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## PONDING BANKS ON ATARTINGA STATION

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### INTRODUCTION

The present "Year" and "Decade of Land Care" are focussing attention on Australia's degraded lands and efforts to reclaim damaged areas. Where a knowledge of events leading to degradation exists, and where activities are centred on inherently fertile parts of the landscape, reclamation efforts can be permanent, productive and show a long-term economic return.

The impetus to successful reclamation should be more than immediate damage limitation. For example, in central Australia, ponding banks will arrest gully erosion. However, the greatly increased supply of nutritious forage behind correctly designed banks allows the turnoff of higher quality cattle. Other benefits include increased access to markets and insulation against adverse seasons. This scenario is illustrated with the Aldardrama Plain on Atartinga.

### ALDARDRAMA PLAIN - ATARTINGA

The 8 sq km Aldardrama Plain was degraded by horses and sheep in the 1930s (1). By 1943, the area was perpetually bare and erosion cells were intensifying as gully heads moved upslope. The station came out of the 1959-65 drought with 280 cattle and a debt of 19,000 pounds. With no prospect of immediately buying more country, the only way of surviving was to repair damaged land. The eroding parts of the plain had estimated slopes of 1-2% and some form of contour banking appeared appropriate. A cable blade Allis Chalmers bulldozer used for fence line clearing and dam sinking was available. With advice from the NT Administration (NTA), the first ponding banks were built in 1969.

### PONDING BANKS

Ponding banks had been used for scald reclamation in western NSW, but there was little available information relevant to arresting erosion on sloping country in central Australia. Consequently, the design, placement and size of ponding banks have improved considerably over the last 20 years.

#### The first banks

Twenty five banks were built under the guidance of the NTA Soil Conservation officer who surveyed long banks (200+ m) with big catchments away from erosion scours. Borrow pits were above the banks and acted as small dams to drown re-establishing grasses and attract kangaroos. Many banks were breached in average rains and it was not possible (or sensible) to quickly repair these breaks. The bulldozer was adequate for the job but the towed ripper was slow and frustrating on harder soils.

Many introduced forage species were tried behind the banks as seed supplies and time permitted. Plants that persisted include *Panicum antidotale*, *Sorghum alnum*, and *Chenopodium auricomum*. A range of buffel (*Cenchrus ciliaris*) varieties were tried but only the US variety is palatable on Atartinga.

#### Current banks

Today, banks are built above active gully heads and on scalded country over a large part of eastern Atartinga using a Cat D7 bulldozer (2). There are 64 banks on 4 sq km of what was once the most degraded country on the Aldardrama Plain and 300 banks on Atartinga. In all cases, the borrow pit is downslope of the bank. Maximum ponding depth on flat surfaces is 150 mm with at least 1 m

of freeboard above water when the bank has consolidated. A cautious approach is required on many catchments and in all cases, a greater number of short banks with a flat or down-turned shape are the safest proposition. These banks allow water to flow past the bank ends without initiating excessive erosion and they also prevent water damming up and breaking through the bank in intense rains. Thus, small banks of 60 m length near the top of the slope may only pond 0.5 ha but the soil above this zone is still sufficiently saturated by slower flowing water to initiate gradual vegetation recovery. Longer (300 m), conventional shaped banks with larger ponding areas (3-4 ha) are then used as confidence increases and on flatter parts of the landscape. Banks can still fail in intense rains and these are repaired with a rubber tyred loader. Excessive bank failure and erosion of bank spill points indicate where more banks are required.

Banks are hand seeded with US buffel at the water line when built. These plants rapidly establish but the rate of recolonization on ponded areas away from the bank is dependant on the severity of degradation. Initial soil surface modification to allow infiltration and the later build up of organic matter are important processes (3). Usually by the time a bank has ponded five to six times (over three to four years), palatable perennial grasses have re-established on remnant islands of topsoil, while ephemerals and annual grasses have colonized bare and scalded areas and continue to trap further sediment.

#### INCREASED CATTLE PRODUCTION

The Aldardrama Plain had a negligible carrying capacity when reclamation commenced. The plain was fenced into a 33 sq km paddock in 1970 and since then, has been stocked with 150 weaners for six months of each year. These cattle graze almost entirely on the 4 sq km of reclaimed country where they consistently gain weight in all seasons. The country continues to improve under this stocking rate.

Ponding banks on Atartinga are costed primarily on the basis of the amount of fuel used. Sixty four banks cost approximately \$4000 at today's fuel prices. Modification of early banks and repairs to others increase this cost. The Aldardrama Plain now produces about 13500 kg of beef annually. Two thirds of this production is conservatively attributable to the grazing of forage behind the banks. At a value of \$1 per kg liveweight, an annual return of \$9000 demonstrates that reclamation costs have been recovered many times over.

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