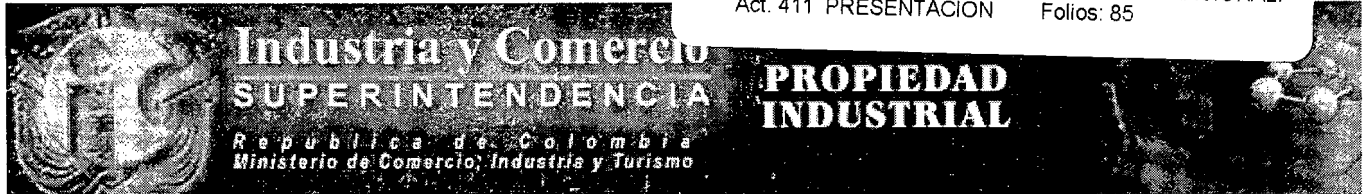




No. 13-046965-00000-0000

Fecha: 2013-03-08 15:39:03 Dep. 2020 DIR.NUEVASCR
Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI
Act. 411 PRESENTACION Folios: 85



Delegatura de Propiedad Industrial
División de Nuevas Creaciones

SOLICITUD DE

**PATENTE DE INVENCION
PCT ENTRADA EN FASE NACIONAL**

21. EXPEDIENTE No.

13-46965

54. TITULO: COMPOSICIÓN PARA PREVENIR/ CONTROLAR
ARTRÓPODOS DAÑINOS Y MÉTODO PARA PREVENIR/
CONTROLAR ARTRÓPODOS DAÑINOS

52. CLASIFICACION INTERNACIONAL: A01N 43/40, A01N 37/24,
A01N 37/28, A01N 43/16,
A01N 43/56, A01N 47/32,
A01P 7/04

71. SOLICITANTE: SUMITOMO CHEMICAL COMPANY, LIMITED

DOMICILIO: 27-1, Shinkawa 2-chome, Chuo-ku, Tokyo
1048260, JAPON

74. APODERADO: Dra. MARGARITA CASTELLANOS A.

22. BOGOTA, D.C.,

08 MAR 2013



Industria y Comercio
SUPERINTENDENCIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 13-046965- -00000-0000

Fecha: 2013-03-08 15:39:03 Dep. 2020 DIR.NUEVASCR
Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI
Act. 411 PRESENTACION Folios: 85

DIRECCION DE NUEVAS CREACIONES
SOLICITUD FASE NACIONAL - PCT

1	(12) TIPO DE SOLICITUD	☒ Patente de Invención ☒ Capítulo I	☐ Patente de Modelo de Utilidad ☐ Capítulo II
2	DATOS SOLICITUD INTERNACIONAL PCT (86)		
Solicitud Internacional No.		PCT/JP2011/068488	Fecha 08/08/2011
Publicación Internacional No.		WO/2012/023530 A1	Fecha 23/02/2012
3	(54) TITULO DE LA INVENCION (200 caracteres o espacios máximos)		
COMPOSICIÓN PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS Y MÉTODO PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS			
4	CLASIFICACION INTERNACIONAL (51) CIP		
A01N 43/40, A01N 37/24, A01N 37/28, A01N 43/16, A01N 43/56, A01N 47/32, A01P 7/04			
5	(71) SOLICITANTE(S) _____ Esta persona también es inventor Para datos adicionales utilizar hoja de información adicional		
APELLIDOS O RAZON SOCIAL SUMITOMO CHEMICAL COMPANY, LIMITED		NOMBRE	IDENTIFICACION TIPO.
6	DATOS DEL SOLICITANTE		
DIRECCION CIUDAD DEPARTAMENTO/ESTADO PAIS DE RESIDENCIA		27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 1048260 JAPON	No. TELEFONO E-MAIL NACIONALIDAD O LUGAR DE JAPON CONSTITUCION
7	(72) INVENTOR(ES) Para datos adicionales utilizar hoja de información adicional		
APELLIDOS		NOMBRES	NACIONALIDAD
1. SAKAMOTO	Norihisa	JAPONESA	
2. SAKAMOTO	Emiko	JAPONESA	
3.			
4.			
5.			
6.			
7.			
8.			
DIRECCION DE CORREO ELECTRONICO:			
8	DATOS INVENTOR(ES)		
PAIS RESIDENCIA	DEPARTAMENTO/ESTADO	CIUDAD	DIRECCION
1. JAPON	Hyogo 675-2333	Kasai-shi,	c/o SUMITOMO CHEMICAL COMPANY, LIMITED, 636-2, Kishiro-cho,
2. JAPON	Hyogo 665-8555	Takarazuka-shi	c/o SUMITOMO CHEMICAL COMPANY, LIMITED, 2-1, Takatsukasa 4-chome,
OTRO(S) SOLICITANTE(S) Y/U OTRO(S) INVENTOR(ES)			
_____ Los demás solicitantes y/o demás inventores se indican en una hoja a continuación			
9	(74) _____ REPRESENTANTE ☒ APODERADO		
APELLIDOS		NOMBRES	IDENTIFICACION
CASTELLANOS ABONDANO		MARGARITA	C.C. 39.779.654 T.P. 70.819
DIRECCION	Calle 94A No. 7A-09		No. TELEFON 7560770
CIUDAD	BOGOTA		E-MAIL info@castellanosyco.co
PAIS	COLOMBIA		No. DE PROTOCOLO EN LA OFICINA

10	(30) DECLARACIONES DE PRIORIDAD ☒ SI ☐ NO			
(33) PAIS DE ORIGEN 1. JAPON 2. JAPON 3. 4. 5.		CODIGO PAIS JP JP	(31) NUMERO 2010-184720 2011-021485	(32) FECHA (AAA/MM/DD) 20/08/2010 03/02/2011
11	DECLARACION SOBRE USO DE RECURSOS GENETICOS O BIOLOGICOS			
Declaro que el objeto de la presente solicitud de patente fue obtenido a partir de recursos genéticos o biológicos de los que cualquiera de los países miembros de la Comunidad Andina es país de origen. ☐ SI ☒ NO NOTA: En caso afirmativo deberá anexar copia del contrato de acceso de recursos genéticos o productos derivados, o certificado o número de registro expedido por la Autoridad competente.				
12	DECLARACION SOBRE USO DE CONOCIMIENTOS TRADICIONALES			
Declaro que el objeto de la presente solicitud de patente fue obtenido a partir de conocimientos tradicionales de comunidades indígenas, afroamericanas o locales de países miembros de la Comunidad Andina. ☐ SI ☒ NO NOTA: En caso afirmativo deberá anexar la licencia o autorización de uso de conocimiento tradicional, o certificado, o número de registro expedido por la Autoridad competente.				
13	REDUCCION DE TASAS			
Declaro que carezco de medios económicos para presentar la solicitud de patente ☐ SI ☒ NO NOTA: En caso de ser persona natural y carecer de medios económicos, y por lo tanto, aplique la reducción de tasas a que se refiere la resolución vigente en tarifas, debe firmar la presente solicitud bajo la gravedad de juramento.				
Micro, pequeñas y medianas empresas ☐ Copia simple de la declaración de renta del año inmediatamente anterior, o en su defecto prueba documental idónea. ☐ Documento de constancia de cumplimiento con lo establecido en la ley 905 de 2004.		Universidades públicas o privadas ☐ Copia acto de reconocimiento institucional emitido por el Ministerio de Educación. Acreditación Colciencias.	Entidades sin animo de lucro ☐ Copia de registro vigente en Cámara de Comercio. ☐ Hoja de información complementaria. ☐ Otros, especificar.	
14	AUTORIZACION DE NOTIFICACION EN LINEA ☐ SI ☒ NO			
Manifiesto que he leído y entendido perfectamente los términos y condiciones de uso de medios electrónicos para las notificaciones en línea a través de Internet de los actos administrativos proferidos por la Superintendencia de Industria y Comercio que deber ser notificados personalmente y, en consecuencia, autorizo el servicio de notificación a través de internet.				
14	COMPROBANTE DE PAGO O PAGO ELECTRONICO		N° 13-0022499	Fecha: 6-Mar-2013
15	FIRMA DEL SOLICITANTE, DEL APODERADO O DEL REPRESENTANTE LEGAL			
Junto a cada firma, indicar el nombre del firmante y su calidad (si tal calidad no es obvia al leer el petitorio) Margarita Castellanos Abondano MARGARITA CASTELLANOS ABONDANO - APODERADO				
16	ORDEN Y RELACION DE DOCUMENTOS QUE ACOMPAÑAN LA SOLICITUD			
Documentación Técnica Solicitud Internacional en Castellano 1. ☒ Descripción N° de folios: 37 2. ☒ Reivindicaciones N° de reivindicaciones: 6 3. ☐ Dibujos y/o figuras N° de folios: 4. ☒ Resumen 5. ☐ Certificado de depósito de material biológico si fuera el caso. 6. ☐ Listado de secuencias de nucleótidos y/o aminoácidos en forma digital si fuera el caso. 7. ☐ Arte final 12 x 12 8. ☐ Anexo formato digital.		Documentación Jurídica 9. ☒ Poderes, si fuera el caso. 10. ☒ Documento que legalmente pruebe la cesión del inventor al solicitante o a su causante. 11. ☐ Copia del contrato de acceso de recursos genéticos o productos derivados, certificado o número de registro, si fuera el caso. 12. ☐ Copia de la licencia o autorización de Conocimientos Tradicionales, certificado o número de registro, si fuera el caso. 13. ☐ Documento que acredita la existencia y representación legal, cuando el solicitante es persona jurídica. 14. ☒ Comprobante de pago de la tasa de presentación de la solicitud. 15. ☐ Comprobante de pago por reivindicación de prioridad 16. ☐ Comprobante de pago de la tasa por concepto de excedente de palabras en la publicación. 17. ☐ Comprobante de pago por reivindicación adicional a 10.		

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
NIT : 800.176.089-2
- / -



RECIBO DE CAJA

No. 13 - 0022499

Bogotá D.C., Marzo 06 de 2013 - 15:24:19

RECIBIDO DE : CASTELLANOS Y Y CO NI 800.174.641

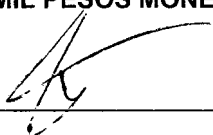
*** Soporte del Pago ***

TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	VR. PAGO
CONSIGNACION	BANCO DE BOGOTA	062754387	535292763	06/03/2013	7.099.800.00

*** Conceptos Pagados ***

CANT.	RENTISTICO	CONCEPTO	Vr. UNIDITARIO	Vr. CONCEPTO
1	50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE INVENCIÓN	500.000.00	500.000.00
				\$500.000.00
			=====	

SON: **QUINIENTOS MIL PESOS MONEDA CORRIENTE***

Responsable: 

Recibo de Caja Aplicado al Expediente No. _____

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 13-046965- -00000-0000

Fecha: 2013-03-08 15:39:03 Dep. 2020 DIR. NUEVASCR
Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI
Act. 411 PRESENTACION Folios: 85

Sede Centro: Carrera 13 No. 27 - 00 Pisos 3,4,5 y 10 Bogotá, D.C.- Colombia

Web: www.sic.gov.co e-mai: info@sic.gov.co Conmutador: (571) 5870000 Fax: (571) 5870284 Línea: 018000-910165 Call Center: (571) 6513240

, Marzo 6 de 2013 - 15:24:20

P A T E N T S

CESION

El (los) suscrito (s)

Norihisa SAKAMOTO and Emiko SAKAMOTO

en consideración al pago de la suma de
(.....), que he(mos) recibido, por el
presente documento cedo (cedemos) a

SUMITOMO CHEMICAL COMPANY, LIMITED

una compañía constituida de conformidad con las leyes de
con oficinas en

27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 1048260, Japón

todos los derechos y títulos sobre la invención denominada

*composición para prevenir/controlar
artrópodos dañinos y método para
prevenir/controlar artrópodos dañinos.*

EL CESIONARIO firma también el presente y declara que acepta
dicha cesión

Dado y firmado hoy

en

ASSIGNMENT

The undersigned

Norihisa SAKAMOTO and Emiko SAKAMOTO

in consideration of the sum of 1 U.S. dollar
(.....), the receipt of which is hereby
acknowledged, by these presents do sell, assign and transfer unto

SUMITOMO CHEMICAL COMPANY, LIMITED

a corporation organized under the laws of Japan
having a place of business at

27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 1048260, Japan

all rights and title to the invention related to

COMPOSITION FOR PREVENTING/CONTROLLING HARMFUL
ARTHROPODS AND METHOD FOR
PREVENTING/CONTROLLING HARMFUL ARTHROPODS

THE ASSIGNEE signs these presents and declares that accepts the
aforesaid assignment

Given an signed this

in Hyogo, JAPAN

Inventors

Norihisa Sakamoto
Norihisa SAKAMOTO

Emiko SAKAMOTO
Emiko SAKAMOTO

Osamu Ishitobi
Osamu ISHITOBI, Representative Director
SUMITOMO CHEMICAL COMPANY, LIMITED
Assignee

CASTELLANOS & Co.
INTELLECTUAL PROPERTY LAW FIRM

CALLE 94 A No. 7 A - 09 / P.O. BOX 6349
PHONE (57 1) 7 560770 / FAX (57 1) 755 0158
BOGOTÁ D.C. COLOMBIA
info@castellanosyco.co

4974-FNPGT

COLOMBIA

PODER

POWER OF ATTORNEY

El (los)

I (we) the undersigned

SUMITOMO CHEMICAL COMPANY, LIMITED
Domiciliados en 27-1, Shinkawa 2-chome,
Chuo-ku, Tokyo 104-8260 - JAPON

SUMITOMO CHEMICAL COMPANY, LIMITED
Of 27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8260
Japan

Nombran por el presente a **XIMENA CASTELLANOS A. y/o MARGARITA CASTELLANOS A.** abogadas con oficinas en la Carrera 9 No. 93-09, Bogotá-Colombia para

hereby grant(s) Power of Attorney to **XIMENA CASTELLANOS A. and for MARGARITA CASTELLANOS A.** attorneys residing at Carrera 9 No. 93-09, Bogotá-Colombia, to

y para obtener la protección de mi (nuestra) propiedad Industrial y con este fin autorizamos a dichos apoderados para que nos representen ante cualesquiera autoridades o personas de los órdenes administrativo, contencioso - administrativo y judicial en todo lo relacionado con los siguientes actos y gestiones:

and to obtain the protection of my (our) Industrial Property, for which purpose we authorize the said attorneys to represent us before any authorities, or persons, specially those, administrative, contentious and judicial, in all matters concerning the following:

- a) Obtención de patentes de invención, modelos y dibujos industriales; registro de marcas de fábrica, de servicio, colectivas o defensivas y de denominaciones de origen, depósito de nombres y enseñas comerciales; su renovación, prórroga, inscripción de traspaso y cambio de nombre o domicilio, cancelación voluntaria y el registro de licencias de uso de esos derechos;
- b) Para la obtención de registros sanitarios;
- c) Acciones de oposición, observación, cancelación, nulidad, medidas cautelares y en general los juicios civiles, penales, administrativos o contencioso - administrativos que promovamos o se nos promuevan.

- a) Obtainment of patents, models and designs, registration of trademarks, service, collective and defensive marks, and of designations of origin; the deposit of trade names and enshins; its renewal, extension, recordal of assignments, change of name or domicile, voluntary cancellation, and the registration of licenses of use of the above rights;
- b) For the obtainment of Sanitary registrations;
- c) Actions of opposition, cancellation, nullity, infringement, granting of licenses; and in general the civil, criminal and administrative suits related to those rights; actions and suits instituted by us or against us;

Pudiendo en todos los actos y gestiones arriba mencionados sustituir éste mandato, transigir, desistir, recibir, cancelar, renunciar, aceptar notificaciones y nombrar apoderados judiciales y extrajudiciales.

In all the above matters they may substitute this power of attorney, compromise, desist, cancel, receive, renounce, accept notifications and appoint attorneys in fact, in or out of court.

Dado y firmado hoy 9 de Marzo de 2005

Given and signed this 9th day of March, 2005

en Osaka - JAPON

in Osaka, Japan
Satoshi Kawachi

SUMITOMO CHEMICAL
COMPANY, LIMITED

por

by **SATOSHI KAWACHI**
REPRESENTATIVE DIRECTOR

(El notario debe suscribir el documento en la pagina siguiente)

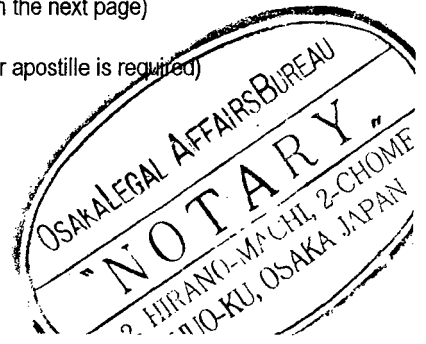
(Notary shall execute on the next page)

(Se requiere legalización consular o mediante apostilla)

(Consular legalization or apostille is required)

ALVARO CASTELLANOS M. & CIA.
ABOGADOS COLOMBIA

Carrera 9 No. 93-09 - P.O. Box 6349 - Bogotá, Colombia
Tels.: (571) 610 74 20 / 60 / 60 - Fax (571) 610 07 01 - e-mail: avcastellanos@impulso.net.co





APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: **JAPAN**

This public document

2. has been signed by **Shoji ISHIDA**

3. acting in the capacity of **Notary Public of the Osaka
Legal Affairs Bureau**

4. bears the seal/stamp of **Shoji ISHIDA, Notary Public**

Certified

5. at **Osaka**

6. **MAR. 29. 2005**

7. by the **Ministry of Foreign Affairs**

8. No. **01152**

9. Seal/stamp:



10. Signature:

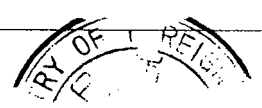
Tsutomu HIGUCHI

For the Minister for Foreign Affairs

公証人

公証人

登簿平成 1 7 年 第 2 5 2 号



嘱託人 住 友 化 学 株 式 会 社

代表取締役 河 内 哲 は、代理人

稲本暢子を通じ当公証人の面前で、別紙編綴

の証書にある上記嘱託人の署名は同嘱託人が

したものであることを自認する旨陳述した。

上記の会社は日本国東京都中央区新川二丁目 2 7 番 1 号に所

在し日本の法律に基づいて設立された会社であり河内哲は同

会社の代表取締役である。_____

よってこれを認証する。_____

平成 1 7 年 3 月 2 5 日 _____

公証人石田昌司役場において。_____

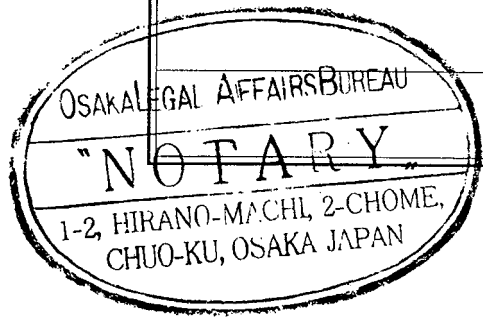
大阪市中央区平野町 2 丁目 1 番 2 号 (沢の鶴ビル内)

大阪法務局所属

公 証 人

石田昌司

公証人



大阪法務局所属 公証人役場



NOTARIAL ATTESTATION

REGISTER NUMBER: 252/2005

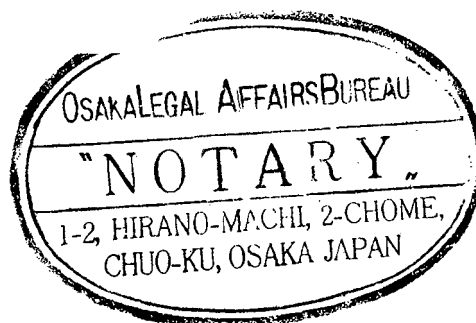
This is to certify that Nobuko INAMOTO, an agent of Satoshi KAWACHI, has stated in my very presence that said Satoshi KAWACHI acknowledged himself to have signed the attached Power of Attorney in compliance with the authority bestowed on him as the Representative Director of SUMITOMO CHEMICAL COMPANY, LIMITED, a corporation organized and existing under the laws of Japan and having a principal place of business at 27-1, Shinkawa 2-chome, Chuo-ku, Tokyo 104-8260 Japan.

At the Office of Shoji ISHIDA, Osaka, Japan
on the 25th day of March, 2005

Shoji Ishida

Shoji ISHIDA
Notary attached to
The Osaka Legal Affairs Bureau

c/o Sawanotsuru Building
1-2, Hirano-machi 2-chome
Chuo-ku, Osaka, Japan



総第 965 号

証 明

大阪法務局所属公証人 石田昌司

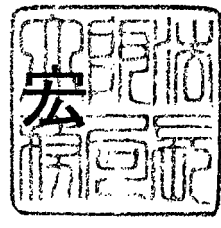
平成 17年 3 月 25 日付

平成 17年 登簿 第 252 号

この認証の付与は、在職中の公証人が
その権限に基づいてしたものであり、
かつ、その押印は、真実のものであること
を証明する。

平成 17年 3月 29日
平成 年 月 日

大阪法務局長 梅津和



CERTIFICATE

This is to certify that the annexed Notarial Certificate has
been executed by Notary, duly authorized and practising in Osaka,
Japan, and that the Official seal appearing on the same is genuine.

Date 05. 3. 29

Director of the Osaka Legal Affairs Bureau

-----TRADUCCION OFICIAL No. 05-0414-----

de un documento escrito en INGLES, el cual para su identificación lleva el sello de la Traductora e Intérprete Oficial, Res. 2755/68 y 01144/97 de Minjusticia, al igual que la presente.-----

(Anexos a un documento de Poder de Sumitomo Chemical Co.Ltd.)

Registro No. 252/2005

La presente es para certificar que Nobuko INAMOTO, agente de Satoshi KAWACHI, ha manifestado en mi presencia que dicho Satoshi KAWACHI reconoció el mismo haber firmado el documento de Poder adjunto en cumplimiento de la autoridad conferida a él como Director representante de SUMITOMO CHEMICAL COMPANY, LIMITED, una sociedad constituida y existente bajo las leyes del Japón y con domicilio principal de negocios en 27-1, Shinkawa 2-chome, Chuo-ku, Tokio 104-8260 Japón.

En la oficina de Shoji ISHIDA, Osaka, Japón

Hoy día 25 de Marzo de 2005

(fdo) ilegible

Shoji ISHIDA

NOTARIO adjunto a la

Oficina De Asuntos Legales de Osaka

c/o Sawanotsuru Building

DORA DUQUE DE BERNAL
TRADUCTORA E INTERPRETE OFICIAL
RES. 02755/68 Y 01144/97 - MINJUSTICIA
REP. DE COLOMBIA

1-2, Hirano- machi, 2-Chome,
Chuo-ku, Osaka, Japón

(Sello) Oficina de Asuntos Legales de Osaka

NOTARIO

1-2, Hirano-Machi, 2-chome,
Chuo-ku, Osaka, Japón

CERTIFICADO

La presente es para certificar que la firma que aparece anteriormente ha sido
impuesta por Notario, debidamente autorizado y en ejercicio en Osaka, Japón, y
que el sello oficial que aparece en el mismo es auténtico.

Fecha: 05.3.29

Director de la Oficina de Asuntos Legales de Osaka

APOSTILLA

(Convención e La Haya del 5 de Octubre de 1961)

1. País: JAPON

Este documento público

2. ha sido firmado por Shoji ISHIDA

3. actuando en su carácter de Notario Público de la Oficina de Asuntos
Legales de Osaka

4. lleva el sello de Shoji ISHIDA, Notario Público

Certificado

DORA DUQUE DE BERNAL
TRADUCTORA E INTERPRETE OFICIAL
RES. 02755/68 Y 01144/97 - MINJUSTICIA
REP. DE COLOMBIA

5. en Osaka

6. El 29 de Marzo de 2005

7. por el Ministerio de Relaciones Exteriores

8. No. 01152

9. Sello:

10: Firma

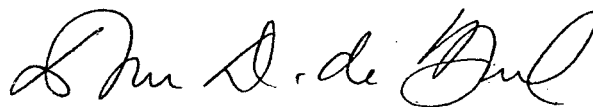
(fdo) ilegible

Tsutomu HIGUCHI

Por el Ministro de Relaciones Exteriores.

Es traducción fiel y completa, a la cual me remito,

Bogotá, Abril 8, 2005



DORA DUQUE DE BERNAL
TRADUCTORA E INTERPRETE OFICIAL
RES. 02755/68 Y 01144/97 - MINJUSTICIA
REP. DE COLOMBIA

MINISTERIO DE
RELACIONES EXTERIORES

346782
Dora Duque
CUYA FIRMA APARECE EN EL
DOCUMENTO DESEMPEÑA
LAS FUNCIONES INDICADAS

NO SE ASUME
RESPONSABILIDAD DEL TEXTO

2005 ABR 11 A 11:32

ues
JEFE DE LEGALIZACIONES
BOGOTÁ D.C.

(12) 特許協力条約に基づいて公開された国際出願

(19) 世界知的所有権機関
国際事務局



(10) 国際公開番号

WO 2012/023530 A1

(43) 国際公開日

2012 年 2 月 23 日(23.02.2012)

PCT

(51) 国際特許分類:

A01N 43/40 (2006.01) A01N 43/56 (2006.01)
A01N 37/24 (2006.01) A01N 47/32 (2006.01)
A01N 37/28 (2006.01) A01P 7/04 (2006.01)
A01N 43/16 (2006.01)

(74) 代理人: 中山 亨, 外(NAKAYAMA, Tohru et al.);
〒5418550 大阪府大阪市中央区北浜四丁目 5 番
3 3 号住友化学知的財産センター株式会社内
Osaka (JP).

(21) 国際出願番号:

PCT/JP2011/068488

(22) 国際出願日:

2011 年 8 月 8 日(08.08.2011)

(25) 国際出願の言語:

日本語

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— 国際調査報告 (条約第 21 条(3))

(54) Title: COMPOSITION FOR PREVENTING/CONTROLLING HARMFUL ARTHROPODS AND METHOD FOR PRE-
VENTING/CONTROLLING HARMFUL ARTHROPODS

(54) 発明の名称: 有害節足動物防除組成物及び有害節足動物の防除方法

(57) Abstract: The disclosed composition for preventing/controlling harmful arthropods contains flonicamid, at least one type of
compound for controlling the growth of insects that is selected from Group (A) consisting of methoxyfenozide, tebufenozide, and
chromafenozide, and at least one type of compound for preventing/controlling sheath blight selected from Group (B) consisting of
flutolanil, pencycuron, N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, furametpyr, and vali-
damycin A, and has an excellent effect of preventing/controlling harmful arthropods.

(57) 要約: フロニカミドと、群 (A) より選ばれる 1 種以上の昆虫成長制御化合物と、群 (B) より選ば
れる 1 種以上の紋枯病防除化合物とを含有する有害節足動物防除組成物は、有害節足動物に対する優れた
防除効力を有する。群 (A): メトキシフェノジド、テブフェノジド及びクロマフェノジドからなる
群。群 (B): フルトラニル、ペンシクロン、N-[2-(1,3-ジメチルブチル)フェニル]-5-
フルオロ-1,3-ジメチル-1H-ピラゾール-4-カルボキサミド、フラメトピル及びバリダマ
イシン A からなる群

WO 2012/023530 A1

DESCRIPTION

COMPOSITION FOR PREVENTING/CONTROLLING HARMFUL ARTHROPODS AND
METHOD FOR PREVENTING/CONTROLLING HARMFUL ARTHROPODS

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Technical Field

The present invention relates to a harmful arthropod control composition and a method for controlling a harmful arthropod.

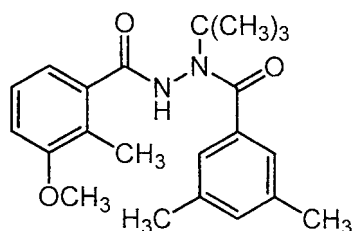
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Background Art

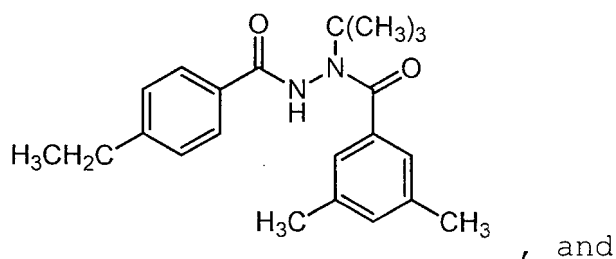
Heretofore, various compounds are known as active ingredients in harmful arthropod control compositions (see, for example, The Pesticide Manual-15th edition (published by BCPC); ISBN 978-1-901396-18-8).

15

Methoxyfenozide:



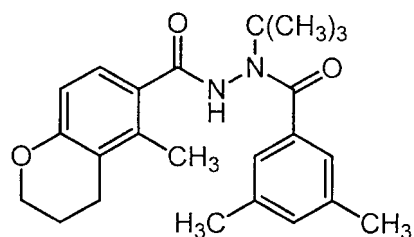
tebufenozide:



, and

20

chromafenozide:



are known as insect growth regulator compounds.

Disclosure of Invention

25

The present invention includes the following [1] to [6]:

[1] A harmful arthropod control composition comprising flonicamid, one or more insect growth regulator compounds selected from Group (A), and one or more sheath blight disease control compounds selected from Group (B):

5 Group (A): a group consisting of methoxyfenozide, tebufenozide, and chromafenozide.

Group (B): a group consisting of flutolanil, pencycuron, N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, furametpyr and validamycin A.

10 [2] The harmful arthropod control composition according to the above [1], wherein the weight ratio of flonicamid to the insect growth regulator compound is from 50:1 to 1:10.

[3] The harmful arthropod control composition according to the above [2], wherein the weight ratio of flonicamid to the sheath blight disease control compound is from 100:1 to 1:100.

[4] The harmful arthropod control composition according to any one of the above [1] to [3], wherein the sheath blight disease control compound is flutolanil, pencycuron, or N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide.

[5] A method for controlling a harmful arthropod, which comprises applying an effective amount of the harmful arthropod control composition according to any one of the above [1] to [4] to a plant or an area in which a plant is grown.

[6] The method for controlling a harmful arthropod according to the above [5], wherein the plant or the area in which a plant is grown is rice or an area in which rice is grown.

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Mode for Carrying out the Invention

The harmful arthropod control composition of the present invention comprises flonicamid, one or more insect growth regulator compounds selected from the following Group (A) (hereinafter sometimes referred to as "the present insect growth regulator compound"), and one or more sheath blight disease control compounds selected from the following Group (B) (hereinafter sometimes referred to as "the present sheath blight disease control compound").

40 Group (A): a group consisting of methoxyfenozide, tebufenozide, and chromafenozide;

Group (B): a group consisting of flutolanil, pencycuron, N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, furametpyr and validamycin A.

Flonicamid is a known compound and can be obtained, for example, by a method described in JP 2994182 B.

All of methoxyfenozide, tebufenozide, chromafenozide, flutolanil, pencycuron, furametpyr and validamycin A are known compounds, and described, for example, at pages 764, 1074, 211, 559, 871, 580 and 1187 of "The Pesticide Manual-15th edition (published by BCPC); ISBN 978-1-901396-18-8". These compounds can be obtained from commercial sources or produced by known methods.

N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide (hereinafter referred to as "the present active compound (I)") is a known compound, and can be obtained by, for example, a method described in WO 2003/010149.

Typical Examples of the sheath blight disease control compound include flutolanil, pencycuron and the present active compound (I).

In the harmful arthropod control composition of the present invention, the weight ratio of flonicamid to the present insect growth regulator compound (= flonicamid:insect growth regulator compound) is generally from 500:1 to 1:100, preferably from 50:1 to 1:10, more preferably from 20:1 to 1:10.

In the harmful arthropod control composition of the present invention, the weight ratio of flonicamid to the present sheath blight disease control compound (= flonicamid:sheath blight disease control compound) is generally from 1000:1 to 1:1000, preferably from 100:1 to 1:100, more preferably from 50:1 to 1:50.

In the harmful arthropod control composition of the present invention, the weight ratio of flonicamid, the present insect growth regulator compound, and the present sheath blight disease control compound is not particularly limited. However, the present insect growth regulator compound is generally from 0.2 to 10000 parts by weight, preferably from 2 to 1000 parts by weight, and the present sheath blight disease control compound is generally from 0.1 to 100000 parts by weight, preferably from 1 to 10000 parts

by weight, relative to 100 parts by weight of flonicamid.

The harmful arthropod control composition of the present invention may be prepared by simply mixing flonicamid, the present insect growth regulator compound, and the present sheath blight disease control compound, or by
5 mixing flonicamid, the present insect growth regulator compound and the present sheath blight disease control compound and an inert carrier, and if necessary, a surfactant and/or other formulation additives, and then formulating the
10 mixture into a formulation such as an oil solution, an emulsifiable concentrate, a suspension concentrate, a wettable powder, a water dispersible granule, a dust, or a granule.

Thus formulated harmful arthropod control composition
15 may be used directly, or after the addition of other inert ingredients such as water, sand and vegetable oil, as a harmful arthropod control agent.

The total amount of flonicamid, the present insect growth regulator compound and the present sheath blight
20 disease control compound in the harmful arthropod control composition of the present invention is generally from 0.01 to 99% by weight, preferably from 0.1 to 90% by weight, more preferably from 0.5 to 70% by weight.

Examples of the inert carrier include solid carriers
25 and liquid carriers.

Examples of the solid carrier to be used for formulation of the harmful arthropod control composition include fine powders or granules of minerals (e.g., kaolin clay, attapulgate clay, bentonite, montmorillonite, acidic
30 white clay, pyrophyllite, talc, diatomaceous earth, and calicite); natural organic substances (e.g., corncob flour, and walnut shell flour), synthetic organic substances (e.g., urea); salts (e.g., calcium carbonate, and ammonium sulfate); and synthetic inorganic substances (e.g., synthetic hydrated
35 silicon oxide). Examples of the liquid carrier include aromatic hydrocarbons (e.g., xylene, alkylbenzene, and methyl naphthalene); alcohols (e.g., 2-propanol, ethylene glycol, propylene glycol, and ethylene glycol monoethyl ether); ketones (e.g., acetone, cyclohexanone, and isophorone);
40 vegetable oils (e.g., soybean oil, and cotton oil); petroleum-based aliphatic hydrocarbons; esters;

dimethylsulfoxide; acetonitrile; and water.

Examples of the surfactant include anionic surfactants (e.g., alkyl sulfate ester salts, alkylaryl sulfonates, dialkyl sulfosuccinates, polyoxyethylene alkylaryl ether phosphate ester salts, ligninsulfonates, and naphthalene sulfonate formaldehyde polycondensates), nonionic surfactants (e.g., polyoxyethylene alkylaryl ethers, polyoxyethylene alkylpolyoxypropylene block copolymers, and sorbitan fatty acid esters), and cationic surfactants (e.g., alkyl trimethyl ammonium salts).

Examples of the other formulation additive include water-soluble polymers (e.g., polyvinyl alcohol, and polyvinyl pyrrolidone), polysaccharides [e.g., gum arabic, alginic acid and salts thereof, CMC (carboxymethyl cellulose), and xanthane gum], inorganic substances (e.g., aluminum magnesium silicate, and alumina-sol), preservatives, colorants, and stabilizers [e.g. isopropyl acid phosphate (PAP), and BHT].

The harmful arthropod control composition of the present invention can be used for protecting plants from damage due to eating or sucking by harmful arthropods such as harmful insects and harmful ticks.

Examples of the harmful arthropod on which the harmful arthropod control composition of the present invention has a controlling effect include as described below:

Hemiptera: Delphacidae such as *Laodelphax striatellus*, *Nilaparvata lugens*, and *Sogatella furcifera*; Deltocephalidae such as *Nephotettix cincticeps*, *Nephotettix virescens*, *Recilia dorsalis*, and *Empoasca onukii*; Aphididae such as *Aphis gossypii*, *Myzus persicae*, *Brevicoryne brassicae*, *Aphis spiraecola*, *Macrosiphum euphorbiae*, *Aulacorthum solani*, *Rhopalosiphum padi*, *Toxoptera citricidus*, *Hyalopterus pruni*, and *Eriosoma lanigerum*; Pentatomidae such as *Nezara antennata*, *Trigonotylus caelestialium*, *Graphosoma rubrolineatum*, *Eysarcoris lewisi*, *Riptortus clavetus*, *Leptocorisa chinensis*, *Eysarcoris parvus*, *Halyomorpha mista*, *Nezara viridula*, and *Lygus lineolaris*; Aleyrodidae such as *Trialeurodes vaporariorum*, *Bemisia tabaci*, *Dialeurodes citri*, and *Aleurocanthus spiniferus*; Coccoidea such as *Aonidiella aurantii*, *Comstockaspis perniciososa*, *Unaspis citri*, *Ceroplastes rubens*, *Icerya purchasi*, *Planococcus kraunhiae*,

Pseudococcus longispinis, and *Pseudaulacaspis pentagona*; Tingidae; Cimicoidea such as *Cimex lectularius*; Psyllidae such as *Cacopsylla pyricola*; etc.

Lepidoptera: Pyralidae such as *Chilo suppressalis*,
 5 *Tryporyza incertulas*, *Cnaphalocrocis medinalis*, *Notarcha derogata*, *Plodia interpunctella*, *Ostrinia furnacalis*, *Hellula undalis*, and *Pediasia teterrellus*; Noctuidae such as *Spodoptera litura*, *Spodoptera exigua*, *Pseudaletia separata*, *Mamestra brassicae*, *Agrotis ipsilon*, *Plusia nigrisigna*,
 10 *Trichoplusia ni*, *Thoricoplusia* spp., *Heliothis* spp., and *Helicoverpa* spp.; Pieridae such as *Pieris rapae*; Tortricidae such as *Adoxophyes* spp., *Grapholita molesta*, *Leguminivora glycinivorella*, *Matsumuraeses azukivora*, *Adoxophyes orana fasciata*, *Adoxophyes honmai.*, *Homona magnanima*, *Archips*
 15 *fuscocupreanus*, and *Cydia pomonella*; Gracillariidae such as *Caloptilia theivora*, and *Phyllonorycter ringoneella*; Carposinidae such as *Carposina niponensis*; Lyonetiidae such as *Lyonetia* spp.; Lymantriidae such as *Lymantria* spp., and *Euproctis* spp.; Yponomeutidae such as *Plutella xylostella*;
 20 *Gelechiidae* such as *Pectinophora gossypiella*, and *Phthorimaea operculella*; Arctiidae such as *Hyphantria cunea*; Tineidae such as *Tinea translucens*, and *Tineola bisselliella*; *Tuta absoluta*; etc.

Thysanoptera: Thripidae such as *Frankliniella*
 25 *occidentalis*, *Thrips parvi*, *Scirtothrips dorsalis*, *Thrips tabaci*, *Frankliniella intonsa*, *Frankliniella fusca*, *Thrips tabaci*, *Stenchaetothrips biformis*, and *Haplothrips aculeatus*; etc.

Among the above harmful arthropods, preferred are
 30 Hemiptera such as Delphacidae, Deltocephalidae, Aphididae, and Pentatomidae; Lepidoptera such as Pyralidae, and Noctuidae, and more preferred are Hemiptera (e.g., Delphacidae, Aphididae, etc.).

The harmful arthropod control composition of the
 35 present invention may be used for controlling plant diseases such as rice sheath blight disease caused by *Rhizoctonia solani*.

The harmful arthropod control composition of the
 present invention can be applied to a plant or an area in
 40 which a plant is grown to control harmful arthropods therein. The plant as used herein include the stems and leaves of

plants, the flowers of plants, the fruits of plants, the seeds of plants, etc.

The method for controlling a harmful arthropod of the present invention comprises applying an effective amount of the harmful arthropod control composition of the present invention to a plant or an area in which a plant is grown. In the method for controlling a harmful arthropod of the present invention, typical examples of the present sheath blight disease control compound include those for the harmful arthropod control composition of the present invention.

The method for controlling a harmful arthropod of the present invention comprises applying, for example, the harmful arthropod control composition of the present invention to the stems and leaves of plants such as foliage application, or to an area in which a plant is grown such as soil application and submerged application.

When the harmful arthropod control composition of the present invention is applied to a plant or an area in which a plant is grown, the application amount may be an effective amount and vary depending on the kinds of plant to be protected, the species or population size of harmful arthropod to be controlled, the form of a formulation, the timing of application, weather conditions, etc., but is generally within a range from 0.5 to 3,000 g, preferably from 5 to 300 g per 1,000 m² of an area where a plant is grown. The "effective amount" used herein refers to an application amount necessary to control a harmful arthropod.

The harmful arthropod control composition of the present invention in the form of an emulsifiable concentrate, a wettable powder or a suspension concentrate is generally applied after dilution with water. In this case, the total concentration of flonicamid, the present insect growth regulator compound and the present sheath blight disease control compound is generally from 0.00001 to 10% by weight, preferably from 0.0001 to 5% by weight. The harmful arthropod control composition of the present invention in the form of a dust or a granule is generally applied as it is without dilution.

Examples of the plant to which the harmful arthropod control composition of the present invention can be applied include as described below:

Crops: corn, rice, wheat, barley, rye, oat, sorghum, cotton, soybean, peanut, buckwheat, sugar beet, rapeseed, sunflower, sugar cane, tobacco, etc.;

Vegetables: Solanaceae vegetables (eggplant, tomato, green pepper, hot pepper, potato, etc.), Cucurbitaceae vegetables (cucumber, pumpkin, zucchini, watermelon, melon, etc.), Cruciferae vegetables (rape, Japanese radish, turnip, horseradish, kohlrabi, Chinese cabbage, cabbage, brown mustard, broccoli, cauliflower, etc.), Compositae vegetables (burdock, garland chrysanthemum, artichoke, lettuce, etc.), Liliaceae vegetables (Welsh onion, onion, garlic, asparagus, etc.), Umbelliferae vegetables (carrot, parsley, celery, parsnip, etc.), Chenopodiaceae vegetables (spinach, Swiss chard, etc.), Labiatae vegetables (Japanese basil, mint, basil, etc.), strawberry, sweet potato, yam, aroid, etc.;

Fruit trees: pomaceous fruits (apple, common pear, Japanese pear, Chinese quince, quince, etc.), stone fleshy fruits (peach, plum, nectarine, Japanese plum, cherry, apricot, prune, etc.), citrus plants (Satsuma mandarin, orange, lemon, lime, grapefruit, etc.), nuts (chestnut, walnut, hazel nut, almond, pistachio, cashew nut, macadamia nut, etc.), berry fruits (blueberry, cranberry, blackberry, raspberry, etc.), grape, persimmon, olive, loquat, banana, coffee, date, coconut, oil palm, etc.;

Trees other than fruit trees: tea, mulberry, flowering trees (azalea, camellia, hydrangea, sasanqua, Japanese star anise, cherry, tulip tree, crape myrtle, orange osmanthus, etc.), street trees (ash tree, birch, dogwood, eucalyptus, ginkgo, lilac, maple tree, oak, poplar, cercis, Chinese sweet gum, plane tree, zelkova, Japanese arborvitae, fir tree, Japanese hemlock, needle juniper, pine, spruce, yew, elm, horse chestnut, etc.), coral tree, podocarpus, cedar, Japanese cypress, croton, *Euonymus japonicus*, *Photinia glabra*, etc.;

Lawns: *Zoysia* (*zoysiagrass*, *Zoysia matrella*, etc.), Bermuda grasses (*Cynodon dactylon*, etc.), bent grasses (*Agrostis alba*, creeping bent grass, inland bent, etc.), bluegrasses (meadow grass, bird grass, etc.), fescue (tall fescue, chewings fescue, creeping red fescue, etc.), ryegrasses (darnel, rye grass, etc.), orchard grass, timothy grass, etc.;

Others: flowers (rose, carnation, chrysanthemum, prairie gentian, gypsophila, gerbera, marigold, salvia, petunia, verbena, tulip, aster, gentian, lily, pansy, cyclamen, orchid, convallaria, lavender, stock, ornamental
5 cabbage, primula, poinsettia, gladiolus, cattleya, daisy, cymbidium, begonia, etc.), bio-fuel plants (Jatropha, safflower, camelina, switchgrass, Miscanthus, reed canary grass, giant reed, kenaf, cassava, willow, etc.), ornamental plants, etc.

10 Among the above plants, preferred are corn, wheat, rice, etc., and particularly preferred is rice.

 The method for controlling a harmful arthropod of the present invention can be carried out in agricultural lands such as fields, paddy fields, dry fields, lawns, and orchards
15 or nonagricultural lands.

 In the method for controlling a harmful arthropod of the present invention, the plant or the area in which a plant is grown is preferably rice or an area in which rice is grown.

20 The "plant" as used herein may be those having resistance, which is imparted by a genetic modification technology or a conventional breeding method.

Examples

25 Hereinafter, the present invention will be described in more detail with reference to Formulation Examples and Test Examples, but not limited thereto. In the Examples, the term "part(s)" means part(s) by weight unless otherwise specified.

 Firstly, Formulation Examples will be shown below.

30

Formulation Example 1

 Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 15 parts of flutolanil are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of
35 calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 39 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

40 Formulation Example 2

 Fifteen (15) parts of flonicamid, 5 parts of

methoxyfenozide and 16 parts of pencycuron are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 38 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 3

Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 7.5 parts of the present active compound (I) are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 4

Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 7.5 parts of furametpyr are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 5

Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 5 parts of validamycin A are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 49 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 6

Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 15 parts of flutolanil are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 36.5 parts of

diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 7

5 Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 16 parts of pencycuron are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 35.5 parts of
10 diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 8

15 Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 7.5 parts of the present active compound (I) are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 44 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed
20 with stirring to obtain a wettable powder.

Formulation Example 9

25 Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 7.5 parts of furametpyr are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 44 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed
30 with stirring to obtain a wettable powder.

Formulation Example 10

35 Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 5 parts of validamycin A are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

40 Formulation Example 11

 Fifteen (15) parts of flonicamid, 5 parts of

chromafenozide and 15 parts of flutolanil are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 39 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 12

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 16 parts of pencycuron are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 38 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 13

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 7.5 parts of the present active compound (I) are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 14

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 7.5 parts of furametpyr are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 15

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 5 parts of validamycin A are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 49 parts of diatomaceous

earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 16

5 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 2 parts of flutolanil, 86 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

10 Formulation Example 17

 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 1.5 parts of pencycuron, 86.5 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

15

Formulation Example 18

 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 0.75 parts of the present active compound (I), 87.25 parts of kaolin clay and 10 parts of talc are
20 finely-ground and mixed to obtain dusts.

Formulation Example 19

 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 0.75 parts of furametpyr, 87.25 parts of
25 kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

Formulation Example 20

 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 0.3 parts of validamycin A, 87.7 parts of
30 kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

Formulation Example 21

35 One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 2 parts of flutolanil, 85.75 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

40 Formulation Example 22

 One point five (1.5) parts of flonicamid, 0.75 parts of

tebufenozide, 1.5 parts of pencycuron, 85.25 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

5 Formulation Example 23

One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 0.75 parts of the present active compound (I), 87 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

10

Formulation Example 24

One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 0.75 parts of furametpyr, 87 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

15

Formulation Example 25

One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 0.3 parts of validamycin A, 87.45 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

20

Formulation Example 26

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 2 parts of flutolanil, 86 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

25

Formulation Example 27

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 1.5 parts of pencycuron, 86.5 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

30

35 Formulation Example 28

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 0.75 parts of the present active compound (I), 87.25 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

40

Formulation Example 29

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 0.75 parts of furametpyr, 87.25 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

5

Formulation Example 30

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 0.3 parts of validamycin A, 87.7 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

10

Formulation Example 31

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 10 parts of flutolanil, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate (= a mixture of white carbon:ammonium polyoxyethylene alkylether sulfate = 1:1 (weight ratio), the same shall apply hereinafter) and 49.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

15

20

Formulation Example 32

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 7.5 parts of pencycuron, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 52 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

25

Formulation Example 33

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 4 parts of the present active compound (I), 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

30

35

Formulation Example 34

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 4 parts of furametpyr, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground

40

by a wet grinding method to obtain a suspension concentrate.

Formulation Example 35

5 A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 5 parts of validamycin A, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 54.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

10 Formulation Example 36

A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 10 parts of flutolanil, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 47 parts of water is finely-ground by
15 a wet grinding method to obtain a suspension concentrate.

Formulation Example 37

A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 7.5 parts of pencycuron, 30 parts of white
20 carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 49.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 38

25 A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 4 parts of the present active compound (I), 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 53 parts of water is finely-ground by a wet grinding method to obtain a suspension
30 concentrate.

Formulation Example 39

A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 4 parts of furametpyr, 30 parts of white carbon
35 containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 53 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 40

40 A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 5 parts of validamycin A, 30 parts of white

carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 52 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

5 Formulation Example 41

A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 10 parts of flutolanil, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 49.5 parts of water is finely-ground
10 by a wet grinding method to obtain a suspension concentrate.

Formulation Example 41

A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 7.5 parts of pencycuron, 30 parts of white
15 carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 52 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 43

20 A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 4 parts of the present active compound (I), 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground by a wet grinding method to obtain a suspension
25 concentrate.

Formulation Example 44

A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 4 parts of furametpyr, 30 parts of white
30 carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 45

35 A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 5 parts of validamycin A, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 54.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.
40

Next, the effects of the present invention will be demonstrated below with reference to Test Examples.

Test Example 1 (Test for Insecticidal Activity on
5 *Rhopalosiphum padi*)

Each 30 mg of flonicamid, flutolanil, pencycuron and the present active compound (I) was dissolved in 0.3 ml of acetone (manufactured by Wako Pure Chemical Industries, Ltd.) containing SORGEN TW-20 (manufactured by Dai-ichi Kogyo
10 Seiyaku Co., Ltd.) and then diluted with water containing 0.02% by volume of a spreading agent [product name: Dain (registered trademark), manufactured by Sumitomo chemical garden products inc.] to a given concentration. Each 15
15 mg of methoxyfenozide, tebufenozide and chromafenozide was dissolved in 0.2 ml of acetone (manufactured by Wako Pure Chemical Industries, Ltd.) containing SORGEN TW-20 (manufactured by Dai-ichi Kogyo Seiyaku Co., Ltd.) and then diluted with water containing 0.02% by volume of a spreading agent [product name: Dain (registered trademark),
20 manufactured by Sumitomo chemical garden products inc.] to a given concentration.

The water dilution of flonicamid, the water dilution of methoxyfenozide, tebufenozide or chromafenozide, and the water dilution of flutolanil, pencycuron or the present
25 active compound (I) were mixed to prepare test solutions (compositions 1-9) having compositions shown in Table 1.

Each the test solution was sprayed onto a rice seedling (*Oryza sativa*, cultivar: Hoshinoyume) at the 2.5 leaf stage grown in a paper pot in an amount of 10 ml per a seedling.
30 This rice seedling was air-dried and then put into a glass test tube (diameter: 30 mm, height: 200 mm). One day after the spraying, 20 second to third-instar nymphs of *Rhopalosiphum padi* were released into the test tube, and then the tube was placed in a room (25°C, humidity 55%). Five (5)
35 days after releasing the tested nymphs, the insects were observed for life or death, and the number of surviving insects was counted. For each treatment, there were 2 replicates. The average values are shown in Table 1.

Table 1

Composition Number	Test Compounds	Concentration [ppm]	Number of Surviving Insects [head]
1	flonicamid methoxyfenozide flutolanil	20 5 20	0
2	flonicamid tebufenozide flutolanil	20 10 20	0
3	flonicamid chromafenozide flutolanil	20 5 20	0
4	flonicamid methoxyfenozide pencycuron	20 5 20	0
5	flonicamid tebufenozide pencycuron	20 10 20	0
6	flonicamid chromafenozide pencycuron	20 5 20	0
7	flonicamid methoxyfenozide The present active compound (I)	20 5 20	0
8	flonicamid tebufenozide The present active compound (I)	20 10 20	0
9	flonicamid chromafenozide The present active compound (I)	20 5 20	0
Untreated	-	-	21

Industrial Applicability

5 According to the present invention, it is possible to control harmful arthropods.

CLAIMS

1. A harmful arthropod control composition comprising
flonicamid, one or more insect growth regulator compounds
5 selected from Group (A), and one or more sheath blight
disease control compounds selected from Group (B):
Group (A): a group consisting of methoxyfenozide,
tebufenozide, and chromafenozide;
Group (B): a group consisting of flutolanil, pencycuron, N-
10 [2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-
pyrazole-4-carboxamide, furametpyr and validamycin A.
2. The harmful arthropod control composition according to
claim 1, wherein the weight ratio of flonicamid to the insect
15 growth regulator compound is from 50:1 to 1:10.
3. The harmful arthropod control composition according to
claim 2, wherein the weight ratio of flonicamid to the sheath
blight disease control compound is from 100:1 to 1:100.
20
4. The harmful arthropod control composition according to any
one of claims 1 to 3, wherein the sheath blight disease
control compound is flutolanil, pencycuron, or N-[2-(1,3-
dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-
25 carboxamide.
5. A method for controlling a harmful arthropod, which
comprises applying an effective amount of the harmful
arthropod control composition according to any one of claims
30 1 to 4 to a plant or an area in which a plant is grown.
6. The method for controlling a harmful arthropod according
to claim 5, wherein the plant or the area in which a plant is
grown is rice or an area in which rice is grown.

ABSTRACT

A harmful arthropod control composition comprising
flonicamid, one or more insect growth regulator compounds
5 selected from Group (A), and one or more sheath blight
disease control compounds selected from Group (B):
Group (A): a group consisting of methoxyfenozide,
tebufenozide, and chromafenozide;
Group (B): a group consisting of flutolanil, pencycuron, N-
10 [2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-
pyrazole-4-carboxamide, furametpyr and validamycin A,
and having an excellent control effect on harmful arthropods.

DESCRIPTION

COMPOSITION FOR PREVENTING/CONTROLLING HARMFUL ARTHROPODS AND
METHOD FOR PREVENTING/CONTROLLING HARMFUL ARTHROPODS

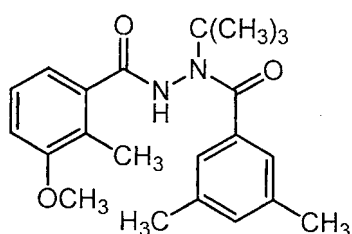
Technical Field

The present invention relates to a harmful arthropod control composition and a method for controlling a harmful arthropod.

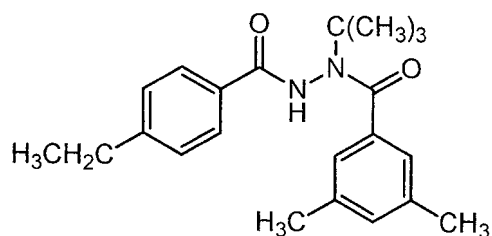
Background Art

Heretofore, various compounds are known as active ingredients in harmful arthropod control compositions (see, for example, The Pesticide Manual-15th edition (published by BCPC); ISBN 978-1-901396-18-8).

Methoxyfenozide:

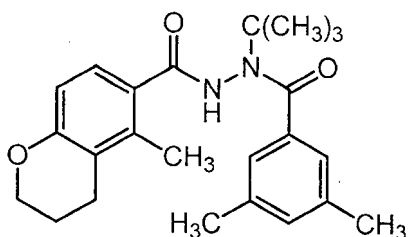


tebufenozide:



, and

chromafenozide:



are known as insect growth regulator compounds.

Disclosure of Invention

The present invention includes the following [1] to [6]:

[1] A harmful arthropod control composition comprising flonicamid, one or more insect growth regulator compounds selected from Group (A), and one or more sheath blight disease control compounds selected from Group (B):

5 Group (A): a group consisting of methoxyfenozide, tebufenozide, and chromafenozide.

Group (B): a group consisting of flutolanil, pencycuron, N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, furametpyr and validamycin A.

10 [2] The harmful arthropod control composition according to the above [1], wherein the weight ratio of flonicamid to the insect growth regulator compound is from 50:1 to 1:10.

[3] The harmful arthropod control composition according to the above [2], wherein the weight ratio of flonicamid to the sheath blight disease control compound is from 100:1 to 1:100.

15 [4] The harmful arthropod control composition according to any one of the above [1] to [3], wherein the sheath blight disease control compound is flutolanil, pencycuron, or N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide.

[5] A method for controlling a harmful arthropod, which comprises applying an effective amount of the harmful arthropod control composition according to any one of the above [1] to [4] to a plant or an area in which a plant is grown.

25 [6] The method for controlling a harmful arthropod according to the above [5], wherein the plant or the area in which a plant is grown is rice or an area in which rice is grown.

30

Mode for Carrying out the Invention

The harmful arthropod control composition of the present invention comprises flonicamid, one or more insect growth regulator compounds selected from the following Group (A) (hereinafter sometimes referred to as "the present insect growth regulator compound"), and one or more sheath blight disease control compounds selected from the following Group (B) (hereinafter sometimes referred to as "the present sheath blight disease control compound").

35 40 Group (A): a group consisting of methoxyfenozide, tebufenozide, and chromafenozide;

Group (B): a group consisting of flutolanil, pencycuron, N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide, furametpyr and validamycin A.

Flonicamid is a known compound and can be obtained, for example, by a method described in JP 2994182 B.

All of methoxyfenozide, tebufenozide, chromafenozide, flutolanil, pencycuron, furametpyr and validamycin A are known compounds, and described, for example, at pages 764, 1074, 211, 559, 871, 580 and 1187 of "The Pesticide Manual-15th edition (published by BCPC); ISBN 978-1-901396-18-8". These compounds can be obtained from commercial sources or produced by known methods.

N-[2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-carboxamide (hereinafter referred to as "the present active compound (I)") is a known compound, and can be obtained by, for example, a method described in WO 2003/010149.

Typical Examples of the sheath blight disease control compound include flutolanil, pencycuron and the present active compound (I).

In the harmful arthropod control composition of the present invention, the weight ratio of flonicamid to the present insect growth regulator compound (= flonicamid:insect growth regulator compound) is generally from 500:1 to 1:100, preferably from 50:1 to 1:10, more preferably from 20:1 to 1:10.

In the harmful arthropod control composition of the present invention, the weight ratio of flonicamid to the present sheath blight disease control compound (= flonicamid:sheath blight disease control compound) is generally from 1000:1 to 1:1000, preferably from 100:1 to 1:100, more preferably from 50:1 to 1:50.

In the harmful arthropod control composition of the present invention, the weight ratio of flonicamid, the present insect growth regulator compound, and the present sheath blight disease control compound is not particularly limited. However, the present insect growth regulator compound is generally from 0.2 to 10000 parts by weight, preferably from 2 to 1000 parts by weight, and the present sheath blight disease control compound is generally from 0.1 to 100000 parts by weight, preferably from 1 to 10000 parts

by weight, relative to 100 parts by weight of flonicamid.

The harmful arthropod control composition of the present invention may be prepared by simply mixing flonicamid, the present insect growth regulator compound, and the present sheath blight disease control compound, or by mixing flonicamid, the present insect growth regulator compound and the present sheath blight disease control compound and an inert carrier, and if necessary, a surfactant and/or other formulation additives, and then formulating the mixture into a formulation such as an oil solution, an emulsifiable concentrate, a suspension concentrate, a wettable powder, a water dispersible granule, a dust, or a granule.

Thus formulated harmful arthropod control composition may be used directly, or after the addition of other inert ingredients such as water, sand and vegetable oil, as a harmful arthropod control agent.

The total amount of flonicamid, the present insect growth regulator compound and the present sheath blight disease control compound in the harmful arthropod control composition of the present invention is generally from 0.01 to 99% by weight, preferably from 0.1 to 90% by weight, more preferably from 0.5 to 70% by weight.

Examples of the inert carrier include solid carriers and liquid carriers.

Examples of the solid carrier to be used for formulation of the harmful arthropod control composition include fine powders or granules of minerals (e.g., kaolin clay, attapulgite clay, bentonite, montmorillonite, acidic white clay, pyrophyllite, talc, diatomaceous earth, and calicite); natural organic substances (e.g., corncob flour, and walnut shell flour), synthetic organic substances (e.g., urea); salts (e.g., calcium carbonate, and ammonium sulfate); and synthetic inorganic substances (e.g., synthetic hydrated silicon oxide). Examples of the liquid carrier include aromatic hydrocarbons (e.g., xylene, alkylbenzene, and methyl naphthalene); alcohols (e.g., 2-propanol, ethylene glycol, propylene glycol, and ethylene glycol monoethyl ether); ketones (e.g., acetone, cyclohexanone, and isophorone); vegetable oils (e.g., soybean oil, and cotton oil); petroleum-based aliphatic hydrocarbons; esters;

dimethylsulfoxide; acetonitrile; and water.

Examples of the surfactant include anionic surfactants (e.g., alkyl sulfate ester salts, alkylaryl sulfonates, dialkyl sulfosuccinates, polyoxyethylene alkylaryl ether phosphate ester salts, ligninsulfonates, and naphthalene sulfonate formaldehyde polycondensates), nonionic surfactants (e.g., polyoxyethylene alkylaryl ethers, polyoxyethylene alkylpolyoxypropylene block copolymers, and sorbitan fatty acid esters), and cationic surfactants (e.g., alkyl trimethyl ammonium salts).

Examples of the other formulation additive include water-soluble polymers (e.g., polyvinyl alcohol, and polyvinyl pyrrolidone), polysaccharides [e.g., gum arabic, alginic acid and salts thereof, CMC (carboxymethyl cellulose), and xanthane gum], inorganic substances (e.g., aluminum magnesium silicate, and alumina-sol), preservatives, colorants, and stabilizers [e.g. isopropyl acid phosphate (PAP), and BHT].

The harmful arthropod control composition of the present invention can be used for protecting plants from damage due to eating or sucking by harmful arthropods such as harmful insects and harmful ticks.

Examples of the harmful arthropod on which the harmful arthropod control composition of the present invention has a controlling effect include as described below:

Hemiptera: Delphacidae such as *Laodelphax striatellus*, *Nilaparvata lugens*, and *Sogatella furcifera*; Deltoccephalidae such as *Nephotettix cincticeps*, *Nephotettix virescens*, *Recilia dorsalis*, and *Empoasca onukii*; Aphididae such as *Aphis gossypii*, *Myzus persicae*, *Brevicoryne brassicae*, *Aphis spiraecola*, *Macrosiphum euphorbiae*, *Aulacorthum solani*, *Rhopalosiphum padi*, *Toxoptera citricidus*, *Hyalopterus pruni*, and *Eriosoma lanigerum*; Pentatomidae such as *Nezara antennata*, *Trigonotylus caelestialium*, *Graphosoma rubrolineatum*, *Eysarcoris lewisi*, *Riptortus clavetus*, *Leptocorisa chinensis*, *Eysarcoris parvus*, *Halyomorpha mista*, *Nezara viridula*, and *Lygus lineolaris*; Aleyrodidae such as *Trialeurodes vaporariorum*, *Bemisia tabaci*, *Dialeurodes citri*, and *Aleurocanthus spiniferus*; Coccoidea such as *Aonidiella aurantii*, *Comstockaspis perniciosus*, *Unaspis citri*, *Ceroplastes rubens*, *Icerya purchasi*, *Planococcus kraunhiae*,

Pseudococcus longispinis, and *Pseudaulacaspis pentagona*; Tingidae; Cimicoidea such as *Cimex lectularius*; Psyllidae such as *Cacopsylla pyricola*; etc.

- Lepidoptera: Pyralidae such as *Chilo suppressalis*,
 5 *Tryporyza incertulas*, *Cnaphalocrocis medinalis*, *Notarcha derogata*, *Plodia interpunctella*, *Ostrinia furnacalis*, *Hellula undalis*, and *Pediasia teterrellus*; Noctuidae such as
Spodoptera litura, *Spodoptera exigua*, *Pseudaletia separata*,
Mamestra brassicae, *Agrotis ipsilon*, *Plusia nigrisigna*,
 10 *Trichoplusia ni*, *Thoricoplusia* spp., *Heliothis* spp., and
Helicoverpa spp.; Pieridae such as *Pieris rapae*; Tortricidae
 such as *Adoxophyes* spp., *Grapholita molesta*, *Leguminivora glycinivorella*, *Matsumuraeses azukivora*, *Adoxophyes orana fasciata*, *Adoxophyes honmai*., *Homona magnanima*, *Archips*
 15 *fuscocupreanus*, and *Cydia pomonella*; Gracillariidae such as
Caloptilia theivora, and *Phyllonorycter ringoneella*;
 Carposinidae such as *Carposina niponensis*; Lyonetiidae such
 as *Lyonetia* spp.; Lymantriidae such as *Lymantria* spp., and
Euproctis spp.; Yponomeutidae such as *Plutella xylostella*;
 20 Gelechiidae such as *Pectinophora gossypiella*, and *Phthorimaea operculella*; Arctiidae such as *Hyphantria cunea*; Tineidae
 such as *Tinea translucens*, and *Tineola bisselliella*; *Tuta absoluta*; etc.

- Thysanoptera: Thripidae such as *Frankliniella*
 25 *occidentalis*, *Thrips parvi*, *Scirtothrips dorsalis*, *Thrips tabaci*, *Frankliniella intonsa*, *Frankliniella fusca*, *Thrips tabaci*, *Stenchaetothrips biformis*, and *Haplothrips aculeatus*;
 etc.

- Among the above harmful arthropods, preferred are
 30 Hemiptera such as Delphacidae, Deltocephalidae, Aphididae, and Pentatomidae; Lepidoptera such as Pyralidae, and Noctuidae, and more preferred are Hemiptera (e.g., Delphacidae, Aphididae, etc.).

- The harmful arthropod control composition of the
 35 present invention may be used for controlling plant diseases such as rice sheath blight disease caused by *Rhizoctonia solani*.

- The harmful arthropod control composition of the
 present invention can be applied to a plant or an area in
 40 which a plant is grown to control harmful arthropods therein.
 The plant as used herein include the stems and leaves of

plants, the flowers of plants, the fruits of plants, the seeds of plants, etc.

The method for controlling a harmful arthropod of the present invention comprises applying an effective amount of the harmful arthropod control composition of the present invention to a plant or an area in which a plant is grown. In the method for controlling a harmful arthropod of the present invention, typical examples of the present sheath blight disease control compound include those for the harmful arthropod control composition of the present invention.

The method for controlling a harmful arthropod of the present invention comprises applying, for example, the harmful arthropod control composition of the present invention to the stems and leaves of plants such as foliage application, or to an area in which a plant is grown such as soil application and submerged application.

When the harmful arthropod control composition of the present invention is applied to a plant or an area in which a plant is grown, the application amount may be an effective amount and vary depending on the kinds of plant to be protected, the species or population size of harmful arthropod to be controlled, the form of a formulation, the timing of application, weather conditions, etc., but is generally within a range from 0.5 to 3,000 g, preferably from 5 to 300 g per 1,000 m² of an area where a plant is grown. The "effective amount" used herein refers to an application amount necessary to control a harmful arthropod.

The harmful arthropod control composition of the present invention in the form of an emulsifiable concentrate, a wettable powder or a suspension concentrate is generally applied after dilution with water. In this case, the total concentration of flonicamid, the present insect growth regulator compound and the present sheath blight disease control compound is generally from 0.00001 to 10% by weight, preferably from 0.0001 to 5% by weight. The harmful arthropod control composition of the present invention in the form of a dust or a granule is generally applied as it is without dilution.

Examples of the plant to which the harmful arthropod control composition of the present invention can be applied include as described below:

Crops: corn, rice, wheat, barley, rye, oat, sorghum, cotton, soybean, peanut, buckwheat, sugar beet, rapeseed, sunflower, sugar cane, tobacco, etc.;

Vegetables: Solanaceae vegetables (eggplant, tomato, green pepper, hot pepper, potato, etc.), Cucurbitaceae vegetables (cucumber, pumpkin, zucchini, watermelon, melon, etc.), Cruciferae vegetables (rape, Japanese radish, turnip, horseradish, kohlrabi, Chinese cabbage, cabbage, brown mustard, broccoli, cauliflower, etc.), Compositae vegetables (burdock, garland chrysanthemum, artichoke, lettuce, etc.), Liliaceae vegetables (Welsh onion, onion, garlic, asparagus, etc.), Umbelliferae vegetables (carrot, parsley, celery, parsnip, etc.), Chenopodiaceae vegetables (spinach, Swiss chard, etc.), Labiatae vegetables (Japanese basil, mint, basil, etc.), strawberry, sweet potato, yam, aroid, etc.;

Fruit trees: pomaceous fruits (apple, common pear, Japanese pear, Chinese quince, quince, etc.), stone fleshy fruits (peach, plum, nectarine, Japanese plum, cherry, apricot, prune, etc.), citrus plants (Satsuma mandarin, orange, lemon, lime, grapefruit, etc.), nuts (chestnut, walnut, hazel nut, almond, pistachio, cashew nut, macadamia nut, etc.), berry fruits (blueberry, cranberry, blackberry, raspberry, etc.), grape, persimmon, olive, loquat, banana, coffee, date, coconut, oil palm, etc.;

Trees other than fruit trees: tea, mulberry, flowering trees (azalea, camellia, hydrangea, sasanqua, Japanese star anise, cherry, tulip tree, crape myrtle, orange osmanthus, etc.), street trees (ash tree, birch, dogwood, eucalyptus, ginkgo, lilac, maple tree, oak, poplar, cercis, Chinese sweet gum, plane tree, zelkova, Japanese arborvitae, fir tree, Japanese hemlock, needle juniper, pine, spruce, yew, elm, horse chestnut, etc.), coral tree, podocarpus, cedar, Japanese cypress, croton, *Euonymus japonicus*, *Photinia glabra*, etc.;

Lawns: *Zoysia* (*zoysiagrass*, *Zoysia matrella*, etc.), Bermuda grasses (*Cynodon dactylon*, etc.), bent grasses (*Agrostis alba*, creeping bent grass, hilland bent, etc.), bluegrasses (meadow grass, bird grass, etc.), fescue (tall fescue, chewings fescue, creeping red fescue, etc.), ryegrasses (darnel, rye grass, etc.), orchard grass, timothy grass, etc.;

Others: flowers (rose, carnation, chrysanthemum, prairie gentian, gypsophila, gerbera, marigold, salvia, petunia, verbena, tulip, aster, gentian, lily, pansy, cyclamen, orchid, convallaria, lavender, stock, ornamental
5 cabbage, primula, poinsettia, gladiolus, cattleya, daisy, cymbidium, begonia, etc.), bio-fuel plants (Jatropha, safflower, camelina, switchgrass, Miscanthus, reed canary grass, giant reed, kenaf, cassava, willow, etc.), ornamental plants, etc.

10 Among the above plants, preferred are corn, wheat, rice, etc., and particularly preferred is rice.

 The method for controlling a harmful arthropod of the present invention can be carried out in agricultural lands such as fields, paddy fields, dry fields, lawns, and orchards
15 or nonagricultural lands.

 In the method for controlling a harmful arthropod of the present invention, the plant or the area in which a plant is grown is preferably rice or an area in which rice is grown.

20 The "plant" as used herein may be those having resistance, which is imparted by a genetic modification technology or a conventional breeding method.

Examples

25 Hereinafter, the present invention will be described in more detail with reference to Formulation Examples and Test Examples, but not limited thereto. In the Examples, the term "part(s)" means part(s) by weight unless otherwise specified.

 Firstly, Formulation Examples will be shown below.

30

Formulation Example 1

 Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 15 parts of flutolanil are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of
35 calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 39 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

40 Formulation Example 2

 Fifteen (15) parts of flonicamid, 5 parts of

methoxyfenozide and 16 parts of pencycuron are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 38 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 3

Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 7.5 parts of the present active compound (I) are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 4

Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 7.5 parts of furametpyr are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 5

Fifteen (15) parts of flonicamid, 5 parts of methoxyfenozide and 5 parts of validamycin A are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 49 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 6

Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 15 parts of flutolanil are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 36.5 parts of

diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 7

5 Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 16 parts of pencycuron are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 35.5 parts of
10 diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 8

Fifteen (15) parts of flonicamid, 7.5 parts of
15 tebufenozide and 7.5 parts of the present active compound (I) are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 44 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed
20 with stirring to obtain a wettable powder.

Formulation Example 9

Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 7.5 parts of furametpyr are added to a
25 mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 44 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

30

Formulation Example 10

Fifteen (15) parts of flonicamid, 7.5 parts of tebufenozide and 5 parts of validamycin A are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of
35 calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

40 Formulation Example 11

Fifteen (15) parts of flonicamid, 5 parts of

chromafenozide and 15 parts of flutolanil are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 39 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 12

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 16 parts of pencycuron are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 38 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 13

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 7.5 parts of the present active compound (I) are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 14

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 7.5 parts of furametryr are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 46.5 parts of diatomaceous earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 15

Fifteen (15) parts of flonicamid, 5 parts of chromafenozide and 5 parts of validamycin A are added to a mixture of 4 parts of sodium lauryl sulfate, 2 parts of calcium lignosulfonate, 20 parts of a fine powder of synthetic hydrated silicon oxide and 49 parts of diatomaceous

earth, and then the resultant mixture is sufficiently mixed with stirring to obtain a wettable powder.

Formulation Example 16

- 5 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 2 parts of flutolanil, 86 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

10 Formulation Example 17

 One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 1.5 parts of pencycuron, 86.5 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

15

Formulation Example 18

- One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 0.75 parts of the present active compound (I), 87.25 parts of kaolin clay and 10 parts of talc are
20 finely-ground and mixed to obtain dusts.

Formulation Example 19

- One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 0.75 parts of furametpyr, 87.25 parts of
25 kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

Formulation Example 20

- One point five (1.5) parts of flonicamid, 0.5 parts of methoxyfenozide, 0.3 parts of validamycin A, 87.7 parts of
30 kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

Formulation Example 21

- 35 One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 2 parts of flutolanil, 85.75 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

40 Formulation Example 22

 One point five (1.5) parts of flonicamid, 0.75 parts of

tebufenozide, 1.5 parts of pencycuron, 85.25 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

5 Formulation Example 23

One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 0.75 parts of the present active compound (I), 87 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

10

Formulation Example 24

One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 0.75 parts of furametpyr, 87 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

15

Formulation Example 25

One point five (1.5) parts of flonicamid, 0.75 parts of tebufenozide, 0.3 parts of validamycin A, 87.45 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

20

Formulation Example 26

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 2 parts of flutolanil, 86 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

25

Formulation Example 27

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 1.5 parts of pencycuron, 86.5 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

30

35 Formulation Example 28

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 0.75 parts of the present active compound (I), 87.25 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

40

Formulation Example 29

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 0.75 parts of furametpyr, 87.25 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

5

Formulation Example 30

One point five (1.5) parts of flonicamid, 0.5 parts of chromafenozide, 0.3 parts of validamycin A, 87.7 parts of kaolin clay and 10 parts of talc are finely-ground and mixed to obtain dusts.

10

Formulation Example 31

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 10 parts of flutolanil, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate (= a mixture of white carbon:ammonium polyoxyethylene alkylether sulfate = 1:1 (weight ratio), the same shall apply hereinafter) and 49.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

15

20

Formulation Example 32

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 7.5 parts of pencycuron, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 52 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

25

Formulation Example 33

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 4 parts of the present active compound (I), 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

30

35

Formulation Example 34

A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 4 parts of furametpyr, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground

40

by a wet grinding method to obtain a suspension concentrate.

Formulation Example 35

5 A mixture of 8 parts of flonicamid, 2.5 parts of methoxyfenozide, 5 parts of validamycin A, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 54.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

10 Formulation Example 36

A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 10 parts of flutolanil, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 47 parts of water is finely-ground by
15 a wet grinding method to obtain a suspension concentrate.

Formulation Example 37

A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 7.5 parts of pencycuron, 30 parts of white
20 carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 49.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 38

25 A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 4 parts of the present active compound (I), 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 53 parts of water is finely-ground by a wet grinding method to obtain a suspension
30 concentrate.

Formulation Example 39

A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 4 parts of furametpyr, 30 parts of white carbon
35 containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 53 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 40

40 A mixture of 8 parts of flonicamid, 5 parts of tebufenozide, 5 parts of validamycin A, 30 parts of white

carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 52 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

5 Formulation Example 41

A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 10 parts of flutolanil, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 49.5 parts of water is finely-ground
10 by a wet grinding method to obtain a suspension concentrate.

Formulation Example 41

A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 7.5 parts of pencycuron, 30 parts of white
15 carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 52 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 43

20 A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 4 parts of the present active compound (I), 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground by a wet grinding method to obtain a suspension
25 concentrate.

Formulation Example 44

A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 4 parts of furametpyr, 30 parts of white
30 carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 55.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.

Formulation Example 45

35 A mixture of 8 parts of flonicamid, 2.5 parts of chromafenozide, 5 parts of validamycin A, 30 parts of white carbon containing 50 parts of ammonium polyoxyethylene alkylether sulfate and 54.5 parts of water is finely-ground by a wet grinding method to obtain a suspension concentrate.
40

Next, the effects of the present invention will be demonstrated below with reference to Test Examples.

Test Example 1 (Test for Insecticidal Activity on
5 *Rhopalosiphum padi*)

Each 30 mg of flonicamid, flutolanil, pencycuron and the present active compound (I) was dissolved in 0.3 ml of acetone (manufactured by Wako Pure Chemical Industries, Ltd.) containing SORGEN TW-20 (manufactured by Dai-ichi Kogyo
10 Seiyaku Co., Ltd.) and then diluted with water containing 0.02% by volume of a spreading agent [product name: Dain (registered trademark), manufactured by Sumitomo chemical garden products inc.] to a given concentration. Each 15
15 mg of methoxyfenozide, tebufenozide and chromafenozide was dissolved in 0.2 ml of acetone (manufactured by Wako Pure Chemical Industries, Ltd.) containing SORGEN TW-20 (manufactured by Dai-ichi Kogyo Seiyaku Co., Ltd.) and then diluted with water containing 0.02% by volume of a spreading agent [product name: Dain (registered trademark),
20 manufactured by Sumitomo chemical garden products inc.] to a given concentration.

The water dilution of flonicamid, the water dilution of methoxyfenozide, tebufenozide or chromafenozide, and the water dilution of flutolanil, pencycuron or the present
25 active compound (I) were mixed to prepare test solutions (compositions 1-9) having compositions shown in Table 1.

Each the test solution was sprayed onto a rice seedling (*Oryza sativa*, cultivar: Hoshinoyume) at the 2.5 leaf stage grown in a paper pot in an amount of 10 ml per a seedling.
30 This rice seedling was air-dried and then put into a glass test tube (diameter: 30 mm, height: 200 mm). One day after the spraying, 20 second to third-instar nymphs of *Rhopalosiphum padi* were released into the test tube, and then the tube was placed in a room (25°C, humidity 55%). Five (5)
35 days after releasing the tested nymphs, the insects were observed for life or death, and the number of surviving insects was counted. For each treatment, there were 2 replicates. The average values are shown in Table 1.

Table 1

Composition Number	Test Compounds	Concentration [ppm]	Number of Surviving Insects [head]
1	flonicamid	20	0
	methoxyfenozide	5	
	flutolanil	20	
2	flonicamid	20	0
	tebufenozide	10	
	flutolanil	20	
3	flonicamid	20	0
	chromafenozide	5	
	flutolanil	20	
4	flonicamid	20	0
	methoxyfenozide	5	
	pencycuron	20	
5	flonicamid	20	0
	tebufenozide	10	
	pencycuron	20	
6	flonicamid	20	0
	chromafenozide	5	
	pencycuron	20	
7	flonicamid	20	0
	methoxyfenozide	5	
	The present active compound (I)	20	
8	flonicamid	20	0
	tebufenozide	10	
	The present active compound (I)	20	
9	flonicamid	20	0
	chromafenozide	5	
	The present active compound (I)	20	
Untreated	-	-	21

Industrial Applicability

5 According to the present invention, it is possible to control harmful arthropods.

CLAIMS

1. A harmful arthropod control composition comprising
flonicamid, one or more insect growth regulator compounds
5 selected from Group (A), and one or more sheath blight
disease control compounds selected from Group (B):
Group (A): a group consisting of methoxyfenozide,
tebufenozide, and chromafenozide;
Group (B): a group consisting of flutolanil, pencycuron, N-
10 [2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-
pyrazole-4-carboxamide, furametpyr and validamycin A.
2. The harmful arthropod control composition according to
claim 1, wherein the weight ratio of flonicamid to the insect
15 growth regulator compound is from 50:1 to 1:10.
3. The harmful arthropod control composition according to
claim 2, wherein the weight ratio of flonicamid to the sheath
blight disease control compound is from 100:1 to 1:100.
20
4. The harmful arthropod control composition according to any
one of claims 1 to 3, wherein the sheath blight disease
control compound is flutolanil, pencycuron, or N-[2-(1,3-
dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-pyrazole-4-
25 carboxamide.
5. A method for controlling a harmful arthropod, which
comprises applying an effective amount of the harmful
arthropod control composition according to any one of claims
30 1 to 4 to a plant or an area in which a plant is grown.
6. The method for controlling a harmful arthropod according
to claim 5, wherein the plant or the area in which a plant is
grown is rice or an area in which rice is grown.

ABSTRACT

A harmful arthropod control composition comprising
flonicamid, one or more insect growth regulator compounds
5 selected from Group (A), and one or more sheath blight
disease control compounds selected from Group (B):
Group (A): a group consisting of methoxyfenozide,
tebufenozide, and chromafenozide;
Group (B): a group consisting of flutolanil, pencycuron, N-
10 [2-(1,3-dimethylbutyl)phenyl]-5-fluoro-1,3-dimethyl-1H-
pyrazole-4-carboxamide, furametpyr and validamycin A,
and having an excellent control effect on harmful arthropods.

**COMPOSICIÓN PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS Y
MÉTODO PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS**

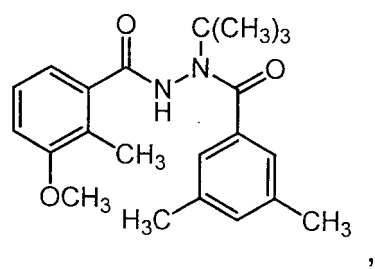
CAMPO TÉCNICO

5 La presente invención se refiere a una composición de control de artrópodos dañinos y a un método para controlar un artrópodo dañino.

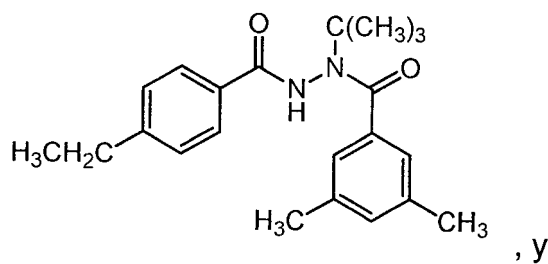
ANTECEDENTES DEL ARTE

Hasta ahora, se conocen diversos compuestos como ingredientes activos en
10 composiciones para el control de artrópodos dañinos (ver, por ejemplo, The Pesticide Manual-15th edition (published by BCPC); ISBN 978-1-901396-18-8).

Metoxifenozone:

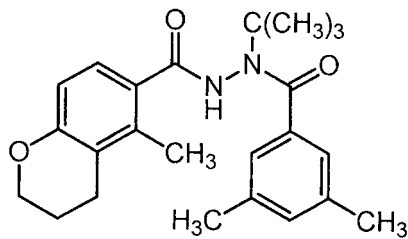


tebufenozide:



15

cromafenozide:



Se conocen como compuestos que regulan el crecimiento de insectos.

5 DESCRIPCIÓN DE LA INVENCION

La presente invención incluye los siguientes [1] a [6]:

[1] Una composición de control de artrópodos dañinos que comprende flonicamid, uno o más compuestos reguladores del crecimiento de insectos seleccionados del Grupo (A), y uno o más compuestos que controlan la enfermedad de la plaga de la vaina seleccionado del Grupo (B):

Grupo (A): un grupo que consiste de metoxifenozide, tebufenozide, y cromafenozide.

Grupo (B): un grupo que consiste de flutolanil, pencycuron, N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, furametpir y validamycin A.

[2] La composición de control de artrópodos dañinos de acuerdo con el anterior numeral [1], en la que la relación en peso de flonicamid al compuesto regulador de

crecimiento de insectos es de 50:1 a 1:10.

[3] La composición de control de artrópodos dañinos de acuerdo con el anterior numeral [2], en la que la relación en peso de flonicamid al compuesto de control de la enfermedad plaga de la vaina es de 100:1 a 1:100.

5

[4] La composición de control de artrópodos dañinos de cualquiera de los anteriores numerales [1] a [3], en la que el compuesto de control de la enfermedad plaga de la vaina es flutolanil, pencycuron, o N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida.

10

[5] Un método para controlar un artrópodo dañino, que comprende aplicar una cantidad eficaz de la composición de control de artrópodos dañinos de acuerdo con cualquiera de los anteriores [1] a [4] a una planta o un área en la cual se cultiva una planta.

15

[6] El método para controlar un artrópodo dañino de acuerdo con el anterior numeral [5], en el que la planta o el área en la cual crece la planta es arroz o un área donde se cultiva arroz.

MODO DE LLEVAR A CABO LA INVENCION

20

La composición de control de artrópodos dañinos de la presente invención

comprende flonicamid, uno o más compuestos reguladores del crecimiento de insectos seleccionados del siguiente Grupo (A) (en lo sucesivo referido algunas veces como "el compuesto regulador del crecimiento de insectos presente"), y uno o más compuestos de control de la enfermedad plaga de la vaina seleccionados del siguiente Grupo (B) (en lo sucesivo referido algunas veces como "el compuesto de control de la enfermedad plaga de la vaina presente").

Grupo (A): un grupo que consiste de metoxifenozone, tebufenozone, y cromafenozone;

Grupo (B): un grupo que consiste de flutolanil, pencycuron, N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, furametpir y validamycin A.

El Flonicamid es un compuesto conocido y se puede obtener, por ejemplo, por un método descrito en el documento JP 2994182 B.

15

Todos los compuestos metoxifenozone, tebufenozone, cromafenozone, flutolanil, pencycuron, furametpir y validamycin A son compuestos conocidos, y se describen, por ejemplo, en las páginas 764, 1074, 211, 559, 871, 580 y 1187 del "The Pesticide Manual-15th edition (published by BCPC); ISBN 978-1-901396-18-8". Estos compuestos se pueden obtener de fuentes comerciales o producirse por

20

métodos conocidos.

La N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida (En lo sucesivo referida como "el presente compuesto activo (I)") es un compuesto conocido, y se puede obtener, por ejemplo, mediante un método descrito en WO 2003/010149.

Ejemplos típicos del compuesto de control de la enfermedad plaga de la vaina incluyen flutolanil, pencycuron y el presente compuesto activo (I).

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En la composición de control de artrópodos dañinos de la presente invención, la relación en peso de flonicamid al compuesto regulador del crecimiento de insectos presente (= flonicamid: compuesto regulador del crecimiento de insectos) es generalmente de 500:1 a 1:100, preferiblemente de 50:1 a 1:10, más preferiblemente de 20:1 a 1:10.

En la composición de control de artrópodos dañinos de la presente invención, la relación en peso de flonicamid al compuesto de control presente de la enfermedad plaga de la vaina (= flonicamid: compuesto de control de la enfermedad plaga de la vaina) es generalmente de 1000:1 a 1:1000,

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preferiblemente de 100:1 a 1:100, más preferiblemente de 50:1 a 1:50.

En la composición de control de artrópodos dañinos de la presente invención, la relación en peso de flonicamid, el compuesto regulador de crecimiento de insectos presente, y el compuesto de control de la enfermedad plaga de la vaina no está particularmente limitada. Sin embargo, el compuesto regulador del crecimiento de insectos presente, y el compuesto de control de la enfermedad plaga de la vaina presente es generalmente de 0.2 a 10000 partes en peso, preferiblemente de 2 a 1000, y el compuesto de control presente es generalmente de 0.1 a 100000 partes en peso, preferiblemente de 1 a 10000 partes en peso, relativo a 100 partes en peso de flonicamid.

La composición de control de artrópodos dañinos de la presente invención se puede preparar simplemente mezclando flonicamid, el compuesto regulador del crecimiento de insectos presente, y el compuesto de control de la enfermedad plaga de la vaina presente, o mezclando flonicamid, el compuesto regulador del crecimiento de insectos presente y el compuesto de control de la enfermedad plaga de la vaina presente y un vehículo inerte, y si es necesario, un tensoactivo y/u otros aditivos de formulación, y luego formulando la mezcla en una formulación tal como una solución oleosa, un concentrado emulsionable, una suspensión

concentrada, un polvo humectable, un gránulo dispersable en agua, un polvo, o un gránulo.

La composición de control de artrópodos dañinos así formulada se puede
5 usar directamente, o después de la adición de otros ingredientes inertes tales como agua, arena y aceite vegetal, como un agente de control de artrópodos dañinos.

La cantidad total de flonicamid, el compuesto regulador del crecimiento de
10 insectos presente y el compuesto de control de la enfermedad plaga de la vaina presente en la composición de control de artrópodos dañinos de la presente invención es generalmente de 0.01 a 99% en peso, preferiblemente de 0.1 a 90% en peso, más preferiblemente de 0.5 a 70% en peso.

15 Ejemplos del vehículo inerte incluyen vehículos sólidos y vehículos líquidos.

Ejemplos del vehículo sólido a ser usado para la formulación de la
composición de control de artrópodos dañinos incluyen polvos finos o gránulos de
20 minerales (e.g., arcilla de caolín, arcilla attapulgita, bentonita, montmorillonita,

arcilla blanca ácida, pirofilita, talco, tierra de diatomeas, y calcita); sustancias orgánicas naturales (e.g., harina de mazorca de maíz y harina de cáscara de nuez), sustancias sintéticas orgánicas (e.g., urea); sales (e.g., carbonato de calcio, y sulfato de amonio); y sustancias inorgánicas sintéticas (e.g., óxido de silicio hidratado sintético).

Los ejemplos del vehículo líquido incluyen hidrocarburos aromáticos (e.g., xileno, alquilbenceno, y metil naftaleno); alcoholes (e.g., 2-propanol, etilenglicol, propilenglicol y etilenglicol monoetiléter); cetonas (e.g., acetona, ciclohexanona, e isoforona); aceites vegetales (e.g., aceite de soya, y aceite de algodón); hidrocarburos alifáticos a base de petróleo, ésteres, dimetilsulfóxido, acetonitrilo, y agua.

Los ejemplos del tensoactivo incluyen tensoactivos aniónicos (e.g., sales de éster alquilsulfato, sulfonatos de alquilarilo, sulfosuccinatos de dialquilo, sales de éster fosfato éter alquilaril polioxietileno, ligninsulfonatos, y policondensados formaldehído naftaleno sulfonato), tensoactivos no iónicos (e.g., éteres alquilaril polioxietileno, copolímeros de bloque alquilpolioxipropileno polioxietileno, y ésteres sorbitán de ácidos grasos), y tensoactivos catiónicos (e.g., sales alquil-trimetil-amonio).

Los ejemplos de otros aditivos de formulación incluyen polímeros solubles en agua (e.g., alcohol polivinílico y polivinil pirrolidona), polisacáridos [e.g., goma Arábica, ácido algínico y sus sales, CMC (carboximetil celulosa), y goma de xantano], sustancias inorgánicas (e.g., silicato de aluminio y magnesio, y alúmina-
5 sol), conservantes, colorantes, y estabilizantes [e.g., fosfato ácido de isopropilo (PAP), y BHT].

La composición de control de artrópodos dañinos de la presente invención se puede utilizar para proteger las plantas del daño causado por la ingestión o
10 succión por artrópodos dañinos, tales como insectos dañinos y garrapatas dañinas.

Ejemplos de los artrópodos dañinos sobre los cuales la composición de control de artrópodos dañinos de la presente invención tiene un efecto de control incluyen, los que se describen a continuación:

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Hemiptera: Delphacidae tales como *Laodelphax striatellus*, *Nilaparvata lugens*, y *Sogatella furcifera*; Deltocephalidae tales como *Nephotettix cincticeps*, *Nephotettix virescens*, *Recilia dorsalis*, y *Empoasca onukii*; Aphididae tales como *Aphis gossypii*, *Myzus persicae*, *Brevicoryne brassicae*, *Aphis spiraecola*,
20 *Macrosiphum euphorbiae*, *Aulacorthum solani*, *Rhopalosiphum padi*, *Toxoptera*

- citricidus*, *Ialopterus pruni*, y *Eriosoma lanigerum*; Pentatomidae tales como *Nezara antennata*, *Trigonotilus caelestialium*, *Graphosoma rubrolineatum*, *Eysarcoris lewisi*, *Riptortus clavetus*, *Leptocorisa chinensis*, *Eysarcoris parvus*, *Halyomorpha mista*, *Nezara viridula*, y *Lygus lineolaris*; Aleyrodidae tales como
- 5 *Trialeurodes vaporariorum*, *Bemisia tabaci*, *Dialeurodes citri*, y *Aleurocanthus spiniferus*; Coccoidea tales como *Aonidiella aurantii*, *Comstockaspis perniciosa*, *Unaspis citri*, *Ceroplastes rubens*, *Icerya purchasi*, *Planococcus kraunhiae*, *Pseudococcus longispinis*, y *Pseudaulacaspis pentagona*; Tingidae; Cimicoidea tal como *Cimex lectularius*; Psillidae tal como *Cacopsilla piricola*; etc.
- 10 Lepidoptera: Piralidae tales como *Chilo suppressalis*, *Tryporyza incertulas*, *Cnaphalocrocis medinalis*, *Notarcha derogata*, *Plodia interpunctella*, *Ostrinia furnacalis*, *Hellula undalis*, y *Pediasia teterrellus*; Noctuidae tales como *Spodoptera litura*, *Spodoptera exigua*, *Pseudaletia separata*, *Mamestra brassicae*, *Agrotis ipsilon*, *Plusia nigrisigna*, *Trichoplusia ni*, *Thoricoplusia spp.*, *Heliothis spp.*, y
- 15 *Helicoverpa spp.*; Pieridae tal como *Pieris rapae*; Tortricidae tales como *Adoxopies spp.*, *Grapholita molesta*, *Leguminivora glycinivorella*, *Matsumuraeses azukivora*, *Adoxopies orana fasciata*, *Adoxopies honmai.*, *Homona magnanima*, *Archips fuscocupreanus*, y *Cydia pomonella*; Gracillariidae tales como *Caloptilia theivora* y *Pillonorycter ringoneella*; Carposinidae tal como *Carposina niponensis*;
- 20 *Lyonetiidae* tal como *Lyonetia spp.*; *Lymantriidae* tales como *Lymantria spp.*, y

Euproctis spp.; Yponomeutidae tal como *Plutella xilostella*; Gelechiidae tales como *Pectinophora gossypiella*, y *Phthorimaea operculella*; Arctiidae tal como *Iphantria cunea*; Tineidae tales como *Tinea translucens*, y *Tineola bisselliella*; *Tuta absoluta*; etc.

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Tisanoptera: Thripidae tales como *Frankliniella occidentalis*, *Thrips parvi*, *Scirtothrips dorsalis*, *Thrips tabaci*, *Frankliniella intonsa*, *Frankliniella fusca*, *Thrips tabaci*, *Stenchaetothrips biformis*, y *Haplothrips aculeatus*; etc.

Entre los artrópodos dañinos mencionados anteriormente, los preferidos son Hemiptera tales como Delphacidae, Deltocephalidae, Aphididae, y Pentatomidae; Lepidoptera tales como Piralidae, y Noctuidae, y los más preferidos son Hemiptera (e.g., Delphacidae, Aphididae, etc.).

La composición de control de artrópodos dañinos de la presente invención puede ser utilizada para controlar enfermedades de plantas tales como la enfermedad plaga de la vaina del arroz causada por *Rhizoctonia solani*.

La composición de control de artrópodos dañinos de la presente invención se puede aplicar a una planta o un área en la cual se cultiva una planta para controlar artrópodos dañinos en la misma. La planta, como se usa en este documento

incluye los tallos y hojas de las plantas, las flores de las plantas, los frutos de las plantas, las semillas de plantas, etc.

El método para controlar un artrópodo dañino de la presente invención
5 comprende aplicar una cantidad eficaz de la composición de control de artrópodos
dañosos de la presente invención a una planta o un área en la cual se cultiva una
planta. En el método para controlar un artrópodo dañino de la presente invención,
los ejemplos típicos del compuesto de control de la enfermedad plaga de la vaina
presente incluyen aquellos para la composición de control de artrópodos dañinos
10 de la presente invención.

El método para el control de un artrópodo dañino de la presente invención
comprende aplicar, por ejemplo, la composición de control de artrópodo dañino de
la presente invención a los tallos y las hojas de las plantas tal como una aplicación
15 foliar o a un área en la que crece una planta tal como aplicación al suelo o
aplicación sumergida.

Cuando la composición de control de artrópodos dañinos de la presente
invención se aplica a una planta o a un área en la cual se cultiva una planta, la
20 cantidad de aplicación varía dependiendo de los tipos de plantas a proteger, la

especie o el tamaño de la especie o población de artrópodos dañinos para ser controlados, la forma de una formulación, el tiempo de aplicación, las condiciones climáticas, etc, pero está generalmente dentro de un intervalo de 0.5 a 3,000 g, preferiblemente de 5 a 300 g por 1,000 m² de un área donde se cultiva una planta.

- 5 La "cantidad efectiva" aquí usada se refiere a una cantidad de aplicación necesaria para controlar un artrópodo dañino.

La composición de control de artrópodos dañinos de la presente invención en forma de un concentrado emulsionable, un polvo humectable o una suspensión
10 concentrada se aplica generalmente después de la dilución con agua. En este caso, la concentración total de flonicamid, el compuesto regulador de crecimiento de insecto presente y el compuesto de control de la enfermedad plaga de la vaina generalmente es de 0,00001 a 10% en peso, preferiblemente de 0,0001 a 5% en peso. La composición de control de artrópodos dañinos de la presente invención
15 en forma de un polvo o un gránulo se aplica generalmente como es, sin dilución.

Ejemplos de la planta a la que se puede aplicar la composición de control de artrópodos dañinos de la presente invención incluyen los que se describen a continuación:

Cultivos: maíz, arroz, trigo, cebada, centeno, avena, sorgo, algodón, soya, cacahuete, trigo sarraceno, remolacha azucarera, colza, girasol, caña de azúcar, tabaco, etc;

- 5 Verduras y hortalizas: verduras solanáceas (berenjena, tomate, pimiento verde, pimiento, patata, etc), hortalizas cucurbitáceas (pepino, calabaza, calabacín, patilla, melón, etc), verduras crucíferas (colza, rábano japonés, nabo, rábano, coles, col china, col, mostaza marrón, brócoli, coliflor, etc.), las verduras compuestas (bardana, guirnalda crisantemo, alcachofa, lechuga, etc), las verduras
- 10 Liliáceas (cebolleta, cebolla, ajo, espárragos, etc.), verduras umbelíferas (zanahoria, perejil, apio, chirivía, etc.), verduras Quenopodiáceas (espinaca, acelga, etc.), verduras Labiadas (albahaca japonesa, menta, albahaca, etc.), fresa, patata, ñame, aráceas, etc.;
- 15 Árboles frutales: frutas pomáceas (manzana, pera común, pera japonesa, membrillo chino, membrillo, etc.), frutas de hueso carnosas (melocotón, ciruela, nectarina, ciruelo japonés, cereza, ciruela albaricoque, etc.), plantas de cítricos (Mandarina Satsuma, naranja, limón, lima, pomelo, etc.), frutos secos (castañas, nueces, avellanas, almendras, pistachos, anacardos, nueces de macadamia, etc.),
- 20 bayas (arándano, arándanos, mora, frambuesa, etc.), uva, caqui, olivo, níspero,

plátano, café, dátil, coco, aceite de palma, etc.;

Los árboles que no sean frutales: té, moreras, árboles con flores (azaleas, camelias, hortensias, sasanqua, anís estrellado japonés, Cereza, árbol tulipán, mirto crespón, naranja osmanthus, etc.), árboles de la calle (fresno, abedul, cerezo silvestre, eucalipto, ginkgo, lila, arce, roble, álamo, cercis, goma china dulce, árbol atanero, zelkova, japonés arborvitae, abeto, abeto japonés, aguja enebro, pino, abeto, tejo, olmo, castaño de Indias, etc.), árbol de coral, Podocarpus, cedro, ciprés japonés, crotón, *Euonymus japonicus*, *Fotinia glabra*, etc.;

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Céspedes: Zoysia (zoysia, Zoysia matrella, etc.), los pastos Bermuda (Cynodon dactylon, etc), las hierbas dobladas (Agrostis alba, hierba rastrera doblada, doblada Hily, etc.), blueglasses (hierba del prado, hierba pájaro, etc), festuca (Festuca alta, festuca masticable, festuca roja rastrera, etc.), raigrás (cizaña, hierba de centeno, etc.), pasto ovillo, pasto timothy, etc.;

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Otros: flores (rosa, clavel, crisantemo, genciana pradera, Gypsophila, gerbera, caléndula, salvia, petunia, verbena, tulipán, aster, genciana, lirio, pensamiento, ciclamen, orquídeas, convallaria, lavanda, mango, col ornamental, primula, foinsettia, gladiolos, cattleya, margarita, cymbidium, begonia, etc.), plantas bio-

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combustibles (Jatrofa, cártamo, camelina, mijo, Miscanthus, hierba cinta, carrizo, kenaf, yuca, sauce, etc.), plantas ornamentales, etc.

Entre las plantas anteriores, las preferidas son maíz, trigo, arroz, etc., y

5 particularmente se prefiere el arroz.

El método para controlar un artrópodo dañino de la presente invención puede llevarse a cabo en tierras agrícolas, tales como campos, arrozales, campos secos, prados y huertos o terrenos no agrícolas.

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En el método para controlar un artrópodo dañino de la presente invención, la planta o el área en la que se cultiva la planta es preferiblemente arroz o un área en la que se cultiva el arroz.

La "planta" como se usa aquí puede ser aquella que tiene resistencia, la cual es impartida por una tecnología de modificación genética o un método de reproducción convencional.

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EJEMPLOS

En lo sucesivo, la presente invención será descrita con más detalle con referencia a Ejemplos de Formulación y Ejemplos de Prueba, pero no se limita a

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los mismos. En los ejemplos, el término "parte(s)" significa parte(s) en peso a menos que se especifique otra cosa.

En primer lugar, se muestran a continuación Ejemplos de Formulación.

EJEMPLO DE FORMULACIÓN 1

5 Quince (15) partes de flonicamid, 5 partes de metoxifenozone y 15 partes de flutolanil son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 39 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

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EJEMPLO DE FORMULACIÓN 2

 Quince (15) partes de flonicamid, 5 partes de metoxifenozone y 16 partes de pencycuron son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio
15 hidratado sintético y 38 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 3

 Quince (15) partes de flonicamid, 5 partes de metoxifenozone y 7.5 partes
20 del compuesto activo (I) presente son agregadas a una mezcla de 4 partes de

lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 46.5 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

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EJEMPLO DE FORMULACIÓN 4

Quince (15) partes de flonicamid, 5 partes de metoxifenozone y 7.5 partes de furametpir son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 46.5 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

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EJEMPLO DE FORMULACIÓN 5

Quince (15) partes de flonicamid, 5 partes de metoxifenozone y 5 partes de validamycin A son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 49 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

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EJEMPLO DE FORMULACIÓN 6

Quince (15) partes de flonicamid, 7.5 partes de tebufenozide y 15 partes de flutolanil son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 36.5 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 7

Quince (15) partes de flonicamid, 7.5 partes de tebufenozide y 16 partes de pencycuron son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 35.5 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 8

Quince (15) partes de flonicamid, 7.5 partes de tebufenozide y 7.5 partes del compuesto activo (I) presente son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino

de óxido de silicio hidratado sintético y 44 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

5 EJEMPLO DE FORMULACIÓN 9

Quince (15) partes de flonicamid, 7.5 partes de tebufenozide y 7.5 partes de furametpir son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 44 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 10

Quince (15) partes de flonicamid, 7.5 partes de tebufenozide y 5 partes de validamycin A son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 46.5 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 11

Quince (15) partes de flonicamid, 5 partes de cromafenozide y 15 partes de flutolanil son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 39 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 12

Quince (15) partes de flonicamid, 5 partes de cromafenozide y 16 partes de pencycuron son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 38 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

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EJEMPLO DE FORMULACIÓN 13

Quince (15) partes de flonicamid, 5 partes de cromafenozide y 7.5 partes del compuesto activo (I) presente son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 46.5 partes de tierra de diatomeas, y luego

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la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 14

5 Quince (15) partes de flonicamid, 5 partes de cromafenozide y 7.5 partes de furametpir son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 46.5 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo
10 humectable.

EJEMPLO DE FORMULACIÓN 15

 Quince (15) partes de flonicamid, 5 partes de cromafenozide y 5 partes de validamycin A son agregadas a una mezcla de 4 partes de lauril sulfato sódico, 2
15 partes de lignosulfonato de calcio, 20 partes de un polvo fino de óxido de silicio hidratado sintético y 49 partes de tierra de diatomeas, y luego la mezcla resultante se mezcló suficientemente con agitación para obtener un polvo humectable.

EJEMPLO DE FORMULACIÓN 16

20 Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de metoxifenozide, 2

partes de flutolanil, 86 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 17

5 Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de metoxifenozone, 1.5 partes de pencycuron, 86.5 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 18

 Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de metoxifenozone,
10 0.75 partes del compuesto activo (I) presente, 87.25 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 19

 Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de metoxifenozone,
15 0.75 partes de furametpir, 87.25 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 20

 Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de metoxifenozone,
20 0.3 partes de validamycin A, 87.7 partes de arcilla de caolín y 10 partes de talco se

muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 21

Uno punto cinco (1.5) partes de flonicamid, 0.75 partes de tebufenozide, 2 partes de flutolanil, 85.75 partes de arcilla de caolín y 10 partes de talco se muelen
5 finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 22

Uno punto cinco (1.5) partes de flonicamid, 0.75 partes de tebufenozide, 1.5 partes de pencycuron, 85.25 partes de arcilla de caolín y 10 partes de talco se
10 muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 23

Uno punto cinco (1.5) partes de flonicamid, 0.75 partes de tebufenozide, 0.75 partes del compuesto activo (I) presente, 87 partes de arcilla de caolín y 10
15 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 24

Uno punto cinco (1.5) partes de flonicamid, 0.75 partes de tebufenozide, 0.75 partes de furametpir, 87 partes de arcilla de caolín y 10 partes de talco se
20 muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 25

Uno punto cinco (1.5) partes de flonicamid, 0.75 partes de tebufenozide, 0.3 partes de validamycin A, 87.45 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 26

Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de cromafenozide, 2 partes de flutolanil, 86 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 27

Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de cromafenozide, 1.5 partes de pencycuron, 86.5 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 28

Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de cromafenozide, 0.75 partes del compuesto activo (I) presente, 87.25 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 29

Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de cromafenozide, 0.75 partes de furametpir, 87.25 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 30

Uno punto cinco (1.5) partes de flonicamid, 0.5 partes de cromafenozide, 0.3 partes de validamycin A, 87.7 partes de arcilla de caolín y 10 partes de talco se muelen finamente y se mezclan para obtener polvos.

EJEMPLO DE FORMULACIÓN 31

Una mezcla de 8 partes de flonicamid, 2.5 partes de metoxifenozone, 10 partes de flutolanil, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio (= una mezcla de carbón blanco y sulfato alquiléter polioxietileno de amonio = 1:1 (relación en peso), lo mismo se aplicará en adelante) y 49.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 32

Una mezcla de 8 partes de flonicamid, 2.5 partes de metoxifenozone, 7.5 partes de pencycuron, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 52 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 33

Una mezcla de 8 partes de flonicamid, 2.5 partes de metoxifenozone, 4 partes del compuesto activo (I) presente, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 55.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

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EJEMPLO DE FORMULACIÓN 34

Una mezcla de 8 partes de flonicamid, 2.5 partes de metoxifenozone, 4 partes de furametpir, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 55.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión

concentrada.

EJEMPLO DE FORMULACIÓN 35

Una mezcla de 8 partes de flonicamid, 2.5 partes de metoxifenozone, 5
5 partes de validamycin A, 30 partes de carbón blanco que contiene 50 partes de
sulfato alquiléter polioxietileno de amonio y 54.5 partes de agua se muelen
finamente mediante un método de molienda en húmedo para obtener una
suspensión concentrada.

10 EJEMPLO DE FORMULACIÓN 36

Una mezcla de 8 partes de flonicamid, 5 partes de tebufenozide, 10 partes
de flutolanil, 30 partes de carbón blanco que contiene 50 partes de sulfato
alquiléter polioxietileno de amonio y 47 partes de agua se muelen finamente
mediante un método de molienda en húmedo para obtener una suspensión
15 concentrada.

EJEMPLO DE FORMULACIÓN 37

Una mezcla de 8 partes de flonicamid, 5 partes de tebufenozide, 7.5 partes
de pencycuron, 30 partes de carbón blanco que contiene 50 partes de sulfato
20 alquiléter polioxietileno de amonio y 49.5 partes de agua se muelen finamente

mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 38

5 Una mezcla de 8 partes de flonicamid, 5 partes de tebufenozide, 4 partes del compuesto activo (I) presente, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 53 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

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EJEMPLO DE FORMULACIÓN 39

 Una mezcla de 8 partes de flonicamid, 5 partes de tebufenozide, 4 partes de furametpir, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 53 partes de agua se muelen finamente
15 mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 40

 Una mezcla de 8 partes de flonicamid, 5 partes de tebufenozide, 5 partes de validamycin A, 30 partes de carbón blanco que contiene 50 partes de sulfato
20 alquiléter polioxietileno de amonio y 52 partes de agua se muelen finamente

mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 41

5 Una mezcla de 8 partes de flonicamid, 2.5 partes de cromafenozide, 10 partes de flutolanil, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 49.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

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EJEMPLO DE FORMULACIÓN 42

 Una mezcla de 8 partes de flonicamid, 2.5 partes de cromafenozide, 7.5 partes de pencycuron, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 52 partes de agua se muelen
15 finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 43

 Una mezcla de 8 partes de flonicamid, 2.5 partes de cromafenozide, 4
20 partes del compuesto activo (I) presente, 30 partes de carbón blanco que contiene

50 partes de sulfato alquiléter polioxietileno de amonio y 55.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

5 EJEMPLO DE FORMULACIÓN 44

Una mezcla de 8 partes de flonicamid, 2.5 partes de cromafenozide, 4 partes de furametpir, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 55.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

EJEMPLO DE FORMULACIÓN 45

Una mezcla de 8 partes de flonicamid, 2.5 partes de cromafenozide, 5 partes de validamycin A, 30 partes de carbón blanco que contiene 50 partes de sulfato alquiléter polioxietileno de amonio y 54.5 partes de agua se muelen finamente mediante un método de molienda en húmedo para obtener una suspensión concentrada.

A continuación, se demostrarán los efectos de la presente invención con referencia a Ejemplos de Prueba.

EJEMPLO DE PRUEBA 1 (Prueba para la actividad insecticida sobre *Rhopalosiphum padi*)

5 30 mg de cada uno de flonicamid, flutolanil, pencycuron y compuesto activo (I) presente se disolvieron 0.3 ml de acetona (fabricado por Wako Pure Chemical Industries, Ltd.) que contiene SORGEN TW-20 (fabricado por Dai-ichi Kogyo Seiyaku Co., Ltd.) y después se diluyeron con agua que contenía 0.02% en volumen de un agente de dispersión [nombre del producto: Dain (marca
10 registrada), fabricado por Sumitomo chemical garden products inc.] hasta una concentración dada.

15 mg de cada uno de metoxifenozone, tebufenozone y cromafenozone se disolvieron 0.2 ml de acetona (fabricado por Wako Pure Chemical Industries, Ltd.)
15 que contiene SORGEN TW-20 (fabricado por Dai-ichi Kogyo Seiyaku Co., Ltd.) y después se diluyeron con agua que contenía 0.02% en volumen de un agente de dispersión [nombre del producto: Dain (marca registrada), fabricado por Sumitomo chemical garden products inc.] hasta una concentración dada.

20 La dilución en agua de flonicamid, la dilución en agua de metoxifenozone,

tebufenozide o cromafenozide, y la dilución en agua de flutolanil, pencycuron o el compuesto activo (I) presente, se mezclaron para preparar soluciones de Prueba (composiciones 1-9) que tienen las composiciones mostradas en la Tabla 1.

5 Cada una de las soluciones de Prueba se roció sobre una plántula de arroz (*Oryza sativa*, cultivar: Hoshinoyume) en la etapa de crecimiento de 2,5 hojas en una maceta de papel, en una cantidad de 10 ml por una plántula. Esta plántula de arroz se secó al aire y luego se puso en un tubo de vidrio de prueba (diámetro: 30 mm, altura: 200 mm). Un día después de la aspersión, se liberaron

10 20 ninfas de *Rhopalosiphum padi* de segundo a tercer estadio en el tubo de prueba, y luego se dejó el tubo en un salón (25°C, humedad 55%). Cinco (5) días después de la liberación de las ninfas de prueba, se observaron los insectos vivos o muertos, y se contaron los insectos sobrevivientes. Para cada tratamiento se hicieron 2 repeticiones. Los valores promedio se muestran en la Tabla 1.

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Tabla 1

Composición Número	Compuestos de prueba	Concentración [ppm]	Número de insectos sobrevivientes [Cabeza]
1	Flonicamid metoxifenozone flutolanil	20 5 20	0
2	Flonicamid tebufenozone flutolanil	20 10 20	0
3	Flonicamid cromafenozone flutolanil	20 5 20	0
4	Flonicamid metoxifenozone pencycuron	20 5 20	0
5	Flonicamid tebufenozone pencycuron	20 10 20	0
6	Flonicamid cromafenozone pencycuron	20 5 20	0
7	Flonicamid metoxifenozone compuesto activo (I) presente	20 5 20	0
8	Flonicamid tebufenozone compuesto activo (I) presente	20 10 20	0
9	Flonicamid cromafenozone compuesto activo (I) presente	20 5 20	0
Sin tratamiento	-	-	21

APLICABILIDAD INDUSTRIAL

De acuerdo con la presente invención, es posible el control de artrópodos

5 dañinos.

REIVINDICACIONES

1. Una composición de control de artrópodos dañinos que comprende
flonicamid, uno o más compuestos reguladores del crecimiento de insectos
5 seleccionados del Grupo (A), y uno o más compuestos de control de la
enfermedad plaga de la vaina, seleccionados del Grupo (B):

Grupo (A): un grupo que consiste de metoxifenozone, tebufenozone, y
cromafenozone;

Grupo (B): un grupo que consiste de flutolanil, pencycuron, N-[2-(1,3-
10 dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, furametpir y
validamycin A.
2. La composición de control de artrópodos dañinos de acuerdo con la
reivindicación 1, en la que la relación en peso de flonicamid al compuesto
15 regulador del crecimiento de insectos es de 50:1 a 1:10.
3. La composición de control de artrópodos dañinos de acuerdo con la
reivindicación 2, en la que la relación en peso de flonicamid al compuesto de
control de la enfermedad plaga de la vaina es de 100:1 a 1:100.

4. La composición de control de artrópodos dañinos de acuerdo con cualquiera de las reivindicaciones 1 a 3, en la que el compuesto de control de la enfermedad plaga de la vaina es flutolanil, pencycuron, o N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida.

5

5. Un método para controlar un artrópodo dañino, que comprende aplicar una cantidad eficaz de la composición de control de artrópodos dañinos de acuerdo con cualquiera de las reivindicaciones 1 a 4 a una planta o un área en la que se cultiva una planta.

10

6. El método para controlar un artrópodo dañino de acuerdo con la reivindicación 5, en donde la planta o el área en la que se cultiva una planta es arroz o es un área en la que se cultiva arroz.

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RESUMEN

Una composición de control de artrópodos dañinos que comprende
5 flonicamid, uno o más compuestos reguladores del crecimiento de insectos
seleccionados del Grupo (A), y uno o más compuestos de control de la
enfermedad plaga de la vaina, seleccionados del Grupo (B):

Grupo (A): un grupo que consiste de metoxifenozone, tebufenozone, y
cromafenozone;

10 Grupo (B): un grupo que consiste de flutolanil, pencycuron, N-[2-(1,3-
dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, furametpir y
validamycin A, y que tiene un excelente efecto de control de artrópodos dañinos.

 Industria y Comercio SUPERINTENDENCIA		SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISION DE NUEVAS CREACIONES TARJETA ARCHIVO PROPIETARIOS					
PATENTE DE INVENCION _____		PCT <u> X </u>		MODELO DE UTILIDAD _____		DISEÑO INDUSTRIAL _____	
(21)	No. de solicitud			(22)	Fecha de solicitud		
(51)	Clasificación internacional A01N 43/40, A01N 37/24, A01N 37/28, A01N 43/16, A01N 43/56, A01N 47/32, A01P 7/04						
(71)	Solicitante (s) SUMITOMO CHEMICAL COMPANY, LIMITED						
(72)	Inventor (es) SAKAMOTO, Norihisa; SAKAMOTO, Emiko						
(74)	Apoderado DRA. MARGARITA CASTELLANOS ABONDANO						
(30)	Prioridad	(31)	No. Prioridad	(32)	Fecha	(33)	País
			2010-184720		2010-08-20		JP
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	No. de solicitud: PCT/JP2011/068488						
(54)	Título: COMPOSICIÓN PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS Y MÉTODO PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS						

	EXTRACTO PARA PUBLICACIÓN ___ Patente de Invención ___ Patente modelo de utilidad <u> X </u> PCT
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(21) No. De solicitud	(51) int. Cl: A01N 43/40, A01N 37/24, A01N 37/28, A01N 43/16, A01N 43/56, A01N 47/32, A01P 7/04
(22) Fecha de solicitud	(71) Solicitante (s) SUMITOMO CHEMICAL COMPANY, LIMITED
(30) Prioridad	(72) Interventor (es) SAKAMOTO, Norihisa; SAKAMOTO, Emiko
(31) No. Prioridad 2010-184720, 2011-021485	
(32) Fecha 20/08/2010, 03/02/2011	
(33) Pais JP, JP	(74) Apoderado (s) DRA. MARGARITA CASTELLANOS ABONDANO
(54) Título COMPOSICIÓN PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS Y MÉTODO PARA PREVENIR/ CONTROLAR ARTRÓPODOS DAÑINOS	
Las casillas identificadas con 85, 86 y 87 sólo aplican para PCT	
(85) Fecha límite inicio Fase Nacional	
(86) Datos relativos a la presentación de la solicitud PCT Fecha de presentación de la solicitud 08/08/2011 No. de solicitud PCT/JP2011/068488	(87) Publicación internacional Fecha 23/02/2012 No. Publicación WO/2012/023530 A1

Resumen reivindicación (es):

- Una composición de control de artrópodos dañinos que comprende flonicamid, uno o más compuestos reguladores del crecimiento de insectos seleccionados del Grupo (A), y uno o más compuestos de control de la enfermedad plaga de la vaina, seleccionados del Grupo (B):
Grupo (A): un grupo que consiste de metoxifenozone, tebufenozone, y cromafenozone;
Grupo (B): un grupo que consiste de flutolanil, pencycuron, N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida, furametpir y validamycin A.
- La composición de control de artrópodos dañinos de acuerdo con la reivindicación 1, en la que la relación en peso de flonicamid al compuesto regulador del crecimiento de insectos es de 50:1 a 1:10.
- La composición de control de artrópodos dañinos de acuerdo con la reivindicación 2, en la que la relación en peso de flonicamid al compuesto de control de la enfermedad plaga de la vaina es de 100:1 a 1:100.
- La composición de control de artrópodos dañinos de acuerdo con cualquiera de las reivindicaciones 1 a 3, en la que el compuesto de control de la enfermedad plaga de la vaina es flutolanil, pencycuron, o N-[2-(1,3-dimetilbutil)fenil]-5-fluoro-1,3-dimetil-1H-pirazol-4-carboxamida.
- Un método para controlar un artrópodo dañino, que comprende aplicar una cantidad eficaz de la composición de control de artrópodos dañinos de acuerdo con cualquiera de las reivindicaciones 1 a 4 a una planta o un área en la que se cultiva una planta.
- El método para controlar un artrópodo dañino de acuerdo con la reivindicación 5, en donde la planta o el área en la que se cultiva una planta es arroz o es un área en la que se cultiva arroz.



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PATENTE DE INVENCION _____ MODELO DE UTILIDAD _____ Art 33 Decisión 486/00

Indicación que se solicita una patente.
Datos de identificación del solicitante o de la persona que presenta la solicitud
Descripción de la invención
Dibujos de ser estos pertinentes
Comprobante de pago de las tasas establecidas (De ser el caso formato de descuento)

Completa _____ Incompleta _____

PATENTE DE INVENCION PCT X MODELO DE UTILIDAD PCT _____ Art.33 Decisión 486/00, Circular Única

X Indicación que se solicita una PCT
X Copia de la solicitud en español, tal como fue presentada inicialmente (capítulo descriptivo, reivindicatorio, resumen)
Dibujos de ser estos pertinentes
X Comprobante de pago de las tasas establecidas (de ser el caso formato de descuento)

Completa X Incompleta _____

DISEÑO INDUSTRIAL _____ (Art. 119 Decisión 486/00)

Indicación que se solicita Diseño industrial
Datos de identificación del solicitante o de la persona que presenta la solicitud
Representación gráfica y fotográfica del Diseño industrial o muestra del material que incorpora el diseño
Comprobante de pago de las tasas establecidas

Completa _____ Incompleta _____

ESQUEMA DE TRAZADO _____ (Art. 92 Decisión 486/00)

Indicación que se solicita un esquema de trazado
Datos de identificación del solicitante o de la persona que presenta la solicitud
Representación gráfica de un esquema de trazado
Comprobante de pago de las tasas establecidas

Completa _____ Incompleta _____