

Greenhouse and Nursery Water Treatment Information System

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Crop Application of Waste

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One potential means of disposing of greenhouse/nursery wastewater is by using it to irrigate another, usually soil-grown, crop. This practice has been investigated in relation to disposal of wastewater from animal agriculture, although little investigation has been done on treating effluent from greenhouses/nurseries (Aldrich et al., 1997; Ali et al., 2005).

Arnold et al. (2003) investigated the use of nursery runoff for irrigating in-ground cut flower and landscape bedding crops (which can be used as a marketing tool at commercial nurseries). Nursery runoff water (including that treated with a wetland) tended to decrease (in comparison to pure tap water) plant productivity of sunflowers, paperwhite narcissus, larkspur, pansies, snapdragons, and zinnia, to varying degrees, likely attributed to high soluble salt concentration. There was no effect on vinca plants. The study suggests 723ppm NaCl/3.17dSm⁻¹ EC may represent upper limits for salinity of runoff water that is to be used for subsequent irrigation of landscape plants. However, it is possible high-salinity water could be used for irrigating more salt-tolerant plants.

Using saline runoff water to irrigate more salt-tolerant crops is referred to as “cascade cropping”. This system has been investigated for transferring water from soilless greenhouse crop to soilless greenhouse crop, or between soil-grown crops (Incrocci et al., 2003; Shannon et al., 2000). However, the same principles would likely apply to transferring water from a soilless crop to a soil-grown crop.

Pros and Cons

Pros:

- Wastewater could be used to irrigate a crop that would provide income to the facility operator

Cons:

- Economic viability of the practice has not been investigated, and would differ between specific situations (Arnold et al., 2003)
- Only viable if have crop fields/beds nearby (or can construct them nearby), and the crop area is big enough to use all runoff water
- Not viable in winter
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Summary

Overall, crop application of drainage water could possibly be a viable means of decreasing nutrient runoff for certain facilities, in certain situations. However, access to a field crop and the amount of drainage water that needs to be treated are factors that would influence viability. As well, dissolved salts in the wastewater to be used for irrigation will likely pose a problem, particularly if the nutrient solution has been recirculated for long term. Overall, more research is required if this is to become a recommended practice.

REFERENCES

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