CHOPPER IMAZAPYR HERBICIDE FOR WEED SUPPRESSION IN JAPAN A NEW CONCEPT FOR INDUSTRIAL VEGETATION

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Summary. Various weed management strategies are available in industrial vegetation control in Japan, where about 32,000 ha are treated by herbicides and 39,000 ha managed by manual weeding. Imazapyr (isopropyl ammonium=(RS)-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl) nicotinate) as CHOPPER 1%AS has been developed for weed suppression in this area. Field trials have shown that foliar application of 50 to 100 g a.i./ha of product in a spray volume of 250 L/ha provided outstanding control of perennial weeds for 3 to 4 months.

INTRODUCTION

Imazapyr is already known as one of the imidazolinone class herbicides developed by American Cyanamid Company for industrial weed control, and for use in conifer forests and plantation crops.

The very unique activity of CHOPPER against the treated weeds was found early in the development of imazapyr, and it controls not only plant growth of perennial weeds, but also seed head development of perennial grasses.

Industrial vegetation management in Japan covered by herbicide treatment is about 32,000 ha and the management of manual weeding shows approximately 39,000 ha (Table 1). Therefore, a new concept of CHOPPER for industrial weed management was installed from 1983. This paper will present some of the field activities in Japan.

MATERIAL AND METHOD

Field trials. CHOPPER 1%AS at 50-100 g a.i./ha in 250 L/ha spray volume was applied with an auto sprayer in roadside, railroad and highway sides in May, 1990-91.

RESULT AND DISCUSSION

Fig. 1 shows the result of a trial on roadside. CHOPPER at 75-100 g/ha showed excellent growth suppression on *Miscanthus sinensis* and at 50-100 g/ha on *Artemisia princeps,* for 125 days. The number of seed heads of *M. sinensis* in CHOPPER plots were well controlled compared with untreated plots (50 g/ha = 13/sqm, 75-100 g/ha = 0.6/sqm and Check = 21/sqm). The total fresh weight of target weeds in CHOPPER plots was about one third of the untreated check at 125 DAT (Fig. 2).

Fig. 3 shows the result of a trial on a railroad. The activity of CHOPPER showed some fluctuation among the target weeds. The effective dosages were 75-100 g/ha for *Solidago altissima* and *M. sinensis* and 75 g/ha for *A. princeps*, efficacy lasted for 100 days.

The result of a trial on a highway side is shown in Fig. 4. CHOPPER at 50-100 g/ha showed excellent weed growth suppression of *S. altissiam* for 98 days.

Other weed situations

Through the official trials from 1989 to 1991, the efficacy of CHOPPER was authorised by JAPR in 1992 (Table 2).

CHOPPER weed growth suppressor can establish a new concept for industrial vegetation management in Japan.

CHOPPER 1%AS at rates from 50-100 g/ha can maintain the roadside or railroad with short height weeds and will protect these areas from erosion.

Use of CHOPPER can demonstrate significant labor savings for successful weed management compared with normal manual weeding (Fig. 5).

Table 1. Industrial vegetation management in Japan

Segment	Land area weed infested (ha)	Area required for maintenance (ha)	Actual sprayed area (ha)	Actual manual weeding area (ha)
Highway	100,000	12,000	1,500	3,700
Railroad	42,000	39,800	10,000	4,000
River	300,000	243,750	0	13,700
Industries	44,000	44,000	20,000	15,000
Airport	900	900	0	900
Local Government	55,000	5,500	900	2,000
Electricity	100	50	0	30
Total	542,500	346,000	32,400	39,330

Industrial estimation

Table 2. The label of CHOPPER 1%AS as a weed growth suppressor.

Site	Use objective	Target weeds	Application timing	Dosage	Spray volume
Railroad Highway	Weed growth suppression	MISSI PHRCO IMPCK FESAR DACGL ADLHI AOXOD SOOAL RUMOB PUELO	Weed growth stage (plant height, 50 cm tall and below)	50-100 g a.i./ha	250 L/ha

MISSI: *Miscanthus sinensis*
IMPCK: *Imperata cylindrica*
DACGL: *Dactylis glomerata*
AOXOD: *Anthoxanthum odoratum*
RUMOB: *Rumex obtusifolius*
PHRCO: *Phragmites communis*
FESAR: *Festuca arundinacea*
ADLHI: *Arundinella hirata*
SOOAL: *Solidago altissima*
PUELO: *Pueraria lobata*

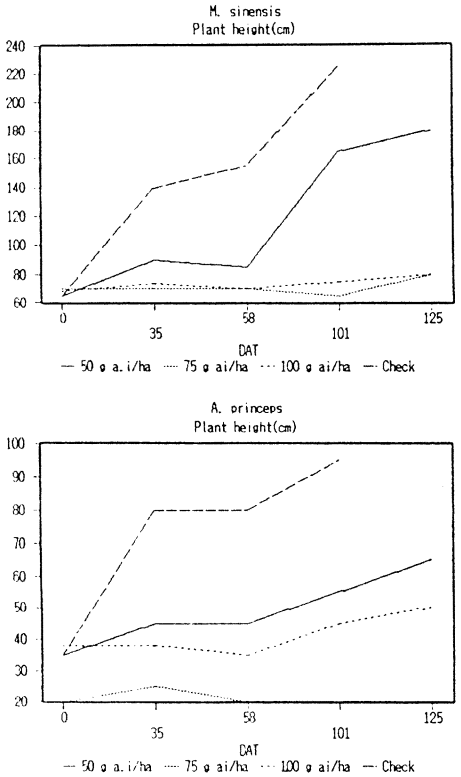

Figure 1. Effect of CHOPPER on roadside.

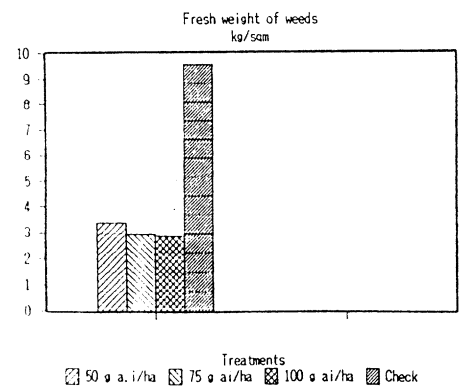

Figure 2. Effect of CHOPPER on weed weight.

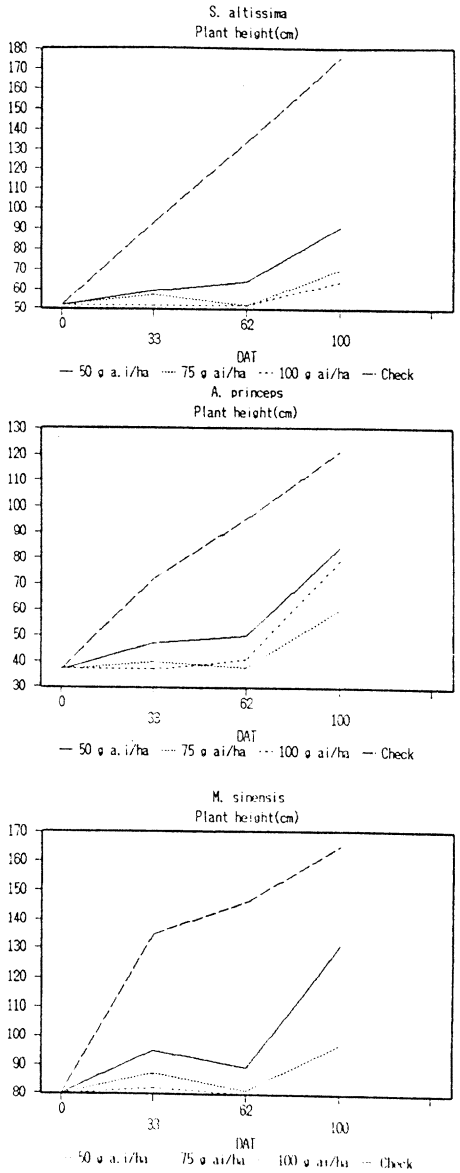

Figure 3. Effect of CHOPPER on railroad.

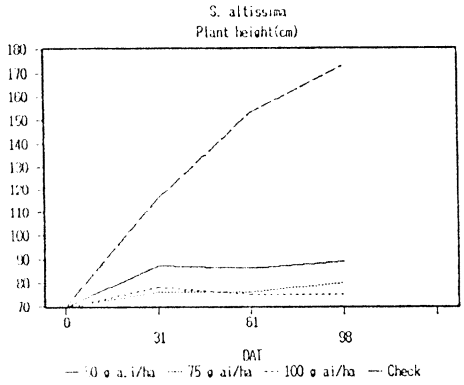

Figure 4. Effect of CHOPPER on highway side.

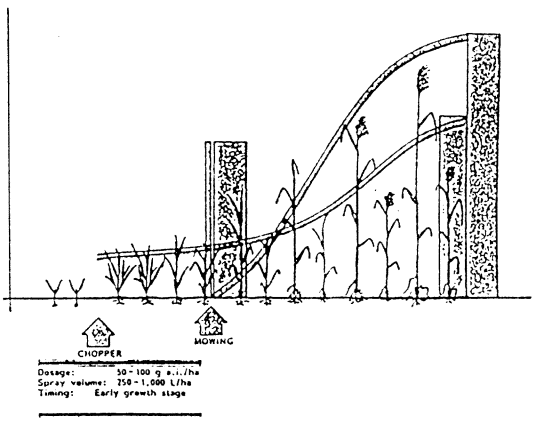

Figure 5. The general effect of CHOPPER for industrial vegetation management.