**

**Approx. 11-15 litres/day
evaporation**

Suits roofed area.

**No requirement for EA exemption in UK
but site distance rules apply and bund is
necessary**

Future – other products **Phytobac**



Other ideas

**Plastic containers for
Phytobac principle**

**Biofilter
development,
integrated
box/plumbing**

**Small operators, plug
in – precharged?**

**What easily available
materials can be
used in the mix?**



Summary

- UK experience good
- Water company involvement supporting message to Farmers
- Biofilters attractive, compact, easy and less expensive
- Roofing of fill areas now being accepted
- Other systems not taken up so well

Questions?

- Lots of interest
- Grants help
- New concepts need further development, evaporation systems
- New composts / biomix / water volumes could be further evaluated