

BACKGROUND INFORMATION FOR A NEW BRUNSWICK AERIAL VELPAR (HEXAZINONE)

FOLIAR APPLIED CONIFER RELEASE TREATMENT

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Prepared by:

Phillip Reynolds

Tim MacKay

Canadian Forestry Service
Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

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INTRODUCTION

On August 29 and August 31, 1984, liquid VELPAR was aerially applied to 24 hectares of J.D. Irving's property along the Ryan Road, near St. Leonard, New Brunswick (Figures 1 and 2).

The treated area was clearcut in 1980-81. There were some scattered trees not felled and removed in the harvesting operation. The area was mechanically prepared for planting by a Letourneau crusher which was used to break up the dry logging slash. Black spruce 2+2 nursery stock was planted in May, 1982. Throughout the site, there are areas of both good drainage and poor drainage, and moisture conditions affecting crop tree growth vary across the site. Deciduous, herbaceous and coniferous species found on the site are listed in Table 1.

METHOD AND MATERIALS

Treatment and Spray Conditions

VELPAR L was applied at three rates (Table 2). All treatment rates were replicated twice.

Lay-out of Treatment Plots

In August, 1984, individual treatment plots and aerial spray swaths were marked. Location of posts for use in establishing transects for preliminary vegetation assessments was begun, but vegetation assessments were not completed.

Table 3 summarizes information pertaining to treatment plots and treatment rates.

Figure 1. Map indicating the relative location of the 1984 VELPAR experimental trials within the province of New Brunswick.

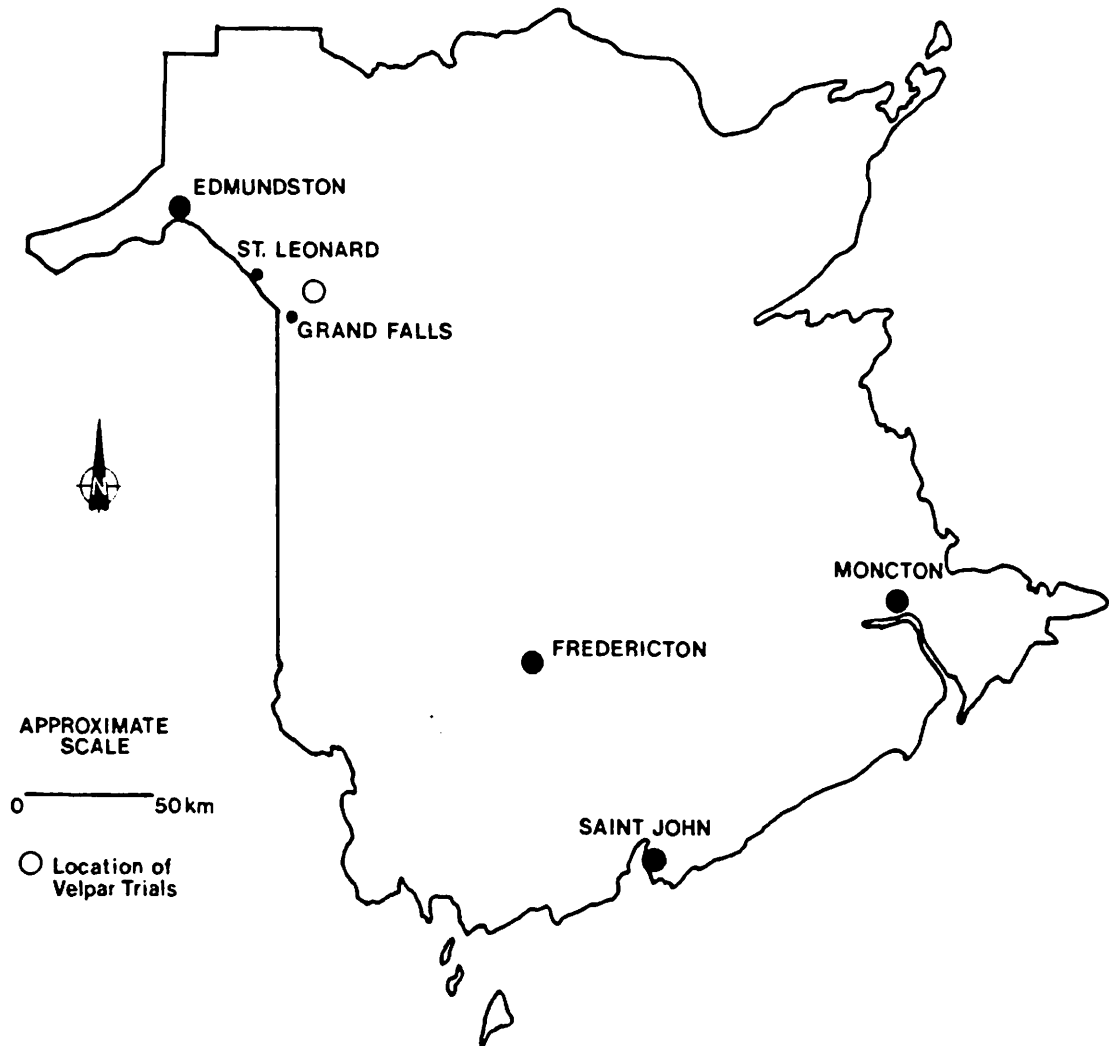
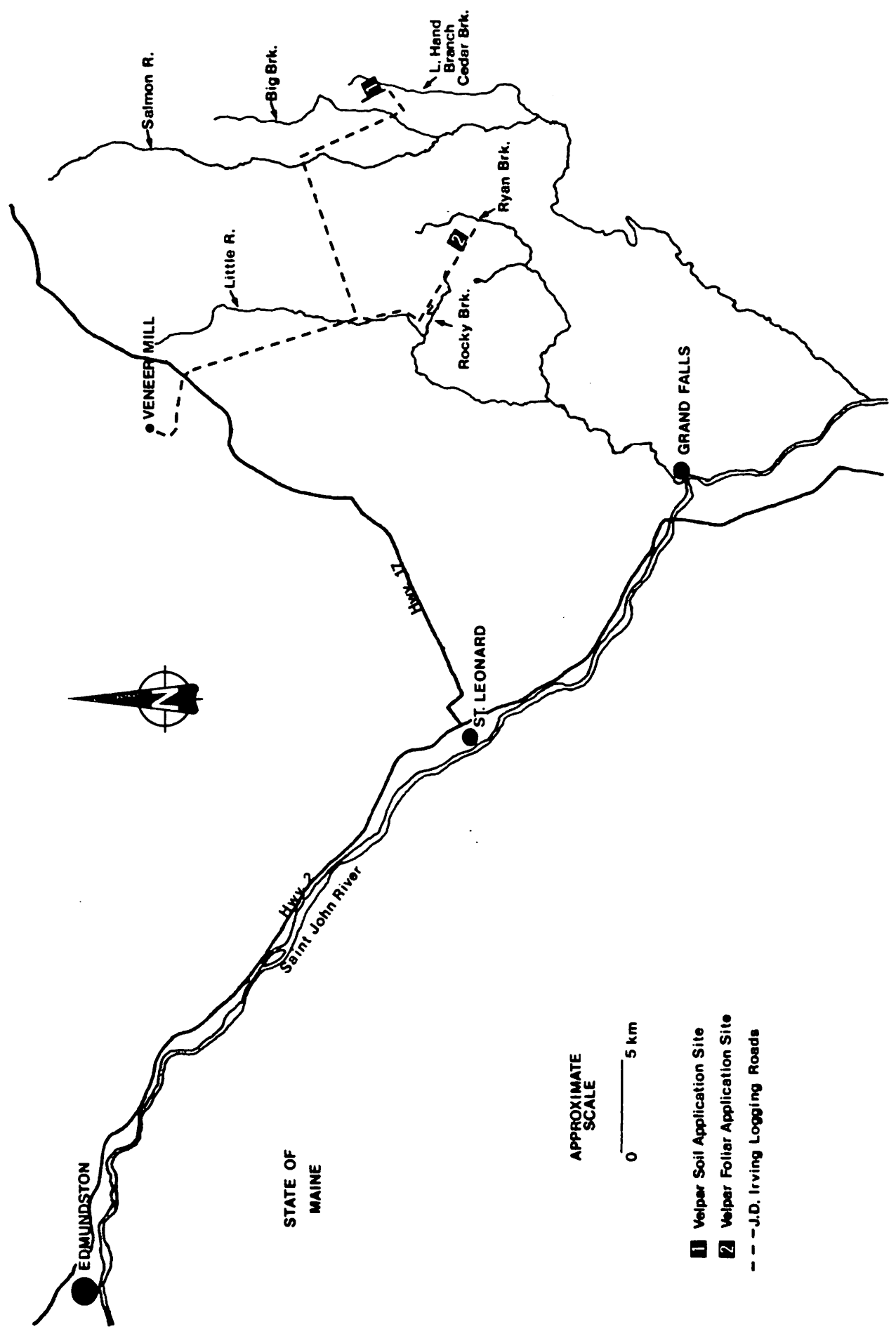


Figure 2. Map indicating the location of the 1984 VELPAR experimental sites with north-western New Brunswick.



- 1 Velpar Soil Application Site
- 2 Velpar Foliar Application Site
- J.D. Irving Logging Roads

Table 1. Deciduous, herbaceous and coniferous species present on the Ryan Road site.

Deciduous

(predominant)

white birch	<i>Betula papyrifera</i>
red maple	<i>Acer rubrum</i>
trembling aspen	<i>Populus tremuloides</i>

(non-predominant)

willow	<i>Salix</i> sp.
beaked hazelnut	<i>Corylus cornuta</i>

Herbaceous

(predominant)

red raspberry	<i>Rubus idaeus</i>
fireweed	<i>Epilobium angustifolium</i>

(non-predominant)

Canada goldenrod	
grasses	<i>Graminae</i>
sedges	<i>Carex</i> sp.

Coniferous

black spruce	<i>Picea mariana</i>
balsam fir	<i>Abies balsamea</i>

Table 2. List of application rates, equipment and weather conditions.

Herbicide (a.i.)	hexazinone (240 gm/L)
Treatment rates	4, 3 and 2 kg/ha
Spray volume	93.2 L/ha
Aircraft	Turbo Thrush Commander
Boom and nozzles	THRU-VALVE BOOM with 58 conventional nozzles (WHIRLJET 1/8 B-10 No. 3 cone tip) (33 + tips, 25 - tips)
Orientation of nozzles	180°
Airspeed	201 km/hr
Swath width and altitude	17 m; 6 to 9 m
Weather (prior)	rain five days prior; mainly clear skies; high temperatures 25-30°C
(at times of spraying)	Aug. 29--air temperature: 25°C humidity: 100% wind direction: S to N wind speed: 0-5 km/hr precipitation: heavy rain before midnight skies: overcast, very hazy
	Aug. 31--air temperature: 21°C humidity: 100% wind direction: S to N wind speed: 5-8 km/hr precipitation: light rain
(after)	heavy rain all day on Aug. 30; high temperatures of 28-31°C and clear skies and no rain on Sept. 1-3

Table 3. Application information pertaining to the treatment plots.

Treatment plot	Rate (kg/ha)	No. of swaths	Spraying direction	Date and time of application (p.m.)
Aa	4	5	E to W	Aug. 31 2:15-2:30
Ab	4	5	E to W	Aug. 31 2:15-2:30
Ba	3	5	E to W	Aug. 31 1:30-1:45
Ca	3	5	E to W	Aug. 31 1:30-1:45
Bb	2	5	E to W	Aug. 31 8:05-8:20
Cb	2	5	E to W	Aug. 31 8:05-8:20
Da	0	-	-	-

- all swaths moved to the east by 1/3 to 1/2 of a width.
- an amount of spray solution equivalent to the amount required to spray approximately 1/4-1/3 of a swath length was sprayed to the north of plots Aa and Ab on two successive loads to empty the aircraft's tank.

Each treatment plot measured 84 metres in width and 477 metres in length for an area of 4 hectares. The plots were separated by 50- or 75-metre vegetation buffers. Treatment plots adjacent to Ryan Road were offset 10 metres from the roadside since there were no trees planted on these roadside landings due to the presence of heavy logging debris.

The corners of each treatment plot were marked with posts painted yellow (Figure 3) and labelled with aluminum tags which contained information identifying the plot, application rate, and position of the post (NE, SW, etc.). The approximate centers of each of the five spray swaths in each treatment plot were marked at both the north and south ends by posts painted red and white. Each post was tagged to identify the plot and swath number.

For comparison purposes, a control area was established south of the treatment plots (Figure 4). It measured 100 metres square or 1 hectare in size. The unsprayed control area is 50 metres from the closest treatment plot and 50 m from Ryan Road. The corners of the control plot were marked with posts painted white and orange and labelled with tags to identify the plot, application rate (0 kg/ha) and position of the post.

Lay-out of Vegetation Assessment Transects

Following spraying, transect posts to be used for future vegetation assessment work were located along plot edges parallel to Ryan Road (west side of the treatment plots) (Figure 4).

Posts painted red were positioned 150 metres from the northwest and southwest corners of each treatment plot. These posts, labelled with tags identifying the plot and transect number (Figure 5), mark the

Figure 3. Plot and spray swath establishment.

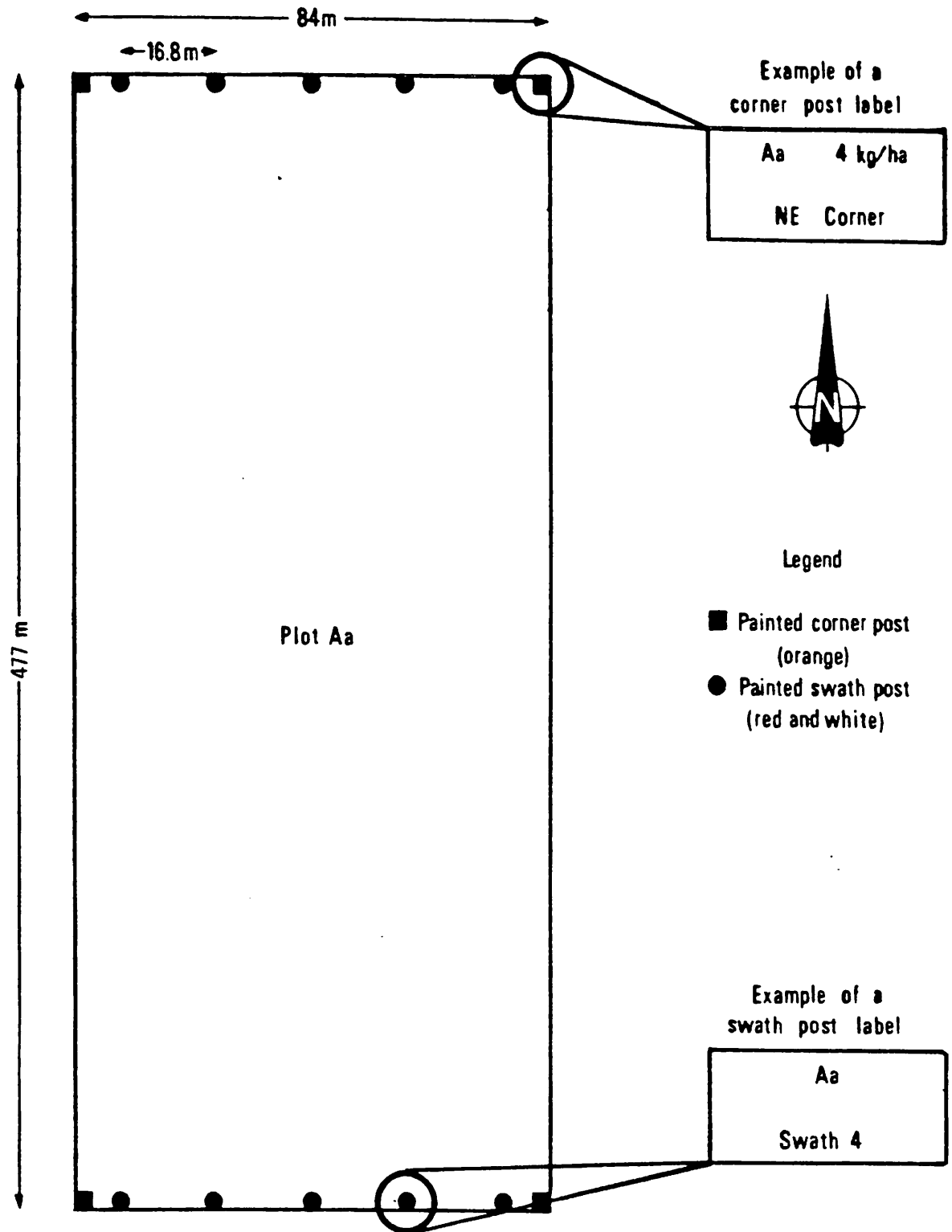


Figure 4. Map of the site indicating treatment and control plot location.

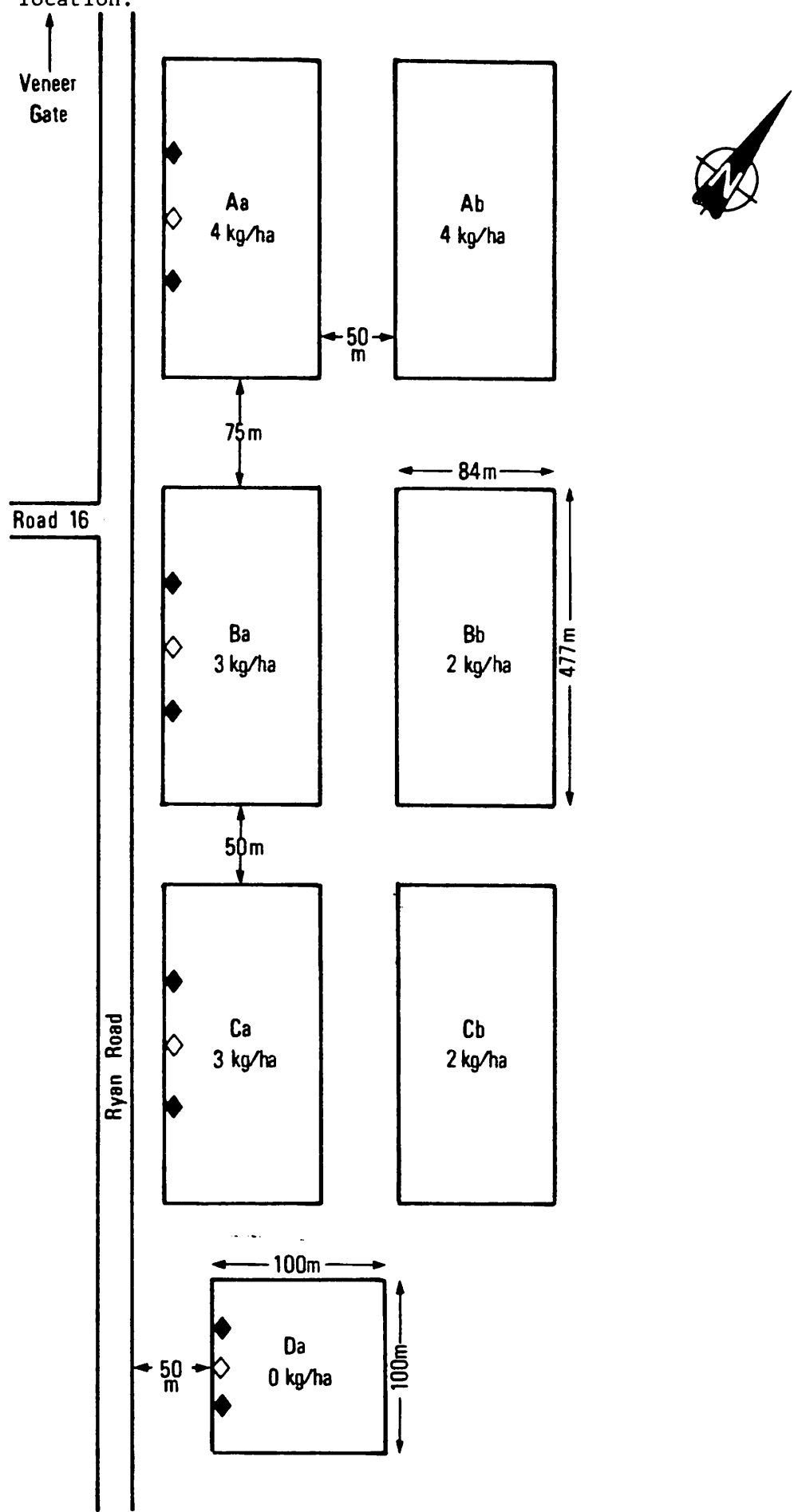
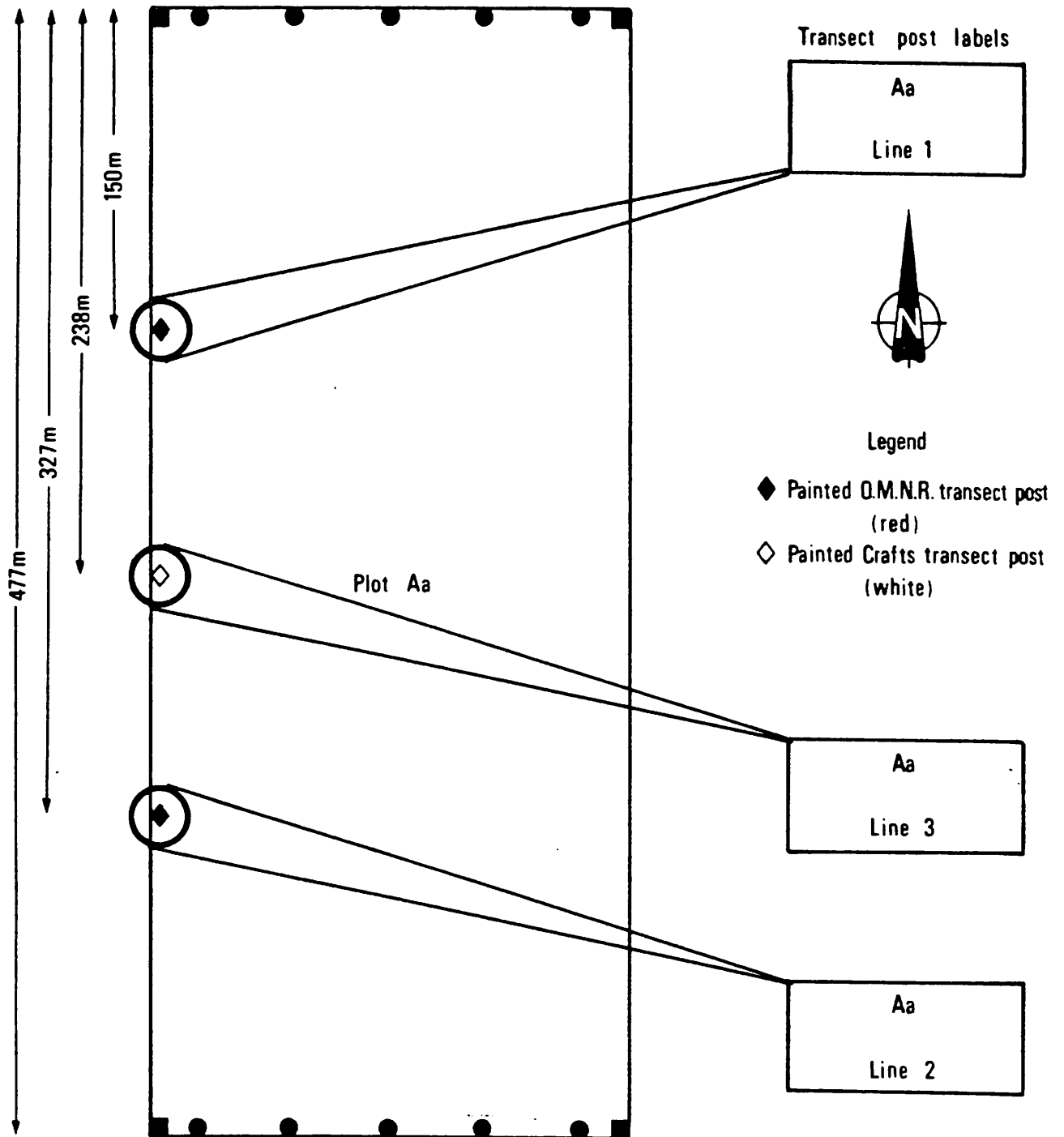


Figure 5. Transect establishment.



beginning of west-east transects to be used in accordance with the Ontario Ministry of Natural Resources (OMNR) vegetation assessment method¹. Posts painted white were positioned equidistant (238 metres) from the northwest and southwest corners of each treatment plot. These posts, labelled with tags identifying the plot and transect number, mark the beginning of west-east transects to be used in accordance with the B.C. Ministry of Forests (BCMOF) vegetation assessment method².

Along the west edge of the control plot, posts were positioned for transects to be used in future vegetation assessment work. Posts painted red were placed 15 metres from both the northwest and southwest plot corner posts and labelled with identification tags. A post painted white was located equidistant (50 metres) from the two plot corner posts and labelled with an identification tag.

REFERENCES

- 1) Lehela, A. and R.A. Campbell. 1982. Instructions for Assessment of Glyphosate Forest Management Trials. Research Note, Ontario Ministry of Natural Resources. Pest Control Section, Maple, Ontario. 11 p.
- 2) Herring, L.J. and J.C. Pollack. 1984. Experimental Design Protocol for Forest Vegetation Management Research Level A Trials. Unpublished manuscript, B.C. Ministry of Forests. Research Branch, Victoria, B.C. 24 p.