

# Sediment

## VEGETATED BUFFER/FILTER STRIPS

**Inadequate buffering of farm run-off may damage wetland values and/or downstream water quality. The buffer may also be ineffective at reducing off site impacts. Sediment traps are generally not effective at removing fine particles or dissolved pollutants. Without a final filter stage, these particles will continue through the system at each rainfall event.**

The width of a buffer strip is measured perpendicular to the stream. The chosen width will reflect the intensity of source, the topography, and whether the buffer is designed to protect streams from groundwater or surface water sources.

- For the purposes of filtering out sediment and nutrients, a buffer should have a width of at least 10 m for a forest buffer on low gradient land, and 5 m for a dense grass buffer on steeper riparian land. Wider buffers are only necessary if there is an extremely intense source of sediment, such as might occur in the wet tropics where surface erosion rates are greatest. Where possible, however, it is more efficient to reduce the intensity of the source.
- Where overland flow is funnelled into narrow (less than 3 m) streamlines several centimetres deep, it is not possible to trap large quantities of sediment, particularly fine sediment, using grass filter strips. In these situations, a grass waterway needs to continue up the hill slope hollow for a width of at least 10 m so that overland flow hits the grass before it is confined, and deposits sediment at the edge of the waterway.

Buffer strips work by allowing shallow dispersed flow to move through the vegetation, which then traps the sediments and particulate matter.

The flow into buffer strips needs to be dispersed and needs to remain that way as the water moves through the strip. Vegetation cover in the buffer strip needs to be similar in structure and must be maintained. The formation of concentrated flow channels should be avoided.

Where buffer strips are immediately adjacent to crop areas, the buffer can be slashed to manage pests.

Vegetation within buffer strips slows the speed of run-off, allowing sediments to be deposited into the buffer strip area.

Infiltration of water into the buffer strip also assists with the removal of other pollutants; however, buffer strips are less effective at removing dissolved nutrients and pesticides. Buffer strips perform best when there is dense vegetation growth at the ground level (e.g. vegetation with multiple stems and groundcover) and shallow flow depths (below the vegetation height).

Buffer strips need to be well vegetated. The most suitable species are grasses, sedges and rushes. Grass seeds can be used or naturally occurring grasses and groundcovers can be encouraged to germinate in the buffer area.

Use local guidelines if they are available to assist with plant selection or contact your local Landcare or Natural Resource Management (NRM) group. Naturally vegetated systems such as waterways, wetlands and riparian zones are a good reference from which to create a species template.

The dry season is the best time to establish a buffer strip to reduce the risk of run-off induced erosion. It allows for adequate establishment and root growth before heavy summer rainfall. Planting early in the dry season takes advantage of the existing moisture in the soil. Irrigation and weed management may be needed until the vegetation is fully established.

Buffer strips rely on good, dense, similarly structured vegetation for optimal treatment. Adequate vegetation growth is the key maintenance objective for buffer strips while minimising channelisation. The most intensive period of maintenance is during the plant establishment period when watering and replanting/reseeding may be required to ensure design densities of plants are achieved.

*Disclaimer: This information is provided as a reference tool only. Please seek professional advice.*

*A Growcom project conducted in collaboration with the Department of Natural Resources and Mines with funding provided by the Queensland Government's Rural Water Use Efficiency Initiative - Irrigation Futures.*



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Typical maintenance will involve:

- The slashing of buffer vegetation to 300mm to maintain good cover and growth. Where buffers are immediately adjacent to crop areas the buffer can be slashed to 100 mm to manage pests. The slashed material should be removed from the area and used on the farm.
- Weed management to prevent propagation of weeds downstream or in riparian zones.
- Replanting/reseeding of desired species to achieve design densities.
- Irrigating vegetation, as required.
- Removing sediment if there is a concentrated build-up which impedes even flows through the buffer area. This should be done during the dry season to allow reestablishment of vegetation before the next wet season. Removed sediment should be disposed of in the farm blocks, away from the buffer and any other drainage lines.
- Filling in any areas in the buffer that have been caused by erosion and which are channelling flows.
- Six monthly inspections after major rainfall events.

*Information in this fact sheet has been obtained from the following resources and is gratefully acknowledged.*

*Buffer Strips fact sheet developed by QDAFF & Healthy Waterways with funding from Queensland Wetlands Program.*

*Riparian Land Management Technical Guidelines. Volume Two: On-ground Management Tools and Techniques, published by Land and Water Resources Research and Development Corporation (LWRRDC)*

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