

## Conservation management of pineapple lands in southeast Queensland

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Pineapples grown in southeast Queensland are generally planted on raised beds on steep slopes (10 to 35%). This practice is adopted to avoid frost in the low-lying areas and to provide good soil drainage to obviate soil-borne root rot (*Phytophthora cinnamoni*). This area is often subjected to high-intensity storms (more than 25 mm/h) in the wet season. The exposure of these steep planting sites to high-intensity storms produces severe erosion in most pineapple farms in the area. The effects of rainfall, land slope and row gradient on soil erosion are being investigated to develop appropriate management practices to reduce soil loss and maintain productivity.

Results to date show that soil erosion in pineapple-growing areas of southeast Queensland is strongly affected by the following factors:

**Land Slope:** When 766 mm of rain was received from October 1979 to May 1980 soil losses of 34, 64 and 148 t/ha were recorded for slopes of 11, 14 and 17% respectively.

**Canopy Cover:** The above soil losses were recorded during the first wet season, when the ground cover was between 32% (at planting) and 66%. For the second wet season, June 1980 - May 1981, when the ground cover was 88% and higher, 0.5, 0.4 and 1.4 t/ha of soil was lost from the same slopes for a rainfall of 1,214 mm.

**Slope Shape:** Soil loss from pineapple plots is also strongly affected by the shape of the land slope. During the first wet season, soil loss from a convex 14% slope was 64 t/ha while a concave 14% slope lost only 31 t/ha. Examinations of channel shape indicated that sheet erosion had occurred from the sides and tops of the beds without rilling of the channel.

**Row Gradient:** Between 1979 and 1981, row gradients less than 6% resulted in soil deposition in the channels while gradients of more than 8% produced rilling.

**Recommendations:** Assessing the above results in association with local soil and storm characteristics, hydraulic channel design and local farming practices, the following practices are recommended:

- Pineapple row length should not exceed 30 m.
- On erodible soils planting should be restricted to slopes less than 3%, while 11% is the limit for stable soils.
- Row gradient should not exceed 3% on erodible soils and 6% on stable soils.
- A minimum row gradient of 2% should be maintained to allow adequate surface drainage.
- Mulching of pineapple beds and channels at planting is necessary for soil protection. Further work on crop management techniques is required.