CONVENTION APPLICATION FOR A PATENT

We, E.I. DU PONT DE NEMOURS AND COMPANY, a corporation organised and existing under the laws of the State of Delaware, located at Wilmington, State of Delaware, 19898, United States of America, hereby apply for the grant of a patent for an invention entitled, "HERBICIDAL \(\sigma\)-CARBOMETH-OXY SULFONYLUREAS", which is described in the accompanying complete specification.

This application is a Convention Application and is based on the application for a patent or similar protection made in the United States of America on 10 May 1985 numbered 732,783.

Our address for service is: Care of JAMES M. LAWRIE & CO., Patent Attorneys of 72 Willsmere Road, Kew, 3101, Victoria, Australia.

DATED this 1st day of May 1986

JAMES M. LAWRIE & CO.

By: [Signature]

Patent Attorneys for
E.I. DU PONT DE NEMOURS AND COMPANY
Declaration in Support of an Application for a Patent

(Combined Form -- Convention and Non-Convention)

In support of the Convention application made for a patent for an invention entitled "HERBICIDAL a-CARBOMETHOXYSULFONYLUREAS",

I, Frank Richard Ortolani, Secretary of the Patent Board of E. I. DU PONT DE NEMOURS AND COMPANY, 7108 Du Pont Building, Wilmington, Delaware 19898, United States of America do solemnly and sincerely declare as follows:

1. E. I. DU PONT DE NEMOURS AND COMPANY is the assignee of the invention and of the priority right from the said actual inventor(s) of the invention and the facts upon which the said Corporation is entitled to make the application are as follows: E. I. DU PONT DE NEMOURS AND COMPANY is the assignee of the invention and of the priority right from the said actual inventor(s).

2. The basic application(s) as defined by section 141 of the Act was made in the United States of America on the 10th day of May 1985, No. 732,783, by Gerald Edward Lepone, and on the day of 19 , No. , and on the day of 19 , by

3. Gerald Edward Lepone

of 211 Rheti Lane
Elkton, Maryland 21921
United States of America

is the actual inventor(s) of the invention and the facts upon which the said Corporation is entitled to make the application are as follows: E. I. DU PONT DE NEMOURS AND COMPANY is the assignee of the invention and of the priority right from the said actual inventor(s).

4. The basic application(s) referred to in paragraph 2 of this Declaration was the first application(s) made in a Convention country in respect of the invention the subject of the application.

DECLARED AT Wilmington, Delaware, U.S.A. this 18th day of April 1986

Signature of Declarant

To: The Commissioner of Patents.
Claim

1. A compound of the formula

\[
\text{I}
\]

The compound which is 2-[[\text{N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl}]]\text{aminosulfonyl}benzoic acid, methyl ester.
TO BE COMPLETED BY APPLICANT

Name of Applicant: E.I. DU P\'T DE NEMOURS AND COMPANY, a corporation organised and existing under the laws of the State of Delaware, located at Wilmington, State of Delaware, 19898, United States of America.

Address of Applicant: 

Actual Inventor: GERALD EDWARD LEPONE

Address for Service: Care of: JAMES M. LAWRIE & CO., Patent Attorneys of 72 Willsmere Road, Kew, 3101, Victoria, Australia.

Complete Specification for the invention entitled: HERBICIDAL \(\alpha\)-CARBOMETHOXYSULFONYLUREAS

The following statement is a full description of this invention, including the best method of performing it known to me:—*

*Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 250 mm in depth and 160 mm in width, on tough white paper of good quality and it is to be inserted inside this form.
Patent Attorneys for
E.I. DU PONT DE NEMOURS AND COMPANY

Title BA-8636

HERBICIDAL O-CARBOMETHOXYSULFONYLUREAS

Background of the Invention

A designated o-carbomethoxysulfonylea is an extremely attractive agricultural chemical. It has high herbicidal activity and low residual activity. The compound of the instant invention is generically disclosed in U.S. Patent 4,383,113.

There is a continual need for herbicides which have high activity, selectivity for important crops such as cereals, and low residual activity.

The importance of cereal crops for feeding mankind is well-known. Unfortunately, some of the known herbicides have high residual activity. Thus, crops cannot easily be rotated in an area in which the herbicide is present.

Thus, there is a need for herbicides with high activity as herbicides but low residual activity to facilitate rotation of crops.
Summary of the Invention

According to the instant invention, such a compound has been discovered.

This invention pertains to the compound of Formula I, its agriculturally suitable compositions and its method-of-use as a selective postemergent herbicide, particularly for cereal crops (wheat and barley).

The compound is 2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester, m.p. 146-148°C. The compound also undergoes rapid soil dissipation and would ordinarily possess no recrop limitations.

DETAILED DESCRIPTION OF THE INVENTION

As part of the present invention, it has been found that unexpectedly high herbicidal activity with safety to wheat and barley, is exhibited by 2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester. The compound of the present invention has the Formula I.
Synthesis

The title compound of Formula I can be prepared by the reaction of 2-carbomethoxybenzensulfonyl isocyanate (II) with 2-methoxy-4-methyl-6-methylamino-1,3,5-triazine (III). The reaction is best carried out in an inert aprotic organic solvent such as dichloromethane, 1,2-dichloroethane, tetrahydrofuran or acetonitrile at a temperature between 20° and 85°C.


The following example further illustrates the present invention.
Example 1

2-[[N-[4-methoxy-6-methyl-1,3,5-triazin-2-yl]-
N-methylaminocarbonyl]aminosulfonyl]benzoic acid,
 methyl ester.

To a solution of 2-carbomethoxybenzenesulfonyl
isocyanate (22.4 g 93.0 mmol) in dichloromethane (100
mL) was added 2-methoxy-4-methyl-6-methylamino-1,3,5-
triazine (10.7 g, 69.6 mmol), followed by a catalytic
amount of 1,4-diazabicyclo[2.2.2]octane. After stir-
ring overnight at ambient temperature under a nitrogen
atmosphere, the reaction mixture was concentrated in
vacuo. The residue was triturated with diethyl ether
and then washed with 1-chlorobutane to yield the title
compound as a white powder (27.8 g, m.p. 126-131°C).

IR(KBr): 1735, 1720, 1570, 1470, 1430, 1350 (SO2 1285, 1270, 1170,
1160 cm⁻¹).

NMR (CDCl3/DMSO) δ 2.7 (s, HET-CH3)
3.4 (s, N-CH3)
3.9 (s, CO2CH3)
4.05 (s, HET-OCOCH3)
7.35-7.75 (m, ArH)
8.15-8.4 (m, ArH)
14.0 (broad, NH).

A modification of this procedure involving
reduction of the reaction volume, followed by the
addition of xylene, led to precipitation of the title
compound as a white powder, m.p. 146-148°C.
Formulations

Useful formulations of the compound of Formula I can be prepared in conventional ways. They include dusts, granules, pellets, solutions, suspensions, emulsions, wettable powders, emulsifiable concentrates and the like. Many of these may be applied directly. Sprayable formulations can be extended in suitable media and used at spray volumes of from a few liters to several hundred liters per hectare. High strength compositions are primarily used as intermediates for further formulation. The formulations, broadly, contain about 0.1% to 99% by weight of active ingredient(s) and at least one of (a) about 0.1% to 20% surfactant(s) and (b) about 1% to 99.9% solid or liquid inert diluent(s). More specifically, they will contain these ingredients in the following approximate proportions:

Table I

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Diluent(s)</th>
<th>Surfactant(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wettable Powders</td>
<td>20-90</td>
<td>0-74</td>
</tr>
<tr>
<td>Oil Suspensions, Emulsions, Solutions, (including Emulsifiable Concentrates)</td>
<td>3-50</td>
<td>40-95</td>
</tr>
<tr>
<td>Aqueous Suspension</td>
<td>10-50</td>
<td>40-84</td>
</tr>
<tr>
<td>Dusts</td>
<td>1-25</td>
<td>70-99</td>
</tr>
<tr>
<td>Granules and Pellets</td>
<td>0.1-95</td>
<td>5-99.9</td>
</tr>
<tr>
<td>High Strength Compositions</td>
<td>90-99</td>
<td>0-10</td>
</tr>
</tbody>
</table>

* Active ingredient plus at least one of a surfactant or a diluent equals 100 weight percent.
Lower or higher levels of active ingredient can, of course, be present depending on the intended use and the physical properties of the compound. Higher ratios of surfactant to active ingredient are sometimes desirable, and are achieved by incorporation into the formulation or by tank mixing.

Typical solid diluents are described in Watkins, et al., "Handbook of Insecticide Dust Diluents and Carriers", 2nd Ed., Dorland Books, Caldwell, New Jersey, but other solids, either mined or manufactured, may be used. The more absorptive diluents are preferred for wettable powders and the denser ones for dusts. Typical liquid diluents and solvents are described in Marsden, "Solvents Guide," 2nd Ed., Interscience, New York, 1950. Solubility under 0.1% is preferred for suspension concentrates; solution concentrates are preferably stable against phase separation at 0°C. "McCutcheon's Detergents and Emulsifiers Annual", MC Publishing Corp., Ridgewood, New Jersey, as well as Sisely and Wood, "Encyclopedia of Surface Active Agents", Chemical Publishing Co., Inc., New York, 1964, list surfactants and recommended uses. All formulations can contain minor amounts of additives to reduce foaming, caking, corrosion, microbial growth, etc.

The methods of making such compositions are well known. Solutions are prepared by simply mixing the ingredients. Fine solid compositions are made by blending and, usually, grinding as in a hammer or fluid energy mill. Suspensions are prepared by wet milling (see, for example, Littler, U.S. Patent 3,060,084). Granules and pellets may be made by spraying the active material upon preformed granular carriers or by agglomeration techniques. See J. E. Browning, "Agglomeration", Chemical Engineering.

For further information regarding the art of formulation, see for example:

H. M. Loux, U.S. Patent 3,235,361, February 15, 1966, Col. 6, line 16 through Col. 7, line 19 and Examples 10 through 41;


H. Gysin and E. Knusli, U.S. Patent 2,891,855, June 23, 1959, Col. 3, line 66 through Col. 5, line 17 and Examples 1-4;

G. C. Klingman, "Weed Control as a Science", John Wiley and Sons, Inc., New York, 1961, pp. 81-96; and


In the following examples, all parts are by weight unless otherwise indicated.

Example 2

**Wettable Powder**
2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]amino sulfonyl]benzoic acid, methyl ester 80%

sodium alkyl napthalenesulfonate 2%

sodium ligninsulfonate 2%

synthetic amorphous silica 3%

kaolinite 13%

The ingredients are blended, hammer-milled until all the solids are essentially under 50 microns, re-blended, and packaged.
Example 3

Wettable Powder

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid.

- methyl ester 50%
- sodium alkylnaphthalenesulfonate 2%
- low viscosity methyl cellulose 2%
- diatomaceous earth 46%

The ingredients are blended, coarsely hammer-milled and then air-milled to produce particles essentially all below 10 microns in diameter. The product is reblended before packaging.

Example 4

Granule

Wettable Powder of Example 3 5%
attapulgite granules 95%

(U.S.S. 20-40 mesh: 0.84-0.42 mm)

A slurry of wettable powder containing 25% solids is sprayed on the surface of attapulgite granules while tumbling in a double-cone blender. The granules are dried and packaged.

Example 5

Extruded Pellet

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid.

- methyl ester 25%
- anhydrous sodium sulfate 10%
- crude calcium ligninsulfonate 5%
- sodium alkylnaphthalenesulfonate 1%
- calcium/magnesium bentonite 59%

The ingredients are blended, hammer-milled and then moistened with about 12% water. The mixture is extruded as cylinders about 3 mm diameter which are cut to produce pellets about 3 mm long. These may be used directly after drying, or the dried pellets may
be crushed to pass a U.S.S. No. 20 sieve (0.84 mm openings). The granules held on a U.S.S. No. 40 sieve (0.42 mm openings) may be packaged for use and the fines recycled.

Example 6

Oil Suspension
2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 25%

polyoxyethylene sorbitol hexaoleate 5%

highly aliphatic hydrocarbon oil 70%

The ingredients are ground together in a sand mill until the solid particles have been reduced to under about 5 microns. The resulting thick suspension may be applied directly, but preferably after being extended with oils or emulsified in water.

Example 7

Wettable Powder
2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 20%

sodium alkynaphthalenesulfonate 4%

sodium ligninsulfonate 4%

low viscosity methyl cellulose 3%

attapulgite 6%

The ingredients are thoroughly blended. After grinding in a hammer-mill to produce particles essentially all below 100 microns, the material is reblended and sifted through a U.S.S. No. 50 sieve (0.3 mm opening) and packaged.
Example 8

Low Strength Granule

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 1%

N,N-dimethylformamide 9%
attapulgite granules 90%
(U.S.S. 20-40 sieve)

The active ingredient is dissolved in the solvent and the solution is sprayed upon dedusted granules in a double cone blender. After spraying of the solution has been completed, the blender is allowed to run for a short period and then the granules are packaged.

Example 9

Aqueous Suspension

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 40.0%

polyacrylic acid thickener 0.3%
dodecylphenol polyethylene glycol ether 0.5%
disodium phosphate 1.0%
monosodium phosphate 0.5%
polyvinyl alcohol 1.0%
water 56.7%

The ingredients are blended and ground together in a sand mill to produce particles essentially all under 5 microns in size.

Example 10

Solution

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester

sodium salt 5%
water 95%

The salt is added directly to the water with stirring to produce the solution, which may then be packaged for use.
Example 11

**Low Strength Granule**

\[2-[(N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl)aminosulfonyl]benzoic acid,\]

| methyl ester | 0.1% |
| attapulgite granules | 99.9% |

(U.S.S. 20-40 mesh)

The active ingredient is dissolved in a solvent and the solution is sprayed upon dedusted granules in a double-cone blender. After spraying of the solution has been completed, the material is warmed to evaporate the solvent. The material is allowed to cool and then packaged.

Example 12

**Granule**

\[2-[(N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl)aminosulfonyl]benzoic acid,\]

| methyl ester | 80% |
| wetting agent | 1% |
| crude ligninsulfonate salt (containing 5-20% of the natural sugars) | 10% |
| attapulgite clay | 9% |

The ingredients are blended and milled to pass through a 100 mesh screen. This material is then added to a fluid bed granulator, the air flow is adjusted to gently fluidize the material, and a fine spray of water is sprayed onto the fluidized material. The fluidization and spraying are continued until granules of the desired size range are made. The spraying is stopped, but fluidization is continued, optionally with heat, until the water content is reduced to the desired level, generally less than 1%. The material is then discharged, screened to the desired size range, generally 14-100 mesh (1410-149 microns), and packaged for use.
Example 13

High Strength Concentrate

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 99.0%
silica aerogel 0.5%
synthetic amorphous silica 0.5%

The ingredients are blended and ground in a hammer-mill to produce a material essentially all passing a U.S.S. No. 50 screen (0.3 mm opening). The concentrate may be formulated further if necessary.

Example 14

Wettable Powder

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 90.0%
dioctyl sodium sulfosuccinate 0.1%
synthetic fine silica 9.9%

The ingredients are blended and ground in a hammer-mill to produce particles essentially all below 100 microns. The material is sifted through a U.S.S. No. 50 screen and then packaged.

Example 15

Wettable Powder

2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]aminosulfonyl]benzoic acid, methyl ester 40%
sodium ligninsulfonate 20%
montmorillonite clay 40%

The ingredients are thoroughly blended, coarsely hammer-milled and then air-milled to produce particles essentially all below 10 microns in size. The material is reblended and then packaged.
Example 15
2-(N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylamino)carbonylaminosulfonylelfenamid, methyl ester

The active ingredient is blended with attapulgite and then passed through a hammer-mill to produce ground concentrate. The ground concentrate is then blended with powdered pyrophyllite until homogeneous. The compound of the instant invention may be used in combination with the following herbicides.

Example 16

Oil Suspender:

- 25% blend of polyalcohol carboxylic esters and oil-soluble petroleum sulfonates
- 10% 5-methyl ester of polyalcohol carboxylic acid
- 10% xylenes

The ingredients are combined and ground together in a sand mill to produce particles essentially all below 5 microns. The product can be used directly, extended with oils, or emulsified in water.

Example 17

Dust

2-(N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylamino)carbonylaminosulfonylelfenamid, methyl ester

attapulgite

The active ingredient is blended with attapulgite and then passed through a hammer-mill to produce ground particles essentially all below 200 microns. The ground concentrate is then blended with powdered pyrophyllite until homogeneous. The product can be used directly, extended with oils, or emulsified in water.
Complete Specification for the invention entitled: HERBICIDAL o-CARBOMETHOXYSULFONYLUREAS

The following statement is a full description of this invention, including the best method of performing it known to me:—

*Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 250 mm in depth and 160 mm in width, on white paper of good quality and it is to be inserted inside this form.

| 2,4-D  | fluroxypyr       |
| 2,4-DB | flurochloridone  |
| barban | glyphosate       |
| basagran | imazaquin   |
| bentazon | isoprotuuron |
| benzoilpropethyl | L-flampropisopropyl |
| bifenoxy | linuron       |
| bromofenoxium | Lontrel     |
| bromoxynil | MCP         |
| butraline | MCPA        |
| chlometexynil | MCPB     |
| chlorfenprop-methyl | methabenzthiazuron |
| clepyralid (3,6-DCP) | metoxuron   |
| chlorsulfuron | metribuzin   |
| chlorotoluron | metsulfuron methyl |
| cyanazine | metsulfuron methyl |
| diallate | neburon       |
| dicamba | nitrofene      |
| dichlorprop (2,4-DP) | paraquat    |
| diclofop-methyl | pendimethaline |
| difenzoquat | picrocarb     |
| dinoseb (DNBP) | propanil     |
| dinoterbe | TBA          |
| diquat | terbutryn     |
| diuron | triallate     |
| DNOC | trifluraline   |
| flamprop isopropyl | triallate   |
| flamprop methyl | trifluraline |
| 3-methyl-6-[4,5-dihydro-5-methyl-5-(1-methylethyl)-4-oxo-1H-imidazol-2-yl]benzoic acid, methyl ester | 3-methyl-6-[4,5-dihydro-5-methyl-5-(1-methylethyl)-4-oxo-1H-imidazol-2-yl]benzoic acid, methyl ester |
| 3-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]aminocarbonyl]aminosulfonyle]-2-thiophenecarboxylic acid, methyl ester | 3-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]aminocarbonyl]aminosulfonyle]-2-thiophenecarboxylic acid, methyl ester |
| 4-chloro-2-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]-aminocarbonyl]aminosulfonyle]-benzoic acid, (1-methyl ethyl)ester | 4-chloro-2-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]-aminocarbonyl]aminosulfonyle]-benzoic acid, (1-methyl ethyl)ester |
Most preferably in combination with:

- 3-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)aminocarbonyl]aminosulfonyl]-2-thiophenecarboxylic acid, methyl ester;
- 3-methyl-6-[4,5-dihydro-5-methyl-5-(1-methylethyl)-4-oxo-1H-imidazol-2-yl]benzoic acid, methyl ester;
- difenzoquat; or
- diclofop-methyl.

Utility

The compound of this invention is useful for the post-emergence control of weeds in the cereal crops wheat and barley. It controls a broad spectrum of broadleaf weeds with outstanding crop safety. Since it is rapidly dissipated in soil, it may be used in double cropping situations or where crops sensitive to herbicides now used in cereal crops will follow the cereal.

The rates of application are from 8 to 125 g/ha.

The exact rate used will depend on the weeds to be controlled, and their stage of growth, the crop, the climate, other herbicides used in combination with it, formulation, etc. The exact rate to be used may be selected by one with ordinary skill in the art.

This compound may be used with other compounds selective on cereal crops including other sulfonylureas, the diarylethers, the ureas, the triazines and the carbamates.

The herbicidal properties of this chemical are shown in the greenhouse test that follows.

Procedure

Plastic trays were lined with polyethylene liners and filled with pasteurized Sassafras sandy loam soil (pH 6.5, 1% O.M.). One tray was planted with wheat.
(Triticum aestivum), barley (Hordeum vulgare), wild oats (Avena fatua), cheatgrass (Bromus secalinus), blackgrass (Alopecurus myosuroides), annual bluegrass (Poa annua), green foxtail (Setaria viridis), Italian ryegrass (Lolium multiflorum), and rapeseed (Brassica napus). A second tray was planted with Matricaria inodora, cleavers bedstraw (Galium aparine), Russian thistle (Salsola kali), shepherdspurse (Capsella bursa-pastoris), kochia (Kochia scoparia), black nightshade (Solanum nigrum), speedwell (Veronica persica), wild buckwheat (Polygonum convolvulus), and sugarbeet (Beta vulgaris). For postemergence treatments, the first tray was planted 14 days before spraying, and the second tray was planted 24 days before treatment. Plants in the postemergence treatments ranged in height from 1 to 15 cm depending on specie. Wheat, barley, and wild oats were in the 2-leaf stage of development (Zadoks Stage 11). A second set of trays were prepared in an identical manner before spraying to service as preemergence treatments. Herbicides were diluted in a non-phytotoxic solvent and applied to the trays using a belt sprayer.

Additionally, three other species were evaluated: Veronica hederaefolia, chickweed (Stellaria media) and Viola arvensis. These plantings were grown in five inch pots containing the same soil as described previously. The plants were grown for 22 days before treatment. Herbicide application was made in a similar manner as the screening trays.

Plants were grown in the greenhouse for 21 days at which time visual ratings were made by comparing to an untreated control treatment. Ratings were based on a scale of 0 = no effect to 100 = complete kill.
<table>
<thead>
<tr>
<th>Rate (g/ha)</th>
<th>125</th>
<th>64</th>
<th>32</th>
<th>16</th>
<th>8</th>
<th>4</th>
<th>2</th>
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<td><em>Matricaria inodora</em></td>
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Active ingredient plus at least one of a surfactant or a diluent equals 100 weight percent.
3.060.084). Granules and pellets may be made by spray-\'ing the active material upon preformed granular carriers or by agglomeration techniques. See J. E. Browning, "Agglomeration", Chemical Engineering.

The claims defining the invention are as follows:

1. A compound of the formula

\[
\text{[Chemical Structure]}\]

The compound which is 2-[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-N-methylaminocarbonyl]amino-sulfonyl]benzoic acid, methyl ester.

2. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of the compound of Claim 1 and at least one of the following: surfactant, solid or liquid diluent.

3. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of Claim 1.

4. A composition suitable for controlling the growth of undesired vegetation in wheat and barley which comprises an effective amount of the compound of Claim 1 and at least one of the following: surfactant, solid or liquid diluent.

5. A method for controlling the growth of undesired vegetation in wheat and barley which comprises applying to the locus to be protected an effective amount of a compound of Claim 1.

6. A mixture of an effective amount of the compound of Claim 1 with an effective amount of 3-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]aminocarbonyl]-aminosulfonyl]-2-thiophenecarboxylic acid, methyl ester.
synthetic amorphous silica 3%
kaolinite 13%
The ingredients are blended, hammer-milled until all the solids are essentially under 50 microns, re-blended, and packaged.

7. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of the mixture of Claim 6.

DATED this 1st day of May 1986

JAMES M. LAWRIE & CO.

By: Jeffrey A. Rider

Patent Attorneys for E.I. DU PONT DE NEMOURS AND COMPANY
The ingredients are blended, hammer-milled and then moistened with about 12% water. The mixture is extruded as cylinders about 3 mm diameter which are cut to produce pellets about 3 mm long. These may be used directly after drying, or the dried pellets may...