

CHEMICAL CONTROL OF SORGHUM HALEPENSE
IN NORTH QUEENSLAND

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During the past several years Johnson grass (Sorghum halepense) has appeared as an infestation of farms in localized areas in some Queensland sugar growing districts. The most important occurrence is in the Burdekin delta where several farms are affected as well as adjacent roadsides. Hitherto, the only commercially practical method of control was by cultivation methods after removing the ground from cropping. This however, besides being laborious and leaving the land unproductive for a considerable period, does not attend to the problem of affected adjacent roadsides and ditches from which reinfestation is likely to occur. In light infestations continued patrol and grubbing of the weed is resorted to.

In Johnson grass infested canefields it has been possible to grow only a plant crop, with no succeeding ratoons, as the cultivation prior to planting is sufficient to check the weed enough to allow the plant crop to make reasonably satisfactory growth. The subsequent grass development, however, prevents profitable growth of succeeding ratoons. This of course results in ploughing out after the harvest of the plant crop, and replanting, which does not result in a very economic rotation. Fortunately, in the areas concerned, Johnson grass has appeared as a pest only of cultivated land and adjacent roadsides etc. as it does not seem to spread by seeding into uncultivated areas. The seed appears to need a prepared seed bed for successful establishment.

The advent of Dowpon (sodium 2,2-dichloropropionate) has, however, completely altered the outlook, both for the cultivated farmlands and the surrounding environment.

Previously trials with TCA applications in the area concerned had resulted in unsatisfactory control. The first trials with Dowpon used at the rate of 20 pounds per acre, however, showed promise, but regrowth from the rhizomes occurred. Following this a number of trials were set out involving the use of Dowpon in a series of dosage rates, in several applications and with different time intervals between successive doses, as compared with single applications at

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varying dosages. Combinations of Dowpon and TCA were also used later in the programme.

The treatments and results were as follows:

(A) 10, 20, 30 and 40 pounds per acre of Dowpon were applied as single applications in November, under very dry conditions, when the grass was about 6 inches high.

Result: Slight regeneration occurred in all treatments, particularly the 10 and 20 pounds per acre plots.

(B) Similar treatments to A. were applied after good rains when lush growth about 24 inches high had developed.

Result: 10 pounds per acre produced a slight browning of the foliage, 20 and 30 pounds produced a fair amount of leaf browning and practically all the green leaf was killed at 40 pounds per acre. Many live rhizomes were however left in each treatment with the numbers decreasing slightly with increasing dosage rates.

(C) This was set out at the same time as A (Above).
The treatments were:

2 x 10	pounds	per	acre	applications
3 x 10	"	"	"	"
2 x 15	"	"	"	"
3 x 15	"	"	"	"
2 x 20	"	"	"	"
3 x 20	"	"	"	"

Results: The effects were inconsistent probably because of irregular original infestation. The overall quantity of Johnson grass was reduced but considerable regeneration occurred in all treatments.

(D) Five pounds per acre of Dowpon was applied at weekly intervals to the same plots commencing on 30th November, 1959.

Results: The foliage showed slight yellowing one week after the first spraying. This increased with subsequent treatments. The fifth treatment was probably ineffective as there was little to no green leaf remaining at the time. All rhizomes were affected and were either dead and rotting or discoloured and flaccid. No regeneration occurred.

(E) In this trial 5 and 10 pounds of Dowpon were applied as a combination, in each case, with 10 pounds of TCA per acre.

Results: These plots showed a very rapid death of the foliage. No regeneration occurred and all rhizomes were dead.

(F) Five pounds per acre of Dowpon was applied at intervals of 1, 2 and 3 weeks between sprayings, and 10 pounds per acre of Dowpon was applied at similar intervals. Four applications were made in each case.

Results: 5 pounds Dowpon per acre at weekly intervals gave a good kill but was not as good as 5 pounds at three-weekly intervals which gave practically 100 per cent control. The 10 pounds treatment gave similar but not superior results.

(G) Young ratoon cane infested with Johnson grass was sprayed as follows:

12. 11. 59

30. 11. 59

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|----|-------------------------|--|
| 1. | 10 lbs. per acre Dowpon | 3 lbs. per acre Dowpon
+ 10 lbs. per acre TCA |
| 2. | 10 lbs. per acre Dowpon | 6 lbs. per acre Dowpon
+ 20 lbs. per acre TCA |
| 3. | 10 lbs. per acre Dowpon | 9 lbs. per acre Dowpon
+ 30 lbs. per acre TCA |

Results: 1. Slight check to cane, little to no effect on Johnson grass.

2. Cane retarded and yellowed, slight check to Johnson grass which recovered.

3. Cane severely checked and yellowed, slight check to Johnson grass which recovered.

The cane in untreated areas was finally distinctly better than the cane in any of the treated plots and the Johnson grass in treated areas, due to the checking of cane growth, developed better than in the untreated plots.

General Observations.

Pre-emergence control of grass seedlings was good at 30 and 40 pounds per acre of Dowpon, fair with 20 pounds per acre and poor at 10 pounds per acre. With broad-leafed weeds the pre-emergence effect was poor up to 30 pounds per acre Dowpon and fair at 40 pounds per acre.

Following these trials small scale commercial treatment of Johnson grass infestations in canefields and on roadsides has been instituted using Dowpon at 5 pounds per acre for four successive applications sprayed on at regular intervals. Further investigation of the Dowpon-TCA combination treatment is proceeding.

With the apparently successful development of an economic control of Johnson grass in the Burdekin delta, the possible future danger of infestation of cane farms with Columbus grass (Sorghum x alnum) which has been planted on a large scale on some grazing lands in the catchment of this river system, becomes more hopeful. The Burdekin river normally submerges many of the canefields annually and could thus be expected to transport seed from the headwaters to the cultivated lands. Johnson grass is one of the parents of Columbus grass which will probably react similarly to weedicide treatment. It is considered to constitute a potential weed menace to the sugar cane areas in the future.