# BAY NTN 6867 PERFORMANCE TEST FOR WEED CONTROL IN GRAIN SORGHUM (*Sorghum bicolor* Moench.)

by

Leland Herman Gerhardt Jr.

B.S., Horticulture, College of Agriculture
Kansas State University, 1974

---

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

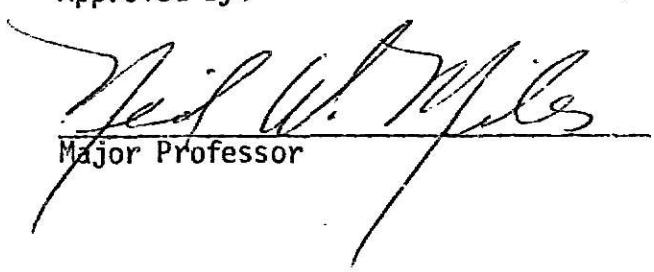
MASTER OF SCIENCE

IN CROP PROTECTION

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1976

Approved by:



Major Professor

BAY NTN 6867 experimental herbicide is a product of Chemagro Division of Mobay Chemical Corp., P.O. Box 4913, Hawthorn Road, Kansas City, Missouri 64120.

The research summarized in the following report was conducted on land leased by Chemagro, and all pesticides and equipment used in the experiment were furnished by Chemagro.

TABLE OF CONTENTS

3"

# INTRODUCTION

Broadleaf and grassy weeds are a major limiting factor in grain sorghum (Sorghum bicolor Moench.) production. Several commercially available and practical herbicide materials control broadleafed weeds in grain sorghum, but the number of materials available for control of grassy weeds is limited.

Control of "grassy weeds" in grain sorghum is difficult, since both weeds controlled and crop protected are graminaceous. The basis for selectivity between closely related species of monocots is small in comparison to the basis of selectivity for controlling dicots in a monocot crop.

An experimental herbicide, BAY NTN 6867 (O-Methyl O-(4-methyl-2-nitrophenyl) (1-methylethyl) phosphoramidothioate), a product of Chemagro Division of Mobay Corp. shows promise for grassy weed control in grain sorghum. This report summarizes information on a sorghum weed control study evaluating BAY NTN 6867 for control of giant foxtail (Setaria faberii Herrm.), and suppression of populations of redroot pigweed (Amaranthus retroflexus L.) and smooth pigweed (Amaranthus hybridus L.) in grain sorghum.

# METHODS AND MATERIALS

## Design of experiment

Field plots were established in the spring of 1975 at the Carl Spray farm, Lawrence, Kansas. The plot site was 72m X 27.5m and individual plots were 9.75m X 3.05m (4 crop rows). A randomized block design and three replications were used (Figure 1).

On April 29, 1975, the site was fertilized at the rate of 157 kg/ha nitrogen (as 34% ammonium nitrate). The fertilizer was incorporated by discing twice with an offset disc, and harrowing to level the soil. No phosphorus or potassium fertilizers were added since the available phosphorus and potassium were greater than 200 lbs/A and 400 lbs/A, respectively. The soil was a silty clay loam, pH 6.8, and 2.5 percent organic matter.

## Herbicide treatments

Three methods of herbicide application were employed: preplant incorporated (PPI), preemergence surface applied (PRE), and post-emergence (POST). All treatments were applied using a push type bicycle plot sprayer with a carbon dioxide propellant source. Applications were made at 45 psi. using Teejet 8004 spray tips. The sprayer was calibrated to apply 336.7 l/ha of liquid mixture. POST applications were made with X-77 spreadersticker added to sprayer tank at 20 ppm.

On May 20, 1975 all PPI treatments (Table 1) were applied and incorporated using an eight foot mounted tandem disc, set at 10 cm penetration depth for 5 cm incorporation.

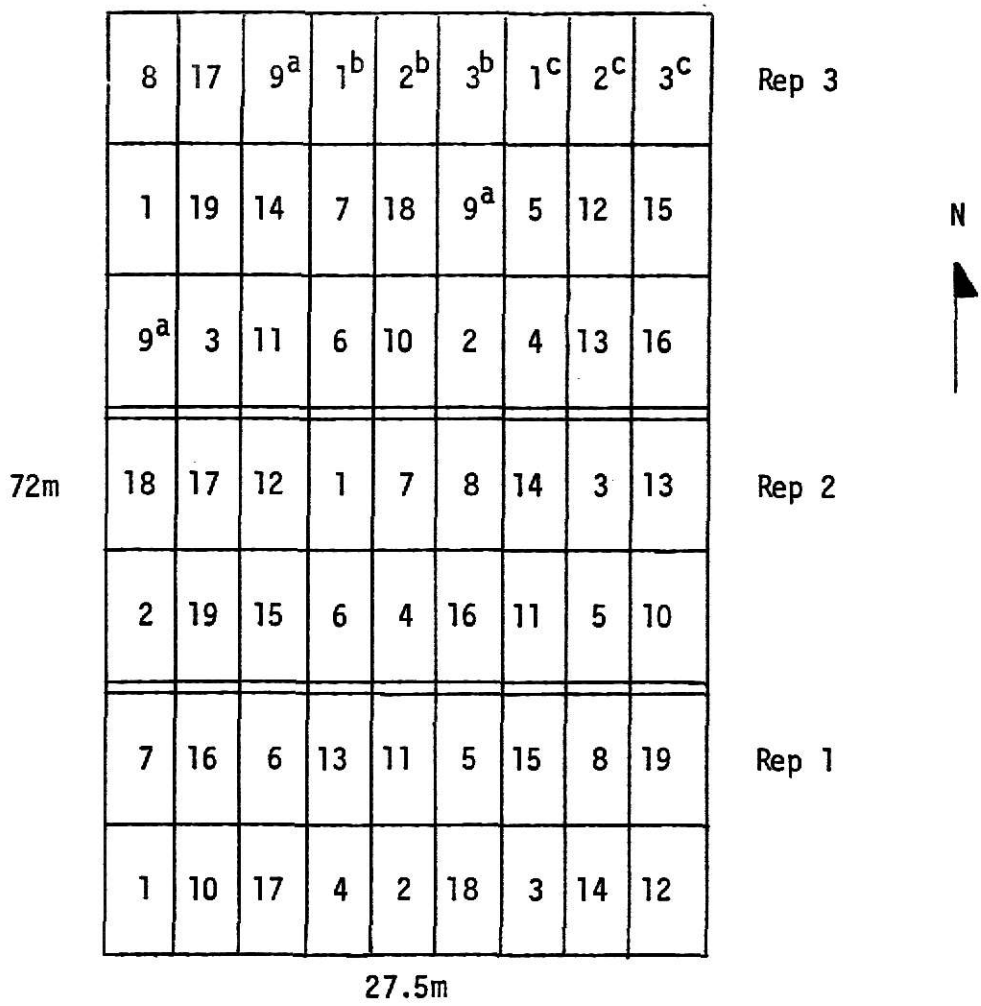



Figure 1. Experimental plot layout. Numbers in squares correspond with code numbers assigned to treatments described in Table 1.

---

[a]Treatment 9 was inadvertently misplaced in the plot layout.

[b]Treatments 1, 2, and 3 are nonreplicated rates of 11.20, 13.44, and 17.92 kg/ha, respectively, of BAY NTN 6867 as a preemergence surface application for phytotoxicity study.

[c]Treatments 1, 2, and 3 are nonreplicated rates of 11.20, 13.44, and 17.92 kg/ha, respectively, of BAY NTN 6867 as a preplant incorporated application for phytotoxicity ratings.