

Strip cropping for erosion control on the Darling Downs

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Strip cropping has been used as a means of erosion control in low gradient land subject to flooding on the eastern Darling Downs since 1956. The current systems have developed by modification of the early designs, based largely on experience with strip performance under flood conditions.

Strip cropping practices in several districts were reviewed to identify any design or associated agronomic management problems. Farms in the following flood areas were selected:

- Catchment outlets - transitional areas between hills and plains, with slopes from 0.3-1.0% (modal 0.4%); junction between upland channel flow and spread flow.
- Plains (upland flow) - plains with slopes from 0.1-0.5% (modal 0.2%); flows are typically spread and from one direction only.
- Plains (major flow) - plains with slopes generally 0.2%; flows are typically spread and from more than one direction, with channel flow caused by flooding from major streams.

Strip cropping layouts were investigated on 52 farms representing some 40% of the strip cropped area. The investigation revealed that agronomic management and strip width were important factors in strip effectiveness. The optimum strip widths for each area for four flow conditions, based on average management, a summer : winter : fallow = 1 : 1 : 1 rotation and stubble incorporation. are shown in Table 1.

TABLE 1. Optimum strip width in three catchment locations.

Location	Optimum strip width (metres) for four flow conditions			
	Channel (major)	Channel (minor)	Spread flow	Local flow
Catchment outlets	20	30	50	60
Plains (upland flow)	50	60	80	100
Plains (major flow)	50	55	60	80

The study showed that variability in land slope, surface conditions, nature of run-on, discharge, flow obstructions, crop sequence, stage and rotation, and management had more influence on strip effectiveness than strip width alone. Adjustments to these optimum widths are therefore required, based on surface management, presence of diversions or irregular slopes and the proportion of erosion susceptible crops such as sunflowers and maize in the rotation.