



Phosphorus Recovery by filtration columns with Coated calcium calcite as filter media can be implemented after constructed wetlands for P reduction and recovery as fertilizer. The filter media are based on calcite that is coated to allow the use of the calcite potential to remove P, but simultaneously improve the mechanical characteristics of the material, to ensure that it can withstand the harsh conditions prevalent in filters, such as hydraulics, meteorization and shear efforts generated by the water flows in the filter. The soft-gel coating improves the competence of the media, but also is permeable enough to allow the contact of the P-rich water with the media so that the grain pores are used for sorbing P that can be later recovered. The filter media used is capable of retaining relatively high concentrations of P, with the potential also for recovery either as a soil amendment or direct use as a slow-release fertilizer.

P treatment is usually met by chemical dosing of iron or aluminium salts. This process is particularly challenging for small populations due to the need to replace low volumes of chemicals in remote locations with the required H&S handling of chemicals, and the need to manage the chemical sludge generated during the process. Chemical dosing in constructed wetlands (CW) carries the added challenge of P entrapment in the sludge layer that can be released at a later stage to the environment. A good combination with CWs is the removal of P using external filters of reactive media as tertiary treatment.

KEY POINTS:

- High phosphorus removal efficiency
- High adsorption capacity
- Modular column system
- Simple operation
- No energy consumption
- Value-added by-product as fertilizer

MAIN FEATURES

- ✓ No need for chemical addition nor management of precipitated material
- ✓ P recovery of a soil amendment and fertilizer
- ✓ No need of operation and maintenance.
- ✓ Minimum lifespan of 5 years