THE PROBLEM OF ROADSIDE JOHNSON GRASS CONTROL

J.M.T. Marley
Department of Primary Industries, Queensland

Johnson grass (*Sorghum halepense*) is a tall, perennial, summer-growing grass species which produces large numbers of rhizomes and copious quantities of viable seed. The grass is a serious weed of cultivation, in which control and eradication are difficult to achieve.

The grass has become established over large areas of roadside and waste places in many farming areas of Queensland. When seed is present or when rhizome material is introduced, it acts as a pioneering species of disturbed areas, quickly leading to dense infestations, with no apparent tendency for natural displacement by a more desirable plant community. It is considered a weed in these situations through its threat to adjacent cultivation by lateral extension of the rhizome system and transport of seed to cultivated areas by wind and water. It also acts as an important alternative host for insect pests and diseases of cultivated sorghums and renders many areas unsuitable for the production of hybrid sorghum seed.

The problem on roadsides is usually initiated in areas of disturbance created during road construction and/or road maintenance operations. Both seeds and rhizome pieces are moved over large distances by earth-moving equipment.

Growth of seedlings and from rhizome pieces is rapid and the grass quickly dominates disturbed areas. Control by cultivation is not practical on roadsides as they often act as waterways and would be vulnerable to severe water erosion if cultivated.

A research program is in progress on the Darling Downs with the aim of replacement of established infestations by development of a desirable perennial grass cover which will act as a stable community and resist re-establishment of the problem.

Two approaches are being investigated:-

(a) Chemical and plant introduction

The factors considered to be vital in this approach are as follows:-

(i) A large measure of destruction of the original rhizomatous infestation with a translocated non-residual herbicide treatment to allow establishment of the introduced replacement species. Glyphosate (1-2 kg/ha) has been shown to be effective.

(ii) The availability for introduction of a sufficiently aggressive and stable replacement species with good ground-

covering ability to suppress eventual re-establishment of the problem by Johnson grass seedlings. Rhodes grass (*Chloris gayana*) has been selected as the most likely species for this role on the Darling Downs.

(iii) A technique for successful seedling establishment of this species in the chemically treated sward. Broadcasting Rhodes grass seed has not resulted in successful establishment in such situations. A part of the present program is the examination of the potential of the use of a triple-disc coulter seeder to allow for more successful seedling establishment.

(iv) Selective chemical control of Johnson grass seedlings and regrowth from surviving rhizomes during the establishment phase of the Rhodes grass. MSMA has demonstrated such selectivity and the most appropriate rate of application for this situation is being investigated.

(b) Alteration of the competitive balance by mowing

The naturally occurring understorey in many areas of roadside Johnson grass infestation is paspalum (*Paspalum dilatatum*). Under a system of mowing the competitive balance is moved in favour of the lower-growing paspalum, which assumes a progressively more expanding, prostrate, defoliation-escaping, growth habit. The growth habit of Johnson grass does not change significantly with regular mowing, and the continued heavy defoliation should lead to a progressive weakening of its rhizome system.

The comparison of three mowing intervals (2-, 4- and 8-weekly for one and two growing seasons as to their effect on the composition of a Johnson grass - paspalum complex is being investigated.