

DISTRIBUTION OF MELOIDOGYNE NATALIEI  
(MICHIGAN GRAPE ROOT-KNOT NEMATODE) IN SOUTHWESTERN MICHIGAN

In 1977 the Michigan Grape Root-Knot Nematode (Meloidogyne nataliei Golden, Rose and Bird 1981) was discovered parasiting the roots of grapes (Vitis labrusca cv. Concord) in a vineyard in Mattawan, Van Buren County, Michigan. During the summer of 1978 a MSU IPM scout conducted a nematode survey of fifty vineyard sites in southwestern Michigan. M. nataliei was detected only in the type vineyard. A 1980 survey of problem vineyards, abandoned vineyards and nurseries was conducted in November to re-examine the extent of distribution of M. nataliei in Michigan. A total of 127 sites representing 60 growers over four counties in southwestern Michigan (Van Buren, Kalamazoo, Berrien and Cass) were sampled. Both roots and soil were collected. Roots were visually examined for the presence of the massive egg sacs, characteristic of M. nataliei, and species identification was confirmed with the aid of a microscope. Soil samples were processed for nematodes using the sugar-floatation technique. All root and soil samples of grapes surveyed were free of infection from M. nataliei. In 1981 and 1982, intensive surveys of cultivated and non-cultivated grapes and various annuals and perennial were conducted in an attempt to delimit the distribution of M. nataliei in Antwerp Township, Van Buren County, Michigan. Analysis of a total of 506 samples indicated that the nematode was limited to present or former vineyards adjacent to the type locality. Non-cultivated grapes in wooded areas north of the original site were found to be infested with M. nataliei. It is possible that run-off water from infested vineyards led to the establishment of the nematode in the wooded areas. Although these were both comprehensive and extensive surveys, the findings necessitate further sampling in successive years to monitor populations densities of M. nataliei after attempts have been made to reduce M. nataliei to non-detectable levels. Relatively little is known about the biology of M. nataliei. A research program on this species is imperative to minimize current and future pest risk.

G. W. Bird  
9/16/83

MICHIGAN GRAPE ROOT-KNOT NEMATODE PROGRAM

Plan of Action

1983 - 1987

1983

February 9 - March 1, 1983

Strategy development and approval

March 1 - April 1, 1983

Vineyard removal

April 1 - May 1, 1983

Prefumigation site preparation

May 1 - May 15, 1983

Soil fumigation

June 15 - July 1, 1983

Overseeding planting

Indicator crop planting

November 15 - December 1, 1983

Indicator plant analysis

1984 - 1987

Indicator plant analysis

Site retreatment (if and where necessary)

Biological research (Meloidogyne nataliei)

G. W. Bird  
2/10/83

## Michigan Grape Root Knot Nematode

1. Under the current situation, the Michigan Department of Agriculture has no grounds to regulate Mr. Francis Ryan's planting program or crop selection after the nematode population reduction has been implemented.
2. Extensive soil sampling for the Michigan Grape Root-Knot Nematode has been undertaken through four surveys (1977, 1980, 1981, and 1982). The 1982 survey is still in progress. These surveys consisted of both soil and root analysis for the nematode. Soil was taken from the grape rhizosphere. Grape is currently the only known host. Because of the life cycle and reproductive habits of this nematode, it is easy to detect this organism during the late fall, winter and early spring by observing females and egg masses on roots. Good correlation has been found between detection of the nematode on root tissue and in the soil. Root tissue analysis, however, appears to be more accurate than soil analysis for this species.
3. Many of the sites to be fumigated have received proper pre-fumigation preparation. Appropriate pre-fumigation preparation of the soil will be undertaken prior to deep and shallow applications of the chemical. Maximum rates of soil fumigant(s) will be used, optimizing their potential to penetrate and kill root.
4. Michigan researchers have shown complete control of the Jagger nematode six years after treatment through the use of high rates of Telone II in deep and shallow application.
5. Indicator plants will be checked periodically after fumigation. The first analysis will be at the end of the first summer after fumigation, and annually thereafter for five years. At the current time concord grape is the only known host. It will be used as an indicator plant.

6. Sudax will be used as the covercrop after soil fumigation. This is necessary to prevent soil erosion. Sudax has been in the original site since the Michigan grape root-knot nematode was discovered, the vineyard removed and fumigated. The nematode has not been detected on this crop.
7. Reasonably extensive efforts have been made to trace the origin of the plants from the original planting site. While a number of leads have been found, none of them have yielded significant results. These efforts have even included a trip to locate this nematode in New York vineyards and nurseries.

G. W. Bird  
2/10/83

AGRICULTURE  
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John Kronmeyer  
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Dr. S. Leon Whitney

STATE OF MICHIGAN



JAMES J. BLANCHARD, Governor

DEPARTMENT OF AGRICULTURE

P. O. Box 30017, Lansing, Michigan 48909

DEAN PRIDGEON, Director

9-a.  
9-6-83  
MD  
for Compact

August 31, 1983

Mr. James B. Grant, Executive Secretary  
National Association of State Departments  
of Agriculture (NASDA)  
1616 H Street, N.W., Room 401  
Washington, D.C. 20006

RE: Progress Report of the Michigan Grape Root Knot  
Nematode Eradication Program

Dear Mr. Grant:

In 1977, the Michigan Grape Root Knot Nematode, *Meloidgyne nataliei*, was discovered as a parasite on the roots of grapes in a vineyard in Mattawan, Van Buren County, Michigan. Since that time the nematode species has not been discovered in another area. Surveys by Dr. George Bird, nematologist, and his staff at Michigan State University and by the Michigan Department of Agriculture included 127 sites representing 60 growers in four counties, additional abandoned vineyards and in nurseries with grape plants in storage. Roots were visually examined and soils were processed for nematodes.

In 1981 and 1982, surveys of cultivated and non-cultivated grapes and various annuals and perennials were conducted to determine the host range of *Meloidgyne nataliei*. Analysis of 506 samples indicates that the nematode species is limited to wild or cultivated grapes and is present in former vineyards adjacent to the infested locality in Mattawan, Michigan. Non-cultivated grapes in a wooded area north of the original site were found to be infested. This area is in the watershed of the original site and is to be fumigated with the original vineyard and adjacent former vineyards.

On December 1, 1982, Director Richard Rominger, California Department of Food and Agriculture, supported a request for Interstate Pest Control Compact funds to be used for eradication of the Michigan Grape Root Knot Nematode.

On April 18, 1983, the Michigan Department of Agriculture received \$45,000 from the Compact insurance fund for expenditure of such funds as proposed in the Interstate Pest Control Compact request.

Mr. James B. Grant  
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August 31, 1983

Dr. George Bird altered the original recommended fumigant from Tolone II to ethylene dibromide. EDB is to be used at the rate of 24 gallons per acre for deep fumigation and 12 gallons per acre for shallow fumigation. The predominant rationale for recommending ethylene dibromide was that prospects of receiving bids were unlikely unless ethylene dibromide was used. The companies with the proper equipment and expertise were not otherwise available. The cost of Tolone II was \$702 per acre compared to ethylene dibromide at \$397 per acre. Thus a potential difference of \$9,760 in total fumigation costs and the prospects of obtaining a moderate bid.

The requirement to change the fumigant was not without a sacrifice. The USDA, APHIS proposed to purchase the fumigant Tolone II at \$10,500. Since the commodity could not be furnished separate from the contract bidder, the MDA could not accept the USDA funds without legislative approval.

On June 6, 1983, bids were open by the Michigan Department of Agriculture for two separate contracts: (1) Site preparation included removal of grape plants and roots, arbor wires, posts, rocks 8 inches in diameter or greater and cultivation of soil to tilth stage, and (2) fumigation including two soil injections, a deep injection at 24 to 30 inches and a shallow injection at 8-inch depth. Fumigation also included use of methyl bromide on exposed articles such as plant remains, posts, wires and cultivating equipment which may perpetrate the root knot nematode or disseminate a life stage to a new site.

Posts, vines, rocks and other materials removed prior to cultivation will be treated under tarpolin with 98 percent methyl bromide and 2 percent chloropicrin at the rate of 2 pounds per 1,000 cubic feet. Attached is a copy of the general conditions and specifications of the contract.

Bids were awarded to Mr. Francis Ryan, the vineyard owner, for the site preparation at \$10,000. One important advantage was the use of Mr. Ryan's equipment on his property. Therefore, the equipment would not be a means of disseminating the pest. The bid for the fumigation services was awarded to the Great Lakes Chemical Corporation, West Lafayette, Indiana. The bid amounted to \$610 per acre for application and fumigant. The vineyards found to be infested in adjacent areas resulting from soil sampling were measured for fumigation. Approximately 32 acres will be treated. Utility companies were notified regarding deep injection near the road right-of-ways.

On July 11, 1983, all property owners were notified of the application of a fumigant for eradication of the Michigan Grape Root Knot Nematode. These were: Mr. Francis Ryan, Mrs. Earl French, Mr. Judd Wise and the Village of Mattawan. The area described is as follows: Antwerp Township, Van Buren County, T.3S., R.13W. - the W $\frac{1}{2}$  of the SW $\frac{1}{4}$  of Section 13 and the E $\frac{1}{2}$  of the SW $\frac{1}{4}$  of Section 14.

Mr. James B. Grant  
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August 31, 1983

Water samples were collected from the homes of the properties involved. Analysis of the water for bromides will be conducted on samples taken prior to and at least twice after the fumigation to assure that no residues are in the groundwater. Site preparation was completed by Mr. Ryan in accordance with contract specifications on July 28, 1983.

The tentative fumigation date was August 1. Upon the recommendations of Dr. Virgil White, Technical Advisor of the Great Lakes Chemical Corporation and Dr. George Bird, Nematologist at Michigan State University, the date was postponed for three weeks to optimize the effectiveness of the fumigation by allowing breakdown of organic matter after soil preparation.

On August 25, 1983, equipment was calibrated for deep soil injection. Deep soil injection commenced on August 26 and was completed August 28. Shallow fumigation is scheduled to start August 31, 1983.

Expenditure of state funds during the fiscal year starting October 1, 1982, involved time of state personnel to survey and monitor the soil fumigation. This figure is estimated to be \$10,000.

A complete financial statement and proof of expenditures will be included in a final report.

Sincerely,

Dean Pridgeon, Director

cc: Rollin Dennistoun, Secretary, IPCC ✓  
Howard Singletary, Chairman  
Technical Advisory Committee, IPCC

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GRAPES

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OLD post  
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WHEAT

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1385A  
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GRAPES  
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1036A  
GRAPES

SECTION  
14

SECTION  
13

VAN BUREN CO  
ANTWERP TOWNSHIP

# INSTRUCTIONS AND CONDITIONS

1. **PROCUREMENT POLICY.** Procurement for the State of Michigan shall be handled in a manner to provide fair opportunity to all businesses, including woman owned and minority owned businesses, to participate in the procurement process. This shall be accomplished without abrogation or sacrifice of quality, the best interest of the State, or the authority vested in the Director of Purchasing to make final decision on award of the contract or purchase order.
2. **PRICES AND NOTATIONS** must be typed or in ink. Prices shall be for new items only unless specified otherwise in Request for Quotation. No erasures permitted. Mistakes may be crossed out and corrections entered and initialed in ink by person signing quotation.
3. **UNIT PRICES** should be stated based on units specified. The bidder may quote on all or a portion of a quantity as specified. Quote on each item separately and indicate brand name or make. Extend and total the bid.
4. **DELIVERY TIME** is a part of the consideration and must be stated in definite terms and must be adhered to. If time varies on different items, the bidder shall so state.
5. **QUOTATIONS** must be signed with firm name and by a responsible officer or employee. Obligations assumed by such signature are binding upon the firm.
6. **TAXES.** The State is exempt from Federal Excise and State Sales taxes and such taxes shall not be included in bid price. Federal Excise Tax Exemption Certificates will be furnished with purchase order if so requested on bid.
7. **SAMPLES** of items, when required, must be furnished free of expense and if not destroyed by tests will, upon request, be returned at bidder's expense. Samples must be received on or before bid opening time and date.
8. **DELIVERY TERMS.** Unless otherwise stated, bids shall be quoted F.O.B. Delivered with all transportation charges prepaid. Bidders may, at their option, also quote F.O.B. Shipping Point, and awards will be based on the lowest cost including transportation charges. Bidders must show shipping weight and point of shipment on all shipping point bids. F.O.B. Delivered means delivered to the dock of the institution or department noted on the bid, and will include all charges for packing, draying, etc.
9. **CANCELLATION OF CONTRACT** by the State may be for a) default by the contractor or b) lack of further need for the service or commodity at the location named in the contract. Default is defined as the failure of the contractor to fulfill the obligations of his quotation, contract, or purchase order. In case of default by the contractor, the State may cancel the contract or purchase order immediately and procure the articles or services from other sources and hold the contractor responsible for any excess costs occasioned thereby. In the event the State no longer needs the service or commodity specified in the contract or purchase order due to program changes, changes in laws, rules or regulations, relocation of offices, or lack of funding, the State may cancel the contract or purchase order by giving the contractor written notice of such cancellation 30 days prior to the date of cancellation.
10. **CASH DISCOUNTS** will be considered in determination of low bidder, provided discounts are based on periods of 30 days or more after receipt of goods or billing on vendor's invoice, whichever is later.
11. **NO BID RESPONSES.** Bidders who cannot quote should return this form stating the reason for not bidding. Failure to return this form may result in removal of the bidder's name from the mailing list.
12. **SPECIFICATIONS** which refer to brand names are given for reference. Bidders may quote on approved equivalent articles, provided brand name and catalog number and any deviations are noted on bid and complete descriptive literature is furnished. Exceptions will state "Do Not Substitute".
13. **ALTERNATE BIDS.** Bidders may offer alternate bids which are at variance from the express specifications and the right is reserved to consider and accept such bids if in the judgment of the Director of Purchasing the alternate bid will produce goods and/or services essentially equal to, or better than, those which would be supplied following the express specifications and acceptance of the alternate bid is deemed to serve the best interests of the State of Michigan. An alternate bid must clearly describe all variances from the express specifications.
14. **AWARD.** The right is reserved to award by item, part or portion of an item, group of items or total bid, to reject any and all bids in whole or in part, and to waive any informality or technical defects if, in the Director of Purchasing's judgment, the best interests of the State will be so served. In determination of awards, the qualification of the bidder, the conformity with the specifications of articles or services to be supplied and the delivery terms will be considered. Care will be exercised in making split awards so as not to penalize vendors by awarding less than minimum shipping weights.
15. **RECEIPT OF BIDS.** Bids must be received in the Purchasing Division prior to date and time as specified on the face of this bid. Late bids cannot be accepted. The responsibility of getting bids to the Purchasing Division rests entirely with the bidder, notwithstanding delays resulting from postal handling or any other reasons.
16. **INSPECTION.** All articles are subject to inspection and test. In case any articles are defective in material or workmanship, or otherwise fail to meet the requirements of this bid, the State shall have the right to reject or to retain and correct such articles. The contractor shall pay the State for expenses incurred in correcting defects. Rejected articles will be held or returned to the contractor at contractor's expense for handling, packing and transportation.
17. **NON-DISCRIMINATION CLAUSE.** In the performance of any contract or purchase order resulting herefrom, the bidder agrees not to discriminate against any employee or applicant for employment, with respect to his hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of his race, color, religion, national origin, ancestry, age, sex, height, weight, marital status or handicap. The bidder, further agrees that every subcontract entered into for the performance of any contract or purchase order resulting herefrom will contain a provision requiring non-discrimination in employment, as herein specified, binding upon each subcontractor. This covenant is required pursuant to Act No. 453 of Public Acts of the State of Michigan of 1976, as amended, and any breach thereof may be regarded as a material breach of the contract or purchase order.
18. Pursuant to Act No. 428 of the Public Acts of the State of Michigan of 1980, minority owned business and woman owned business are defined as follows:
 

**MINORITY OWNED BUSINESS** means a business enterprise of which more than 50% of the voting shares or interest in the business is owned, controlled, and operated by individuals who are members of a minority and with respect to which more than 50% of the net profit or loss attributable to the business accrues to shareholders who are members of a minority. **MINORITY** means a person who is black, hispanic, oriental, eskimo, or an American Indian who is not less than 1/4 quantum Indian blood as certified by the person's tribal association and verified by the Indian affairs commission.

**WOMAN OWNED BUSINESS** means a business of which more than 50% of the voting shares or interest in the business is owned, controlled, and operated by women and with respect to which more than 50% of the net profit or loss attributable to the business accrues to the women shareholders.

**CONTROLLED** means exercising the power to make policy decisions in a business.

**OPERATED** means the activity of being involved in the day to day management of a business.
19. **ASSIGNMENT OF ANTITRUST CAUSE OF ACTION.** For and in consideration of the opportunity to submit a quotation and other good and valuable consideration, the vendor hereby assigns, sells and transfers to the State of Michigan all rights, title and interest in and to all causes of action it may have under the antitrust laws of the United States or this State for price fixing, which causes of action have accrued prior to the date of payment and which relate solely to the particular goods, commodities, or services purchased or procured by this State pursuant to this transaction.
20. **UNFAIR LABOR PRACTICES.** Pursuant to Act 278 of the Public Acts of the State of Michigan of 1980, the State shall not award a contract or a subcontract to an employer whose name appears in the current register of employers failing to correct an unfair labor practice compiled pursuant to Section 2 of this Act. A contractor of the State, in relation to that contract, shall not enter into a contract with a subcontractor, manufacturer, or supplier whose name appears in this register. The State may void a contract if, subsequent to award of the contract, the name of the contractor or subcontractor appears in this register.

## REQUEST FOR QUOTATION

FORM DMB 285

DEPARTMENT OF MANAGEMENT AND BUDGET

PURCHASING DIVISION

P.O. BOX 30026

LANSING, MICHIGAN 48909

Page 2 of       

DIRECT QUESTIONS TO: : DATE SENT : DELIVERY REQUIRED : BID NO  
 M. TANNER : 05-20-83 : : 83-BR0064

DEPARTMENT OF AGRICULTURE : BIDDER:  
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## ITEM

001 Prepare site and fumigate soil (both deep and shallow injection).  
 Furnish equipment, personnel, and services on approximately 40 acres  
 of one site in VanBuren County, Michigan, the site to be prepared by  
 June 30, 1983 and the fumigation accomplished during July 1983 at  
 specific soil temperatures.  
 Fumigant to be furnished by contractor.

QUANTITY	UNIT	COMMODITY #	UNIT PRICE	AMOUNT
.01	1	EA	7099-	[ ] [ ]

SITE PREPARATION - COST PER ACRE  
 TO INCLUDE REMOVAL OF GRAPE PLANTS AND  
 ROOTS, ARBOR WIRES, POSTS, ROCK, AND  
 GROUND PREPARATION

QUANTITY	UNIT	COMMODITY #	UNIT PRICE	AMOUNT
.02	1	EA	7099-	[ ] [ ]

FUMIGATION - COST PER ACRE  
 TO INCLUDE FUMIGATION OF SOIL (DEEP AND  
 SHALLOW) AND FUMIGATION OF CONTAMINATED  
 ARTICLES INCLUDING REMOVED, BUT  
 UNDESTROYED PLANTS AND POSTS, ROCKS, WIRE,  
 EQUIPMENT, ECT.

\*\*\*\*\* REQUEST FOR QUOTATION COMPLETE \*\*\*\*\*

REQUEST FOR QUOTATION

ORM DMB 285

DEPARTMENT OF MANAGEMENT AND BUDGET  
PURCHASING DIVISION  
P.O. BOX 30026  
LANSING, MICHIGAN 48909

DIRECT QUESTIONS TO: M. TANNER : DATE SENT : 05-20-83 : DELIVERY REQUIRED : : BID NO : 83-BR0064

DEPARTMENT OF AGRICULTURE : QUOTE FOB - DELIVERED

BIDDER: : SHIP TO: : SITE LOCATION PROPERTY OF: : FRANCIS RYAN : COUNTY ROAD 652 : MATTAWAN MI 49071

SEALED BIDS DUE AT DMS - PURCHASING DIVISION - 2:00 PM 06-06-83  
P.O. BOX 30026  
LANSING, MI 48909

BIDDER READ AND COMPLETE

The undersigned certifies that he/she offers to furnish materials in strict accordance with the requirements of this bid including terms, assignment and conditions on the reverse side; that prices quoted are correct and he/she agrees that this bid may not be withdrawn for a period of 30 days from due date noted above.

SIGNATURE [IN INK] : DATE :  
PAYEE ID NO [ ] : TOTAL OF BID [ ]

CASH DISC. [ ]  
SHIPMENT [ ]  
[ ]  
F.O.B [ ]  
SHIP. PT. [ ]  
EST SHP WT [ ]

ATTACHMENTS:  
NONE

GENERAL REQUIREMENTS:

BIDDER MUST SHOW INDIVIDUAL PRICING FOR SEGMENT #1, SITE PREPARATION AND SEGMENT #2, SOIL FUMIGATION. BIDS WILL BE CONSIDERED FOR EACH SEGMENT ON INDIVIDUAL MERIT.

\*\*\*\*\*PURCHASING USE ONLY\*\*\*\*\*  
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STATE OF MICHIGAN  
REQUEST FOR QUOTATION

DEPARTMENT OF MANAGEMENT AND BUDGET  
PURCHASING DIVISION  
P.O. BOX 30026  
LANSING, MICHIGAN 48909

DIRECT QUESTIONS TO: : DATE SENT : DELIVERY REQUIRED : BID NO  
M. TANNER : 05-20-83 : : 83-BR0064

DEPARTMENT OF AGRICULTURE : BIDDER:

ITEM

001 Prepare site and fumigate soil (both deep and shallow injection).  
Furnish equipment, personnel, and services on approximately 40 acres  
of one site in VanBuren County, Michigan, the site to be prepared by  
June 30, 1983 and the fumigation accomplished during July 1983 at  
specific soil temperatures.  
Fumigant to be furnished by contractor.

QUANTITY	UNIT	COMMODITY #	UNIT PRICE	AMOUNT
-01	1	EA 7099-	[ ]	[ ]

SITE PREPARATION - COST PER ACRE  
TO INCLUDE REMOVAL OF GRAPE PLANTS AND  
ROOTS, ARBOR WIRES, POSTS, ROCK, AND  
GROUND PREPARATION

QUANTITY	UNIT	COMMODITY #	UNIT PRICE	AMOUNT
-02	1	EA 7099-	[ ]	[ ]

FUMIGATION - COST PER ACRE  
TO INCLUDE FUMIGATION OF SOIL (DEEP AND  
SHALLOW) AND FUMIGATION OF CONTAMINATED  
ARTICLES INCLUDING REMOVED, BUT  
UNDESTROYED PLANTS AND POSTS, ROCKS, WIRE,  
EQUIPMENT, ECT.

\*\*\*\*\* REQUEST FOR QUOTATION COMPLETE \*\*\*\*\*

STATE OF MICHIGAN  
REQUEST FOR QUOTATION

DRAI DMB 285

DEPARTMENT OF MANAGEMENT AND BUDGET  
PURCHASING DIVISION  
P.O. BOX 30026  
LANSING, MICHIGAN 48909

Page 1 of       

DIRECT QUESTIONS TO: : DATE SENT : DELIVERY REQUIRED : BID NO  
M. TANNER : 05-20-83 : : 83-BR0064

DEPARTMENT OF AGRICULTURE : QUOTE FOB - DELIVERED  
:

BIDDER: :  
: SHIP TO:  
: SITE LOCATION PROPERTY OF:  
: FRANCIS RYAN  
: COUNTY ROAD 652  
: MATTAWAN MI 49071  
:  
:

SEALED BIDS DUE AT DMS - PURCHASING DIVISION - 2:00 PM 06-06-83  
P.O. BOX 30026  
LANSING, MI 48909

BIDDER READ AND COMPLETE

The undersigned certifies that he/she offers to : CASH DISC. [ ]  
furnish materials in strict accordance with :  
the requirements of this bid including terms, : SHIPMENT [ ]  
assignment and conditions on the reverse side; : [ ]  
that prices quoted are correct and he/she agrees :  
that this bid may not be withdrawn for a period : F.O.B [ ]  
of 30 days from due date noted above. :  
: SHIP. PT. [ ]  
: EST SHP WT [ ]  
SIGNATURE [IN INK] DATE :  
PAYEE ID NO [ ] : TOTAL OF BID [ ]

ATTACHMENTS:  
NONE

GENERAL REQUIREMENTS:

BIDDER MUST SHOW INDIVIDUAL PRICING FOR SEGMENT #1, SITE PREPARATION AND  
SEGMENT #2, SOIL FUMIGATION. BIDS WILL BE CONSIDERED FOR EACH SEGMENT ON  
INDIVIDUAL MERIT.

\*\*\*\*\*PURCHASING USE ONLY\*\*\*\*\*  
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## I. GENERAL CONDITIONS AND SPECIFICATIONS:

A. SCOPE

1. The Director of Purchasing Department of Management and Budget, is responsible for contracting of all services for the State of Michigan, as indicated in Sec. 18.10 of the 1970 Michigan Compiled Laws. In this proposed contract he has authorized the Michigan Department of Agriculture to be his authorized representative in technical matters.
2. Plant Industry Division, Michigan Department of Agriculture, hereinafter referred to as the MDA, requires material (including fumigant as required) facilitating equipment personnel, and services to prepare the site and perform the soil fumigation.
3. The job consists of:
  - a. Removal of grape plants and roots, wires and posts, ground preparation, rock removal, and
  - b. Fumigation of soil and other contaminated articles including plants, posts, wires, equipment, etc., which might perpetuate the Grape Root Knot Nematode (Meloidogyne nataliei).

B. SITE LOCATION

Portion of Section 13 and 14, Antwerp Township, Van Buren County, Michigan. Property owner: Francis Ryan, Co. Rd. 652, Mattawan, MI 49071.

C. ACREAGE TO TREAT

33 to 40 acres.

D. DATE OF TREATMENT

1. Site Preparation - completion by June 30, 1983.
2. Soil Fumigation - completion by July 30, 1983.

E. MATERIALS

1. To be provided by contractor.
2. Deep fumigation - 24 gallons of ethylene dibromide per acre (384# actual material/acre) injected 24 to 30 inches deep.
3. Shallow fumigation - 12 gallons of ethylene dibromide per acre (192# actual material/acre) injected 8 inches deep.
4. Treatment of posts and other materials removed from the treatment site and not destroyed - methyl bromide (as 98% with 2% chloropicrin) at the rate of 2.0 pounds per 1000 cubic feet. The destruction site(s) must be treated with methyl bromide at the rate of 3.5 pounds per 100 square feet at the completion of the project.

#### F. LIMITATIONS OF MOVEMENT

1. Vehicles and equipment entering and leaving the site must enter and exit through a designated point where they must be inspected by an MDA representative in charge before leaving the premises.
2. Equipment, vehicles, tools and other articles contaminated with soil, and personal clothing exposed to soil must not move from an infested area on the farm to a non-infested area or leave the premises without being cleaned according to Section G.
3. Equipment may be moved about the infested farm only in those areas which are designated as infested by the MDA. Such movement from an infested area to a non-infested area will not be allowed without following the cleaning procedures outlined in Section G.
4. Regardless of the type of cleaning equipment used, all soil and debris must be removed from the item of concern. If in the judgment of the MDA representative in charge, the equipment cannot be adequately cleaned, the equipment shall be fumigated.

#### G. CLEANUP OF CONTAMINATED ARTICLES

All tools and equipment used for the site preparation and/or fumigation must be cleaned of contaminated soil and debris before leaving the premises or moving to a non-infested area on the premises by one of the following methods:

1. Water nozzle producing a solid stream or any other method involving the use of water that is approved by the MDA.
2. Air pressure equipment designed to provide free air delivery of not less than 30 c.f.m. at 200 pounds p.s.i. through a single nozzle.
3. Steam pressure sufficient to remove soil and debris from equipment.
4. Brushing with a steel or stiff bristle brush.
5. Fumigation with methyl bromide at the rate of 2.0 pounds per 1000 cubic feet.

This treatment would render the equipment eligible for movement to any destination.

#### H. CERTIFICATION AND LICENSING

The contractor shall contact the MDA prior to the official starting date in time to adequately fulfill the pesticide applicator certification, insurance, and commercial pesticide applicator license requirements of Act 171, P.A. 1975.

I. NOTICE OF AWARD

A purchase order will be issued by the Director of Purchasing, Department of Management and Budget, for a contract to cover the period from the date of award until the contract is completed and terminated.

J. UNFORESEEN CIRCUMSTANCES - MDA LIABILITY

In the event that MDA cancels the treatment due to factors outside its control, MDA assumes liability only for costs related to preparation expenses incurred prior to notification of cancellation by MDA. Factors outside the control of MDA include, but are not limited to the following:

1. Withdrawal of, or inability to utilize available funding.
2. Withdrawal of funding for materials by the United States Government or any agency or division thereof.
3. Initiation of litigation precluding the treatment.

II. SITE PREPARATION REQUIREMENTS:

- A. Remove existing wires and posts from the grape-growing sites to be treated.
- B. Remove all large surface rocks (greater than 10" diameter) from the site.
- C. Remove all existing grape vines and roots from the sites to be treated.
- D. Brush and small trees up to 3" diameter shall be removed from site to be treated.
- E. Large rocks (10" diameter or larger), vines, posts and other materials from the treatment site must be piled or stacked on one or two designated sites on the Ryan Farm for destruction by burning or for fumigation.
- F. The soil must be worked into seedbed condition.

III. SOIL FUMIGATION PROCEDURE:

- A. The soil moisture and tilth at the time of fumigation must be equivalent to seedbed condition.
- B. The soil temperature at an 8 inch soil depth must be between 50-70°F.
- C. Both deep and shallow fumigation is required.
  1. Deep fumigation - accomplished prior to shallow fumigation.
    - a. Must consist of delivery of the fumigant to a soil depth of twenty-four (24) to thirty (30) inches.

- b. The distance (centers) between the application chisels must not be greater than three (3) feet.
  - c. Large stones (10" in diameter or larger) brought to the surface in this deep application must be removed to a designated site within the treatment area on the Ryan Farm to be fumigated in a separate operation.
2. Shallow fumigation - accomplished after deep fumigation.
    - a. Must consist of delivery of the fumigant to a soil depth of eight (8) inches.
    - b. The distance (centers) between the shallow application chisels must **not** be more than twelve (12) inches.
    - c. The soil must then be sealed with an appropriate drag and/or compactor immediately after the injection.
- D. Fumigation of contaminated articles and destruction site.
1. Plants and posts not destroyed, and other contaminated articles including, but not limited to equipment, arbor wires, rocks, tools, etc., shall be cleaned as described in Part I, Sections F and G or fumigated with methyl bromide at the rate of 2 pounds per 1000 cubic feet.
  2. The destruction site(s) must be completed with methyl bromide at the rate of 3.5 pounds per 100 square feet at the completion of the project.

SPECIFICATIONS:

Definite Specifications - All commodities and services to be furnished hereunder shall conform to the specifications as noted in the "Request for Quotation" and/or copies of specifications attached.

PRICE:

Prices quoted shall be the maximum to be charged during the contract period; the state shall receive the benefit of any decrease in price that may occur.

INDEMNIFICATION:

The Contractor shall indemnify and hold harmless the State of Michigan and its agents and employees from and against all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from the performance of the work, which includes all labor, material and equipment required to produce the commodity, construction and/or service required by the Contract (Purchase Order), provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against the State of Michigan or any of its agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Indemnification agreement shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Sub-contractor under Workmen's Compensation acts, disability benefit acts or other employee benefit acts.

The obligations of the Contractor under this Indemnification agreement shall not extend to the liability of the State of Michigan, its agents or employees arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the State of Michigan, its agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

CONTRACTOR'S LIABILITY INSURANCE:

The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's operations under the Contract (Purchase Order), whether such

operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- (1) Claims under workmen's compensation, disability benefit and other similar employee benefit act. A non-resident Contractor shall have insurance for benefits payable under Michigan's Workmen's Compensation Law for any employee resident of and hired in Michigan; and as respects any other employee protected by workmen's compensation laws of any other state the Contractor shall have insurance or participate in a mandatory state fund to cover the benefits payable to any such employee.
- (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees.
- (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees, subject to limits of liability of not less than \$300,000 each occurrence and, when applicable \$300,000 annual aggregate, for non-automobile hazards and as required by law for automobile hazards.
- (4) Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom, subject to a limit of liability of not less than \$50,000 each occurrence for non-automobile hazards and as required by law for automobile hazards.
- (5) Insurance for Subparagraphs (3) and (4) non-automobile hazards on a combined single limit of liability basis shall not be less than \$300,000 each occurrence and when applicable, \$300,000 annual aggregate.

The insurance shall be written for not less than any limits of liability herein specified or required by law, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under the Indemnification clause of the Contract (Purchase Order).

BEFORE STARTING WORK THE CONTRACTOR MUST FURNISH TO THE DIRECTOR OF THE PURCHASING DIVISION, CERTIFICATE(S) OF INSURANCE VERIFYING LIABILITY COVERAGE. THE CONTRACT OR PURCHASE ORDER NO. MUST BE SHOWN ON THE CERTIFICATE OF INSURANCE TO ASSURE CORRECT FILING. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled until at least fifteen days prior written notice bearing the Contract No. or Purchase Order No. has been given to the Director of Purchasing.

METHOD OF AWARD:

Awards will be made to the lowest responsible qualified bidder, the quality of the services to be supplied, their conformity with specifications, their suitability to the requirements of the State and delivery terms being taken into consideration. The State reserves the right to award by items, groups of items, or total bid; to reject any or all bids in whole or part; to waive technical defects if, in the judgment of the Director of Purchasing, the best interests of the State will be served.

STATE OF MICHIGAN



APR 9 1984

AGRICULTURE  
COMMISSION

John Kronemeyer

Robert Chaffin

Rebecca Tompkins

David D. Diehl

Dr. S. Leon Whitney

JAMES J. BLANCHARD, Governor

DEPARTMENT OF AGRICULTURE

P. O. Box 30017, Lansing, Michigan 48909

PAUL E. KINDINGER, Director

April 4, 1984

Mr. James B. Grant, Executive Secretary  
National Association of State Departments  
of Agriculture (NASDA)  
1616 H Street, NW, Room 401  
Washington, D.C. 20006

Re: Final Report of the Michigan Grape Root Knot Nematode  
Eradication Program

Dear Mr. Grant:

A progress report of the Michigan Grape Root Knot Nematode Eradication Program was submitted August 31, 1983, as provided in the Cooperative Agreement between the Interstate Pest Control Compact and the Michigan Department of Agriculture. A copy of the progress report is appended.

At the date of the progress report, the deep soil injection of ethylene dibromide was complete. The shallow fumigation, however, was completed on September 9. The program was terminated on September 28, 1983, including cleaning of equipment, burning combustible debris, fumigation of non-combustible debris and rocks with methyl bromide under tarps, rinsing fumigant drums, and recycling the drums at the Antwerp Township dump.

FINANCIAL STATEMENT OF FUNDS EXPENDED

The dispersement of \$45,000 of Interstate Pest Control Compact funds were allocated as follows:

Michigan State University, Department of Entomology was allocated \$7,000 for research into the extent of distribution of the Michigan Grape Root Knot Nematode, *Meloidogyne nataliei*, in the grape growing area of southwest Michigan. Such research was utilized in relation to regulatory action by the Michigan Department of Agriculture.

The contract offered for site preparation was awarded to Mr. Francis Ryan for \$9,950 to include removal of grape plants and roots, arbor wires, posts, rocks, and soil preparation to tilth.

Mr. James B. Grant  
Page 2  
April 4, 1984

The contract for fumigation, both deep and shallow, was awarded to Great Lakes Chemical Corporation for 32 acres to be fumigated with ethylene dibromide at \$610 per acre in the amount of \$19,520.

The Michigan Department of Agriculture transferred salaries and wages and related costs for supervision and labor from October 1, 1982 to September 30, 1983 in the amount of \$8,530.

The Michigan Department of Agriculture funds supplemental to the Interstate Pest Control Compact assistance of \$45,000 is as follows:

Salaries and wages and related costs:

FY 1981/82	\$ 3,766.35
FY 1982/83	2,546.67 *
FY 1983/84	<u>324.26</u>
Total	\$ 6,637.28

Travel expenses:

FY 1981/82	178½ mi. @ \$.265	\$ 47.30
FY 1982/83	5,008 mi. @ \$.265	<u>1,427.28</u>
Total		\$ 1,474.58

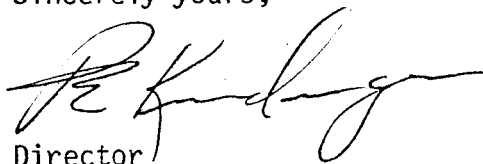
Subsistence:

648 work days @ \$5/day	<u>\$ 3,240.00</u>
MDA SUPPLEMENTAL COSTS	<u>\$11,351.86</u>

\* In excess of salary and wages transferred to Interstate Pest Control Compact account.

A detailed statement of funds expended is attached for administrative purposes.

Sincerely yours,



Director

cc: Rollin Dennistoun, Secretary, IPCC  
Howard Singletary, Chairperson, IPCC  
Technical Advisory Committee