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ASBESTOS GRASS (*Pennisetum basedowii*) IN NORTHERN AUSTRALIAN RANGELANDS

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BACKGROUND

Asbestos grass (*Pennisetum basedowii*) is an annual or short-lived perennial which occurs across northern Australia on floodplains and in Mitchell grass (*Astrebla* spp) pastures. It is most abundant in the Gulf country of north Queensland (it is also known locally as 'bastard grass'). Individual graziers and pastoral companies have expressed concern about the potential for asbestos grass to be a problem weed. An investigation was conducted into current knowledge of the species.

INVESTIGATION INTO ASBESTOS GRASS

This study involved a review of published material, liaison with government research and advisory personnel and a semi-formal survey with graziers and land managers. There is very little published material on asbestos grass.

Origin

The Queensland Herbarium has noted that asbestos grass is a native species. However, there is some conjecture about this, particularly as it belongs to the genus *Pennisetum*. Graziers have been observing changes in the location and density of this species for at least 30 years.

Distribution

Asbestos grass plants from Qld, NT and WA have been identified by the Queensland Herbarium. However, the specific distribution has not been delineated. General observations indicate it has spread significantly in the last 30 years. Prior to the 1974 floods, the species was very limited in its distribution in the Gulf country. Hall (1982) recorded a substantial increase in abundance after the floods. Asbestos grass occurs over an area of 400 sq km on one property in the Gulf country (12% of the holding). Its spread appears to be related to major flood/rainfall events.

Characteristics

Germination or new growth of asbestos grass occurs in November-January and it grows actively through December-February. Flowering occurs in late February-March, with seeds ripening by late March-April. It is dormant from May to November. Asbestos grass occurs as scattered individual plants through to extensive, dominant stands.

There is general recognition that asbestos grass is an undesirable species in pastures. The undesirability of the species is related to it being relatively unpalatable, its aggressive spread after major rainfall/flood events, and its apparent preclusion of more desirable species by forming dense swards. The level of palatability of asbestos grass may vary in relation to its phenological stage. Graziers have observed fresh growth being grazed. Its resistance to burning may enhance its competitiveness with more desirable species. Seed dispersal by wind, overland flow and attachment to animals ensures it is readily spread from parent plants. 'Whirly winds' appear to be an important dispersal agent in some regions. The seeds can cause eye problems with calves and sheep (Milson 2000). One grazier noted that this caused extreme irritation with calves and resulted in an opaque blue film developing over the eye. It is sometimes necessary to manually dislodge these seeds at branding time.

Whilst the main spread of asbestos grass appears to relate to flood/rainfall events, the plant density in existing stands changes annually. This is presumably related to its relatively short life cycle. Break down of dead plant material is relatively slow.

Impact

Asbestos grass appears to be an 'increaser'; its abundance increases as rangeland condition declines (Milson 2000). Whilst concern has been expressed about asbestos grass, there is no quantification on its impact on the environment or pastoral productivity. If the extensive swards on some of the large holdings in the Gulf occurred on smaller holdings, the economic impact could be very serious.

Specific observations on the impact of asbestos grass include: reduction of productivity of associated species in the pasture; cattle will not walk through dense stands and it is very difficult to ride motorbikes through dense stands. The holding paddock on one property is now completely dominated by asbestos grass. This may indicate a relationship between the grazing regime and increase in asbestos grass.

Feral pigs favour asbestos grass areas as habitat, but they do not cause long term damage to the stands.

Management

Depletion or loss of vigour in the more desirable pasture species may enhance the spread of asbestos grass. There is consideration that grazing by *Bos indicus* breeds may be more conducive to increasing the vigour and spread of asbestos grass than *B. taurus* breeds. However, it is probable that this relates more to grazing management rather than breed. Overgrazing may also result in increased run-off and consequent localised flooding; the latter would be conducive to further spread of asbestos grass.

There has been no specific management to control asbestos grass on the properties where there is concern about its impact. This is partly because of economics, but also because of its known lack of response to fire, as well as the lack of knowledge of plant response to management inputs.

RECOMMENDATIONS

There is sufficient evidence to indicate that asbestos grass may pose a potential problem if it continues to spread. It is recommended that a research project be established to study the basic biology and ecology of the species. Research into management could include the response of asbestos grass to intensive grazing in its early growth stage. Although it is difficult to burn, fire should be considered as a possible management tool (at least for containment of dense stands).

On-going Survey

The authors are still gathering information on this species – contributions would be appreciated.

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