

---

## Reduction of phosphorus load from critical source areas using a ferric sulphate dozer

---

**Aaro Närvänen\*, Risto Uusitalo**

MTT Agrifood Research Finland, 31600 Jokioinen, Finland, aaro.narvanen@mtt.fi

**E**xercise areas and milking stations have been identified as hot-spots of phosphorus (P) losses in many animal farms. In farm surveys we repeatedly measure excessive soil P concentrations in surface layer (0–2 cm) of these sites, e.g. paddocks that are affected by excrements. In rainfall simulations these soils have given very high concentrations (up to tens of milligrams per litre) of dissolved reactive P (DRP) in runoff water. As a remediation solution for such small areas that are saturated with P, we tested treatment of runoff water using a ferric sulphate dozer (Närvänen et al., 2008).

The dozer consists of cone-shaped polyester netting that is attached to the bottom of a container filled with granular ferric sulphate. The shape of the netting ensures that when water level rises, a larger volume of the cone is immersed in runoff and more ferric sulphate is dissolved. Thus, chemical dissolution is regulated by the flow. In our test site, the ferric sulphate dozer was placed in a channel leading to a sedimentation pond that had a sand filter wall at the outlet. The chemical treatment that was performed during one calendar year showed reductions of DRP and total P in runoff by 95% and 81%, respectively. For high-P waters draining from small areas, the construction and running costs of this type of treatment are reasonably low.

### Reference

Närvänen, A., Jansson, H., Uusi-Kämppe, J., Jansson, H., Perälä, P. 2008. Phosphorus load from equine critical source areas and its reduction using ferric sulphate. *Boreal Env. Res.* 13, 265–274. (<http://www.borenv.net/BER/pdfs/ber13/ber13-265.pdf>)