

## Land management needs in the Bremer and Lockyer catchments

P.J.M. Johnston and R.M. Stephens

Queensland Department of Primary Industries, Indooroopilly. Qld 4068.

The Bremer and Lockyer catchments, situated about 70 km south west of Brisbane, comprise steep to undulating sedimentary, some basaltic overlays and extensive alluvial plains. These plains are used for irrigated crop production (S30 million annual average 1975-77) with a trend towards more intensive production of higher value crops. Production is being increasingly affected by various forms of degradation.

Two land studies were commenced in 1976 to assess the degradation and make recommendations for the protection of these valuable land and water resources. The lands were classified into mapping units on the basis of geology, soils, topography and vegetation and relationships established between mapping units, land use and land degradation.

These studies found that 36.5% of the area was affected by various forms of degradation (Johnston 1979, Shaw 1979). Salinity of ground water is a major problem with about a quarter of the total area of the alluvials overlying groundwater with high to extremely high salinity ( $> 700$  ppm Cl<sup>-</sup>) (Roberts and Talbot pers. comm.). Heavy grazing of the uplands coupled with tree clearing and cultivation for pasture and fodder crop production has intensified the salinity problems and caused extensive landslipping and erosion in the upper catchment. Polluted water from Lockyer Creek also affects Brisbane's water supply.

Reafforestation of slip-prone areas, pasture improvement, and controlled stocking are essential to achieve stability in the uplands, while reestablishment of deep rooted species on critical areas will reduce groundwater movement and salting of lowland areas. Salinity may be overcome to some extent by conservation of surface runoff to be used for crop establishment and critical periods of crop growth. This reduces the demand on aquifer water which minimises inflow of salt laden groundwater. Land degradation in the uplands is resulting in flash flooding rather than extended periods of runoff, and is contributing sediments which silt dams and watercourses. Preliminary analysis indicates an increase over time of annual runoff from the Lockyer Creek catchment (White pers. comm.).

Solutions to the problem involve an overall catchment approach in which costs and benefits can be adjusted on a community basis. This permits the costs incurred by graziers, who have to relinquish part of their area to re-afforestation and carry out expensive erosion control works, to be shared by

those on the alluvial plain benefitting from increased and stabilized productivity. There is also a need for Government participation in creating a wider community interest and providing a legislative framework under which catchment management schemes can proceed.

Johnston, P.J.M. (1979) Tech. Bull. Div. Ld. Util. Qd. Dep. Prim. Inds. No. 40.

Shaw, J.H. (1979) Tech. Bull. Div. Ld. Util. Qd. Dep. Prim. Inds. No. 39.