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Superintendencia de Industria y Comercio
E. S. D.

162
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Dependencia: 2929 DIVISION DE NUEVAS CREACIONES
Trámite : 011
Evento : 379
Actuación: 329

Referencia : Expediente No. 03.038.176
Solicitante : SYNGENTA PARTICIPATIONS AG
Asunto : Solicitud de patente para: PIRROLCARBOXIAMIDAS
Y PIRROLCARBOTIOAMIDAS Y SUS USOS
AGROQUÍMICOS.

Fecha de presentación: 7 de mayo de 2003.

1. Yo, Emilio FERRERO, obrando como apoderado del solicitante, en el asunto en referencia, atentamente, presento con este escrito copias certificadas de las solicitudes de patente Británicas número 0027284.9 del 8 de noviembre de 2000 y la número 0030268.7 del 12 de diciembre de 2000.

2. Ruego a la Señora Jefe se sirva aceptar este escrito con sus anexos, y se continúe con el trámite de la solicitud.

Bogotá, 27 MAY 2003

Señora Jefe,



EMILIO FERRERO
T.P.A. No. 31.929

COLO 13602 841 002 7
MRE/MRM/
ID-000005/WPC13602



INVESTOR IN PEOPLE

163

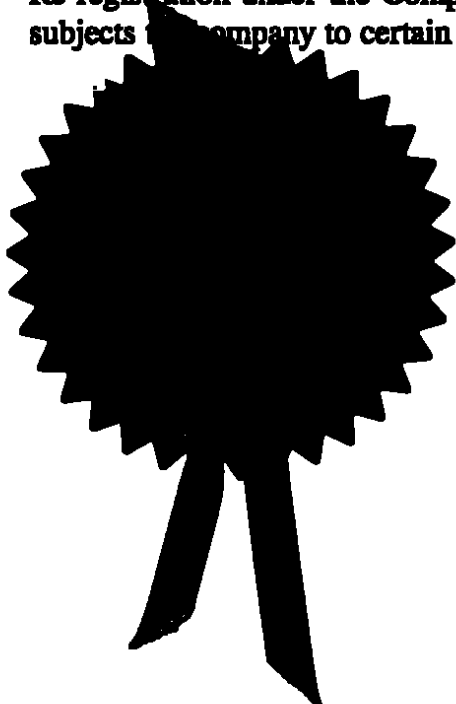
The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.



Signed *Answer*

Dated 30 April 2003

An Executive Agency of the Department of Trade and Industry



130EC00 8590923.1 002093
P01/7700 0.00-0030268.7

164

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

PF/5-50034P2

2. Patent application number

0030268.7

12 DEC 2000

3. Name of applicant, address and postcode of the or of each applicant (underline all surnames)

SYNGENTA PARTICIPATIONS AG
INTELLECTUAL PROPERTY
Schwarzwaldallee 215
4058 Basel, SWITZERLAND

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

8029555001

4. Title of the invention

ORGANIC COMPOUNDS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Syngenta Limited
Intellectual Property Department
Jealotts Hill Research Centre
PO Box 3538 BRACKNELL
Berkshire RG42 6YA, UNITED KINGDOM

Patents ADP number (if you know it)

08029563001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 34

Claim(s) 5

Abstract

Drawing(s)

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 8/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

SYNGENTA PARTICIPATIONS AG

Signature: *V. Kallipudi* Date: 12/12/2000

Authorised Signatory

12. Name and daytime telephone number of person to contact in the United Kingdom

VIJAYA KUMARI MALLIPEDDI 01344 414365
DAWN LISA ROYAL 01344 414079

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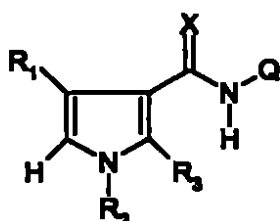
Notes

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- Write your answers in capital letters using black ink or you may type them.
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- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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Organic Compounds

The present invention relates to novel pyrrolicarboxylic acid amides and pyrrolicarbothioic acid amides which have microbicidal activity, in particular fungicidal activity. The invention also relates to the preparation of these substances, to agrochemical compositions which comprise at least one of the novel compounds as active ingredient, to the preparation of the compositions mentioned and to the use of the active ingredients or compositions in agriculture and horticulture for controlling or preventing infestation of plants by phytopathogenic microorganisms, preferably fungi.

The 3-pyrrolicarboxylic acid amides and 3-pyrrolicarbothioic acid amides of the present invention have the general formula I



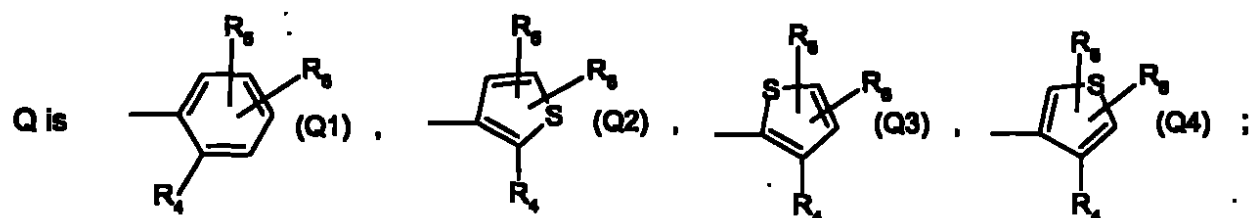
wherein

X is oxygen or sulfur;

R₁ is CF₃, CF₂H or CFH₂;

R₂ is C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy-C₁-C₃alkyl or C₁-C₃haloalkoxy-C₁-C₃alkyl;

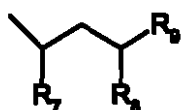
R₃ is hydrogen, methyl, CF₃ or fluoro;



R₄ is C₆-C₁₄bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃;

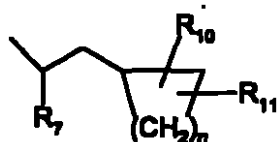
C₆-C₁₄bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃;

C₆-C₁₄bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃; or a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_8 and R_9 are independently of each other hydrogen or halogen.

Surprisingly, It has now been found that the compounds of formula I exhibit improved biological properties which render them more suitable for the practical use in agriculture and horticulture.

Where asymmetrical carbon atoms are present in the compounds of formula I, these compounds are in optically active form. The invention relates to the pure isomers, such as enantiomers and diastereomers, as well as to all possible mixtures of isomers, e.g. mixtures of diastereomers, racemates or mixture of racemates.

Within the present specification alkyl denotes methyl, ethyl, n-propyl and isopropyl. Non-branched alkyl is preferred. Alkyl as part of other radicals such as alkoxy, haloalkyl, etc. is understood in an analogous way. Halogen will be understood generally as meaning fluoro, chloro, bromo or iodo. Fluoro, chloro or bromo are preferred meanings. Halogen as part of other radicals such as haloalkyl, haloalkoxy, etc. is understood in an analogous way.

Bicycloalkyl is, depending on the ring size, bicyclo[2.1.1]hexane, bicyclo[2.2.1]heptane, bicyclo[2.2.2]octane, bicyclo[3.2.1]octane, bicyclo[3.2.2]nonane, bicyclo[4.2.2]decane, bicyclo[4.3.2]undecane, adamantane and the like.

Bicycloalkenyl is bicyclo[2.1.1]hex-4-ene, bicyclo[2.2.1]hept-2-ene, bicyclo[2.2.2]oct-2-ene and the like.

Bicycloalkadienyl is bicyclo[2.2.1]hepta-2,5-diene, bicyclo[2.2.2]octa-2,5-diene, and the like.

One specific subgroup of the compounds of formula I is the group wherein X is oxygen.

Preferred subgroups of compounds of formula I are those wherein

X is oxygen; or

X is sulfur; or

R₁ is CF₃; or

R₁ is CF₂H; or

R₁ is CFH₂; or

R₂ is C₁-C₃alkyl; or

R₂ is C₁-C₃haloalkyl; or

R₂ is C₁-C₃alkoxy-C₁-C₃alkyl; or

R₂ is C₁-C₃haloalkoxy-C₁-C₃alkyl; or

R₂ is C₁-C₃alkyl or C₁-C₃haloalkyl; or

R₂ is C₁-C₃alkyl, C₁-C₃haloalkyl or C₁-C₃alkoxy-C₁-C₃alkyl; or

R₂ is methyl or CH₂OCH₃; or

R₂ is methyl; or

R₃ is hydrogen; or

R₃ is methyl; or

R₃ is CF₃; or

R₃ is fluoro; or

R₃ is hydrogen or fluoro; or

Q is Q1; or

Q is Q2, Q3 or Q4; or

Q is Q2; or

Q is Q3; or

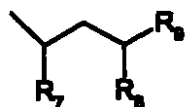
Q is Q4; or

R₄ is C₆-C₁₀bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃; or

C₆-C₁₀bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃; or

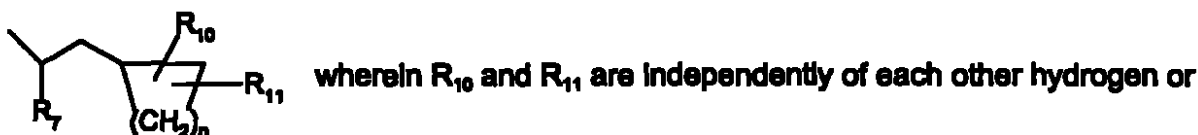
C₆-C₁₀bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃; or

a group of the form



wherein R₇, R₈ and R₉ are independently of each other C₁-C₃alkyl or

C₁-C₃haloalkyl; or a group



halogen and n = 1 or 2; or

R₄ is C₈-C₁₀bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃ ,

C₈-C₁₀bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃ ,

C₈-C₁₀bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃ , or

a group of the form



C₁-C₃haloalkyl; and

R₈ and R₉ are independently of each other hydrogen, chloro, bromo or fluoro; or

R₈ and R₉ are independently of each other hydrogen, chloro or fluoro; or

R₈ is hydrogen and R₉ is chloro or fluoro.

Further preferred subgroups are those wherein

a) X is oxygen;

R₁ is CF₃;

R₂ is C₁-C₃alkyl or C₁-C₃haloalkyl;

R₃ is hydrogen or fluoro;

Q is Q1;

R₄ is C₈-C₁₀bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃; or

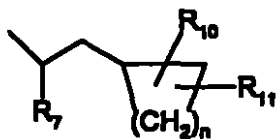
C₈-C₁₀bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃; or

C₈-C₁₀bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃; or

a group of the form



C₁-C₃haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_7 and R_8 are independently of each other hydrogen, fluoro, chloro or bromo; or

b) X is oxygen;

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl or C_1 - C_3 haloalkyl;

R_3 is hydrogen or fluoro;

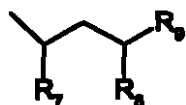
Q is Q2, Q3 or Q4;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

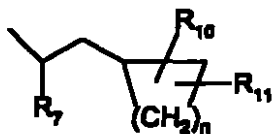
C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_7 and R_8 are independently of each other hydrogen, fluoro, chloro or bromo; and among this subgroup Q = Q2 is preferred; or

c) X is oxygen;

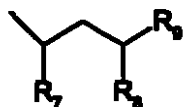
R_1 is CF_3 ;

R_2 is methyl;

R_3 is hydrogen or fluoro;

Q is Q1;

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other CF_3 , methyl or ethyl,

preferably methyl; and

R_8 and R_9 are independently of each other hydrogen, fluoro or chloro; or

d) X is oxygen;

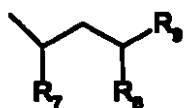
R_1 is CF_3 ;

R_2 is methyl;

R_3 is hydrogen;

Q is Q1;

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other methyl or ethyl,

preferably methyl; and

R_8 and R_9 are independently of each other hydrogen, fluoro or chloro; or

e) X is oxygen;

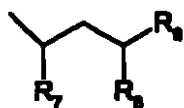
R_1 is CF_3 ;

R_2 is methyl;

R_3 is fluoro;

Q is Q1;

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other methyl or ethyl,

preferably methyl; and

R_8 and R_9 are independently of each other hydrogen, fluoro or chloro.

Other preferred subgroups are those wherein

f) X is sulfur;

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl or C_1 - C_3 haloalkyl;

- 7 -

R_3 is hydrogen or fluoro;

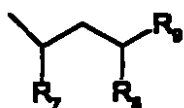
Q is Q1;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

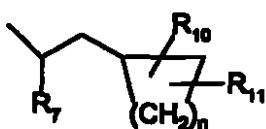
C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_5 and R_6 are independently of each other hydrogen, fluoro, chloro or bromo; or

g) X is sulfur;

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl or C_1 - C_3 haloalkyl;

R_3 is hydrogen or fluoro;

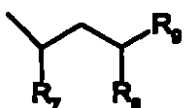
Q is Q2, Q3 or Q4;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

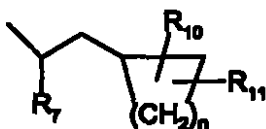
C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_6 and R_8 are independently of each other hydrogen, fluoro, chloro or bromo.

Other subgroups of compounds of formula I are those wherein

h) X is oxygen or sulfur;

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl or C_1 - C_3 alkoxy- C_1 - C_3 alkyl ;

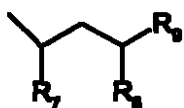
R_3 is hydrogen or fluoro;

Q is Q1;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; and

R_6 and R_8 are independently of each other hydrogen, chloro or fluoro; or

i) X is oxygen or sulfur;

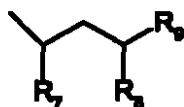
R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl or C_1 - C_3 alkoxy- C_1 - C_3 alkyl ;

R_3 is hydrogen or fluoro;

Q is Q1;

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; and

R_6 and R_8 are independently of each other hydrogen, chloro or fluoro; or

j) X is oxygen or sulfur;

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl or C_1 - C_3 alkoxy- C_1 - C_3 alkyl;

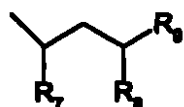
R_3 is hydrogen or fluoro;

Q is Q2, Q3 or Q4;

R_4 is C_8-C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_8-C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_8-C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1-C_3 alkyl or

C_1-C_3 haloalkyl; and

R_8 and R_9 are independently of each other hydrogen, chloro or fluoro; or

k) X is oxygen or sulfur;

R_1 is CF_3 ;

R_2 is C_1-C_3 alkyl, C_1-C_3 haloalkyl or C_1-C_3 alkoxy- C_1-C_3 alkyl;

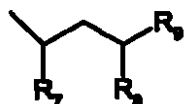
R_3 is hydrogen or fluoro;

Q is Q2;

R_4 is C_8-C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_8-C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_8-C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1-C_3 alkyl or

C_1-C_3 haloalkyl; and

R_8 and R_9 are independently of each other hydrogen, chloro or fluoro.

Preferred individual compounds are :

1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methoxymethyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

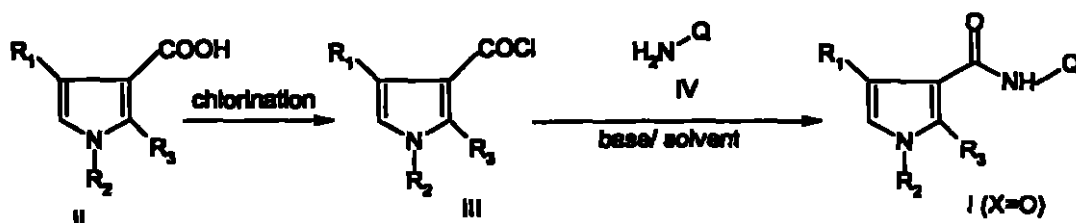
1-methyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methoxymethyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl] amide.

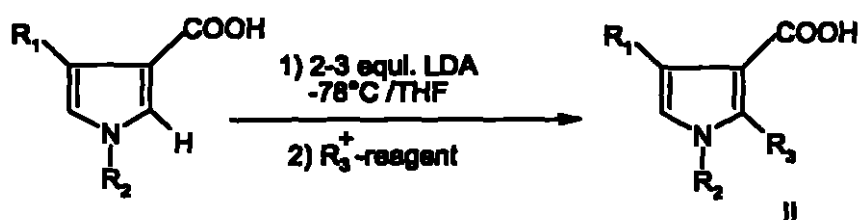
The compounds according to formula I wherein X is oxygen may be prepared according to the following reaction Scheme 1.

Scheme 1



The synthesis of the pyrrole carboxylic acids of formula II wherein R_3 is not hydrogen may be conducted according to Scheme 2A.

Scheme 2A



R_3^+ -reagents : F^+ = N-fluoro-bis(phenylsulfonyl)amine, N-fluoro-N-methyl-toluene-4-sulfonamide, 2-fluoro-3,3-dimethyl-2,3-dihydro-1,2-benzisothiazole-1,1-dioxide, 1-fluoro-sym.-collidiniumtetrafluoroborate

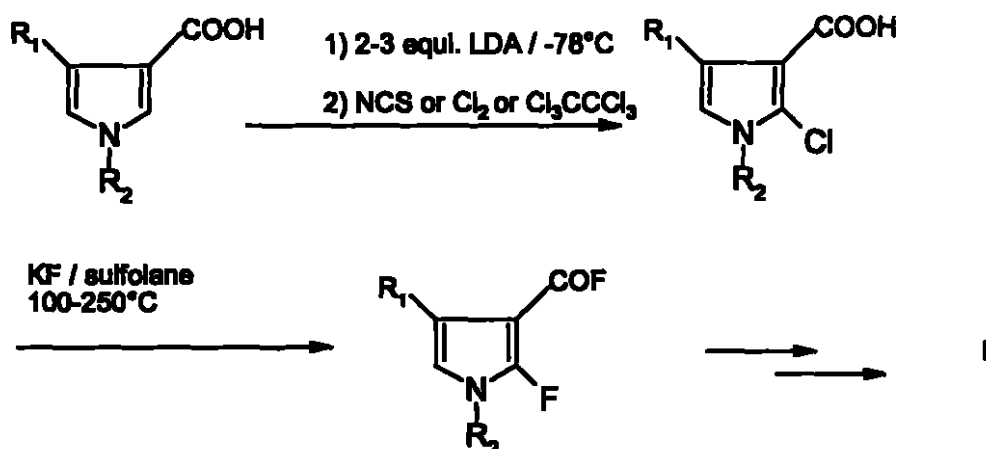
Me^+ = MeI, MeBr, DMS (dimethylsulfate)

Cl^+ = NCS, Cl_2 , hexachloroethane

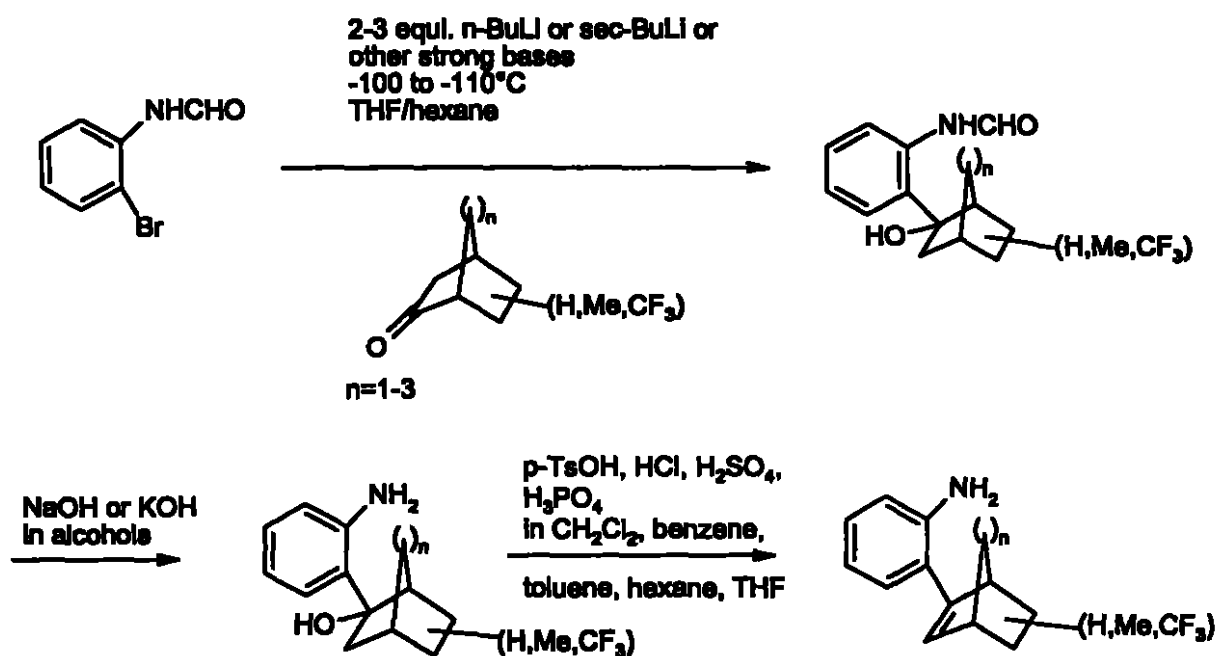
LDA = lithiumdiisopropylamide

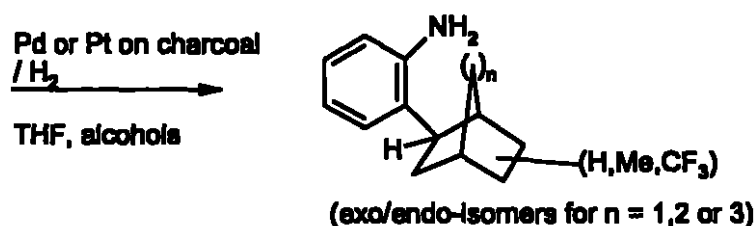
The synthesis of the pyrrole carboxylic acids of formula II wherein $R_3 = H$ is described in WO-00/09482.

Alternatively the pyrrole carboxylic acid fluorides wherein R_3 is fluoro may be obtained as outlined in Scheme 2B).

Scheme 2B

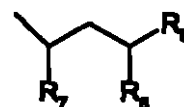
The amines $\text{H}_2\text{N-Q}$ of formula IV, wherein $\text{Q} = \text{Q1}$ as defined in formula I and R_4 is bicycloalkyl, bicycloalkenyl or bicycloalkadienyl may be obtained according to Scheme 3A.

Scheme 3A



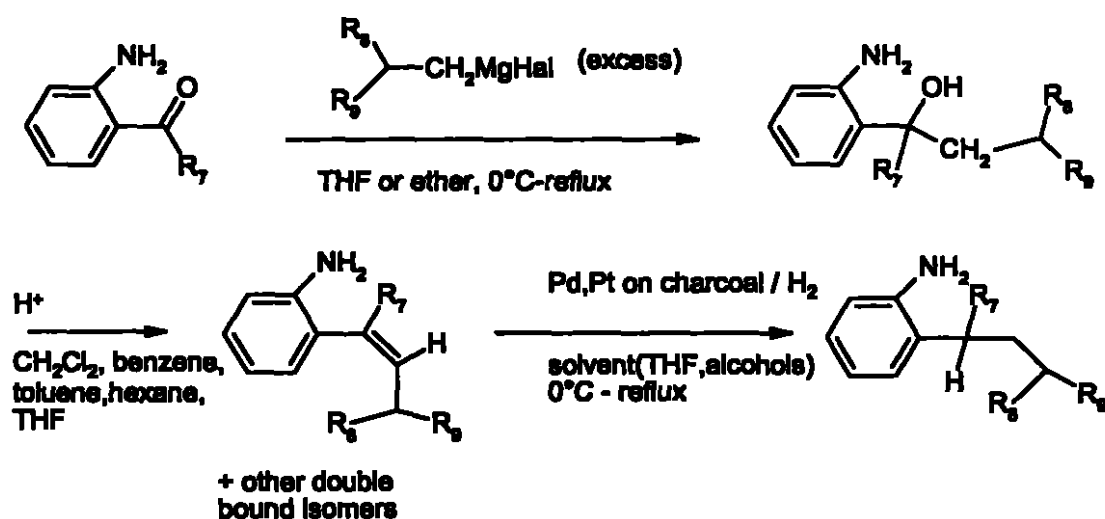
For the synthesis of 2-bicyclo[2.2.1]hept-2-yl phenylamine and other bicyclosystems see for example EP-116044.

The amines $\text{H}_2\text{N-Q}$ wherein Q is Q1 and R_4 is a group of the form



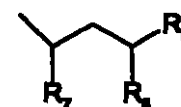
may be obtained according to Scheme 3B.

Scheme 3B

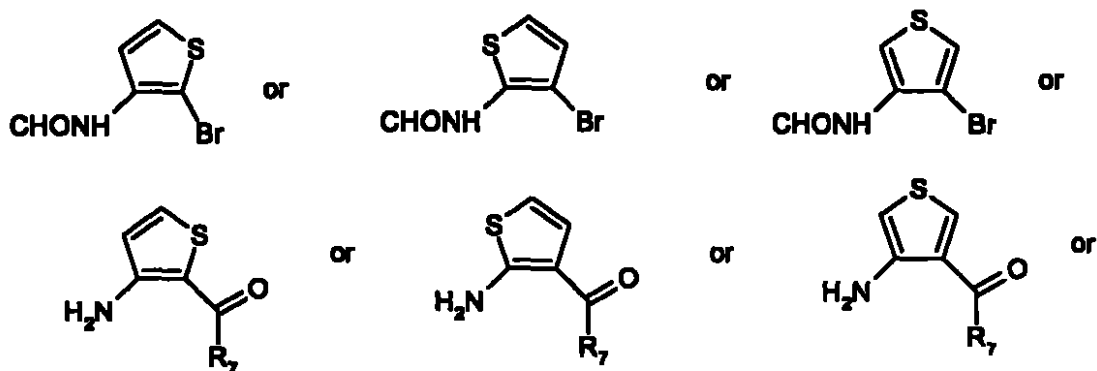


(other synthesis for ortho-alkylsubstituted anilines are also described in EP-824099)

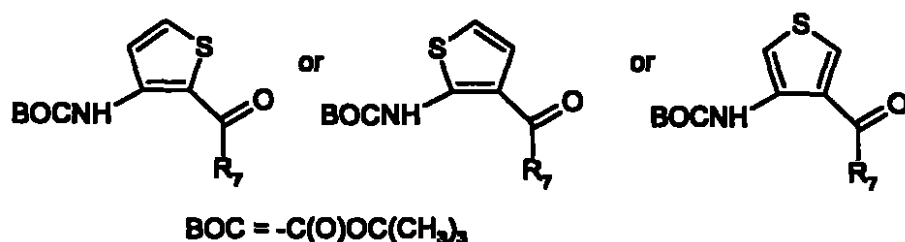
The synthesis of the amines IV wherein Q is Q2, Q3 or Q4 and R_4 is bicycloalkyl,

bicycloalkenyl, bicycloalkadienyl or a group of the form  may be obtained

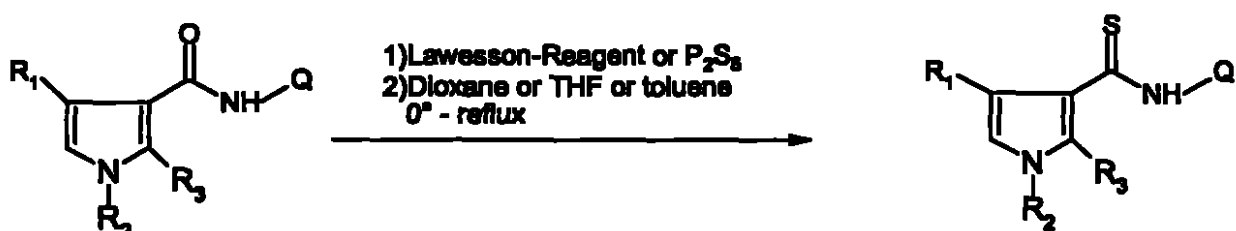
according to scheme 3A) or 3B) starting from the following corresponding thienyl derivatives



(protected aminothiophenes)



The carbothioic acid amides of formula I, wherein X=S may be obtained from the compounds of formula I wherein X=O according to Scheme 4.

Scheme 4

The following phenylamine derivatives of formula IV are new and part of the invention :

2-bicyclo[2.2.2]oct-2-yl-phenylamine;

2-bicyclo[2.2.2]oct-2-en-2-yl-phenylamine; and

2-bicyclo[2.2.2]octa-2,5-dien-2-yl-phenylamine.

Surprisingly, it has now been found that the novel compounds of formula I have, for practical purposes, a very advantageous spectrum of activities for protecting plants against diseases that are caused by fungi as well as by bacteria and viruses.

The compounds of formula I can be used in the agricultural sector and related fields of use as active ingredients for controlling plant pests. The novel compounds are distinguished by excellent activity at low rates of application, by being well tolerated by plants and by being environmentally safe. They have very useful curative, preventive and systemic properties and are used for protecting numerous cultivated plants. The compounds of formula I can be used to inhibit or destroy the pests that occur on plants or parts of plants (fruit, blossoms, leaves, stems, tubers, roots) of different crops of useful plants, while at the same time protecting also those parts of the plants that grow later e.g. from phytopathogenic microorganisms.

It is also possible to use compounds of formula I as dressing agents for the treatment of plant propagation material, in particular of seeds (fruit, tubers, grains) and plant cuttings (e.g. rice), for the protection against fungal infections as well as against phytopathogenic fungi occurring in the soil.

The compounds I are, for example, effective against the phytopathogenic fungi of the following classes: Fungi Imperfecti (e.g. *Botrytis*, *Pyricularia*, *Helminthosporium*, *Fusarium*, *Septoria*, *Cercospora* and *Alternaria*) and Basidiomycetes (e.g. *Rhizoctonia*, *Hemileia*, *Puccinia*). Additionally, they are also effective against the Ascomycetes classes (e.g. *Venturia* and *Erysiphe*, *Podosphaera*, *Monilinia*, *Uncinula*) and of the Oomycetes classes (e.g. *Phytophthora*, *Pythium*, *Plasmopara*). Outstanding activity has been observed against powdery mildew (*Erysiphe* spp.). Furthermore, the novel compounds of formula I are effective against phytopathogenic bacteria and viruses (e.g. against *Xanthomonas* spp, *Pseudomonas* spp, *Erwinia amylovora* as well as against the tobacco mosaic virus).

Within the scope of present invention, target crops to be protected typically comprise the following species of plants: cereal (wheat, barley, rye, oat, rice, maize, sorghum and related species); beet (sugar beet and fodder beet); pomes, drupes and soft fruit (apples, pears, plums, peaches, almonds, cherries, strawberries, raspberries and blackberries); leguminous plants (beans, lentils, peas, soybeans); oil plants (rape, mustard, poppy, olives, sunflowers, coconut, castor oil plants, cocoa beans, groundnuts); cucumber plants (pumpkins, cucumbers, melons); fibre plants (cotton, flax, hemp, jute); citrus fruit (oranges, lemons, grapefruit, mandarins); vegetables (spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes, paprika); lauraceae (avocado, cinnamomum, camphor) or plants such as tobacco,

nuts, coffee, eggplants, sugar cane, tea, pepper, vines, hops, bananas and natural rubber plants, as well as ornamentals.

The compounds of formula I are used in unmodified form or, preferably, together with the adjuvants conventionally employed in the art of formulation. To this end they are conveniently formulated in known manner to emulsifiable concentrates, coatable pastes, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granulates, and also encapsulations e.g. in polymeric substances. As with the type of the compositions, the methods of application, such as spraying, atomizing, dusting, scattering, coating or pouring, are chosen in accordance with the intended objectives and the prevailing circumstances. The compositions may also contain further adjuvants such as stabilizers, antifoams, viscosity regulators, binders or tackifiers as well as fertilizers, micronutrient donors or other formulations for obtaining special effects.

Suitable carriers and adjuvants can be solid or liquid and are substances useful in formulation technology, e.g. natural or regenerated mineral substances, solvents, dispersants, wetting agents, tackifiers, thickeners, binders or fertilizers. Such carriers are for example described in WO 97/33890.

The compounds of formula I are normally used in the form of compositions and can be applied to the crop area or plant to be treated, simultaneously or in succession with further compounds. These further compounds can be e.g. fertilizers or micronutrient donors or other preparations which influence the growth of plants. They can also be selective herbicides as well as insecticides, fungicides, bactericides, nematocides, molluscicides or mixtures of several of these preparations, if desired together with further carriers, surfactants or application promoting adjuvants customarily employed in the art of formulation.

The compounds of formula I can be mixed with other fungicides, resulting in some cases in unexpected synergistic activities.

Mixing components which are particularly preferred are azoles such as azaconazole, bitertanol, propiconazole, difenoconazole, diniconazole, cyproconazole, epoxiconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imazalil, imibenconazole, ipconazole, tebuconazole, tetraconazole, fenbuconazole, metconazole, myclobutanil, perfurazoate,

penconazole, bromuconazole, pyrifenoxy, prochloraz, triadimefon, triadimenol, triflumizole or triticonazole; pyrimidinyl carbinoles such as ancymidol, fenarimol or nuarimol; 2-amino-pyrimidine such as bupirimate, dimethirimol or ethirimol; morpholines such as dodemorph, fenpropidin, fenpropimorph, spiroxamin or tridemorph; anilinopyrimidines such as cyprodinil, pyrimethanil or mepanipyrim; pyrroles such as fenpiclonil or fludioxonil; phenylamides such as benalaxyl, furalaxyl, metalaxyl, R-metalaxyl, ofurace or oxadixyl; benzimidazoles such as benomyl, carbendazim, debacarb, fuberidazole or thlabendazole; dicarboximides such as chlozolinate, dichlozoline, lprodine, myclozoline, procymidone or vinclozolin; carboxamides such as carboxin, fenfuram, flutolanil, mepronil, oxycarboxin or thifluzamide; guanidines such as guazatine, dodine or lminoctadine; strobilurines such as azoxystrobin, kresoxim-methyl, metominostrobin, SSF-129, methyl 2-[(2-trifluoromethyl)-pyrid-6-yloxy-methyl]-3-methoxyacrylate or 2-[α [(α -methyl-3-trifluoromethyl-benzyl)imino]-oxy]-o-tolyl]-glyoxylic acid-methylester-O-methyloxime (trifloxystrobin); dithiocarbamates such as ferbam, mancozeb, maneb, metiram, propineb, thiram, zineb or ziram; N-halomethylthio-dicarboximides such as captafol, captan, dichlofluanid, fluoromide, folpet or tolyfluanid; copper compounds such as Bordeaux mixture, copper hydroxide, copper oxychloride, copper sulfate, cuprous oxide, mancozeb or oxine-copper; nitrophenol derivatives such as dinocap or nitrothal-isopropyl; organo phosphorous derivatives such as edifenphos, lprobenphos, isoprothiolane, phosdiphen, pyrazophos or toclofos-methyl; and other compounds of diverse structures such as acibenzolar-S-methyl, anilazine, blastocidin-S, chinomethionat, chloroneb, chlorothalonil, cymoxanil, dichlorone, diclomezine, dicloran, diethofencarb, dimethomorph, dithlanon, etridiazole, famoxadone, fenamidone, fenitro, ferimzone, fluazinam, flusulfamide, fenhexamid, fosetyl-aluminum, hymexazol, kasugamycin, methasulfocarb, pencycuron, phthalide, polyoxins, probenazole, propamocarb, pyroquilon, quinoxifen, quintozone, sulfur, triazoxide, tricyclazole, triforine, valdamycin, (S)-5-methyl-2-methylthio-5-phenyl-3-phenyl-amino-3,5-dihydroimidazol-4-one (RPA 407213), 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide (RH-7281), N-allyl-4,5-dimethyl-2-trimethylsilylthiophene-3-carboxamide (MON 65500), 4-chloro-4-cyano-N,N-dimethyl-5-p-tolylimidazole-1-sulfonamide (IKF-916), N-(1-cyano-1,2-dimethylpropyl)-2-(2,4-dichlorophenoxy)-propionamide (AC 382042), or iprovalicarb (SZX 722).

A preferred method of applying a compound of formula I, or an agrochemical composition which contains at least one of said compounds, is foliar application. The frequency of

application and the rate of application will depend on the risk of infestation by the corresponding pathogen. However, the compounds of formula I can also penetrate the plant through the roots via the soil (systemic action) by drenching the locus of the plant with a liquid formulation, or by applying the compounds in solid form to the soil, e.g. in granular form (soil application). In crops of water rice such granulates can be applied to the flooded rice field. The compounds of formula I may also be applied to seeds (coating) by impregnating the seeds or tubers either with a liquid formulation of the fungicide or coating them with a solid formulation.

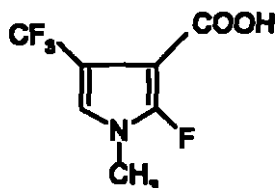
The formulation, i.e. the compositions containing the compound of formula I and, if desired, a solid or liquid adjuvant, are prepared in known manner, typically by intimately mixing and/or grinding the compound with extenders, e.g. solvents, solid carriers and, optionally, surface active compounds (surfactants).

The agrochemical formulations will usually contain from 0.1 to 99 % by weight, preferably from 0.1 to 95 % by weight, of the compound of formula I, 99.9 to 1 % by weight, preferably 99.8 to 5 % by weight, of a solid or liquid adjuvant, and from 0 to 25 % by weight, preferably from 0.1 to 25 % by weight, of a surfactant.

Advantageous rates of application are normally from 5 g to 2 kg of active ingredient (a.i.) per hectare (ha), preferably from 10 g to 1 kg a.i./ha, most preferably from 20 g to 600 g a.i./ha. When used as seed drenching agent, convenient dosages are from 10 mg to 1 g of active substance per kg of seeds.

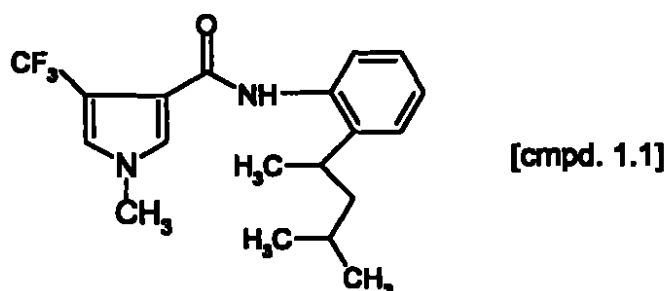
Whereas it is preferred to formulate commercial products as concentrates, the end user will normally use dilute formulations.

The following non-limiting examples illustrate the above-described invention in more detail. Temperatures are given in degrees Celsius. The following abbreviations are used: m.p.= melting point; b.p.= boiling point. "NMR" means nuclear magnetic resonance spectrum. MS stands for mass spectrum. "%" is percent by weight, unless corresponding concentrations are indicated in other units.

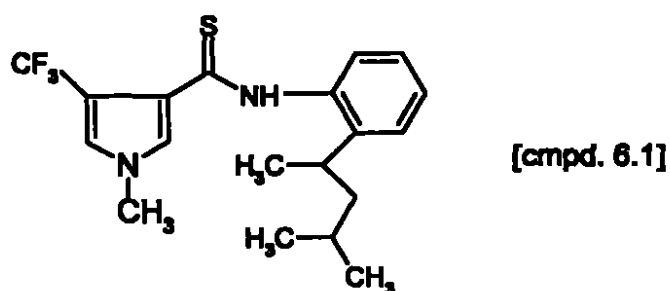
Example 1**2-Fluoro-1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid**

A solution of 1.25g (11mmol) lithiumdiisopropylamide (LDA) à 95% in 20ml absolute THF is dropwise added to a solution of 1.0g (5.2mmol) 1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid in 60ml THF in such a manner that the temperature remains constant at -75°C. After 3 hours stirring at -75°C, a solution of 1.95g (6.2mmol) N-fluoro-bis(phenylsulfonyl)amine in 20ml absolute THF is added in ca. 30 minutes at a constant temperature of -75°C. Then the cooling is stopped and the reaction mixture is stirred for 16 hours, thereby slowly warming up to room temperature. Then the solvent is removed in a water jet vacuum and the residue is solved in water. After addition of 1N hydrochloric acid (pH ≈ 1) ethylacetate is added and the organic phase extracted twice with additional water. After separation of the organic phase, drying over sodium sulfate and evaporation of the solvent in a water jet vacuum the raw material is obtained. The crude product is purified by column chromatography over silica-gel (eluant : hexane/ethylacetate = 1/1). Yield : 0.65g 2-Fluoro-1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid in the form of white crystals; m.p. : 190-191°C.

2-Chloro-1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid can be obtained in analogous manner using for example N-chlorosuccinimide as halogenation agent in the reaction described above, m.p. 197-198°C.

Example 2**1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid[2-(1,3-dimethylbutyl)phenyl]amide**

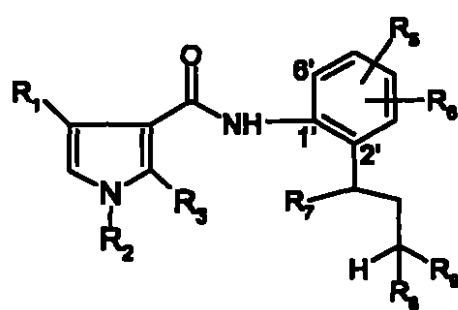
A solution of 0.5g (2.6mmol) 1-methyl-4-trifluoromethylpyrrole-3-carboxylic acid and 0.37g (2.85mmol) oxalylchloride in 20ml methylene chloride is stirred for 3 hours at room temperature in the presence of a catalytic amount of DMF. Then the acid chloride solution is slowly added to a solution of 0.46g (2.6mmol) 2-(1,3-dimethylbutyl)phenylamine, 0.33g (3.4mmol) triethylamine and 15ml methylene chloride. The resulting mixture is then stirred for 16 hours at room temperature. After removal of the solvent in a water jet vacuum, the raw material is taken up in ethylacetate. The ethylacetate phase is washed twice with water and then the organic phase is dried over sodium sulfate. After evaporation of the solvent in a water jet vacuum, the obtained residue is purified by column chromatography over silica-gel (eluant: hexane/ethylacetate = 3/1). Yield: 0.45g 1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid[2-(1,3-dimethylbutyl)phenyl]amide in the form of brownish crystals; m.p. : 83-85°C.

Example 3**1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carbothioic acid[2-(1,3-dimethylbutyl)phenyl]amide**

In a sulfonation flask a mixture of 0.6 g 1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid[2-(1,3-dimethylbutyl)phenyl]amide, 0.45 g P_2S_5 and 30 ml dioxane is heated at 70-75°C for 3 hours. After filtration, the solvent is removed in a water jet vacuum and the residue

taken up in ethylacetate. The organic phase is washed twice with water and ethylacetate is removed in a water jet vacuum. The crude material is purified by column chromatography over silica gel (eluant: ethylacetate/n-hexane = 1:1). Yield: 0.53 g 1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carbothioic acid[2-(1,3-dimethylbutyl)phenyl]amide in the form of a reddish resin (¹H-NMR).

Table 1



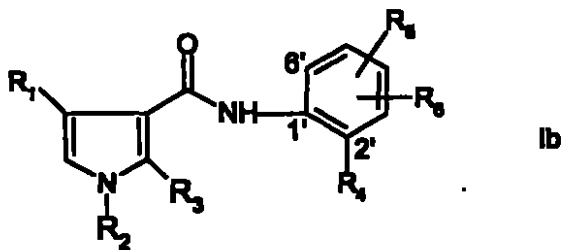
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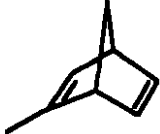
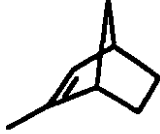
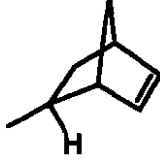
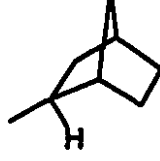
(md = mixture of diastereoisomers)

Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₇	R ₈	R ₉	phys. data m.p.°C
1.1	CF ₃	Me	H	H	H	Me	Me	Me	83-85
1.2	CF ₃	CH ₂ OMe	H	H	H	Me	Me	Me	75-77
1.3	CF ₃	Me	H	H	H	CF ₃	Me	Me	
1.4	CF ₃	Me	H	H	H	Me	CF ₃	CF ₃	
1.5	CF ₃	Me	H	H	H	Me	Me	Et	93-97 (md)
1.6	CF ₃	CH ₂ OMe	H	H	H	Me	Me	Et	
1.7	CF ₃	Me	H	6'-F	H	Me	Me	Me	
1.8	CF ₃	Me	H	5'-F	H	Me	Me	Me	
1.9	CF ₃	Me	H	H	H	Me	Et	Et	
1.10	CF ₃	Me	F	H	H	Me	Me	Me	
1.11	CF ₃	CH ₂ OMe	F	H	H	Me	Me	Me	
1.12	CF ₃	Me	F	H	H	Me	Me	Et	resin; ¹ H-NMR, MS
1.13	CF ₃	Me	F	H	H	CF ₃	Me	Me	resin; ¹ H-NMR, MS
1.14	CF ₃	Me	F	H	H	CF ₃	Me	Et	

1.15	CF ₂ H	Me	H	H	H	Me	Me	Me
1.16	CF ₂ H	Me	H	H	H	Me	Me	Et
1.17	CF ₂ H	Me	H	H	H	CF ₃	Me	Me
1.18	CF ₂ H	Me	H	H	H	Me	Me	Me

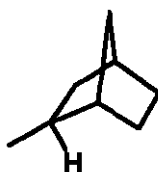
Table 2



Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	phys.data m.p. °C
2.1	CF ₃	Me	H		H	H	
2.2	CF ₃	Me	H		H	H	resin (¹ H-NMR, MS)
2.3	CF ₃	Me	H		H	H	
2.4	CF ₃	Me	H		H	H	136-137

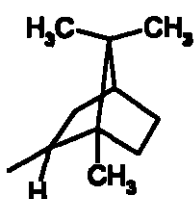
-14

2.5 CF₃ Me H



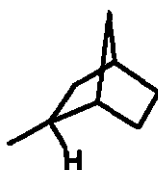
6'-F H

2.6 CF₃ Me H



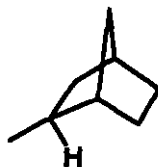
H H

2.7 CF₃ CH₂OMe H



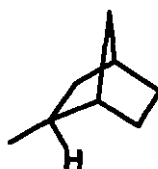
H H

2.8 CF₂H Me H



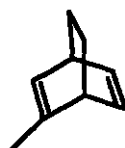
H H

2.9 CF₂H Me H



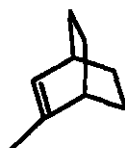
H H

2.10 CF₃ Me H



H H 105-107

2.11 CF₃ Me H



H H 110-112

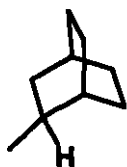
- 23 -

2.12 CF_3 Me H

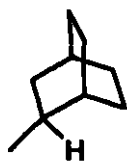
H H

2.13 CF_3 Me H

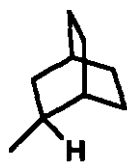
H H 127-129

2.14 CF_3 CH_2OMe H

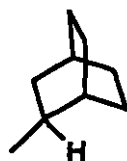
H H

2.15 CF_3 Me H

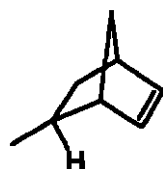
4'-F H

2.16 CF_3 CH_2OMe H

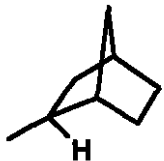
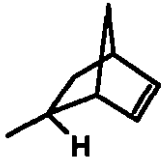
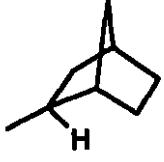
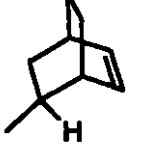
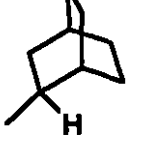
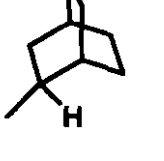
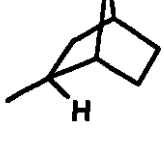
4'-F H

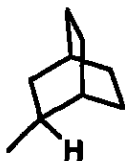
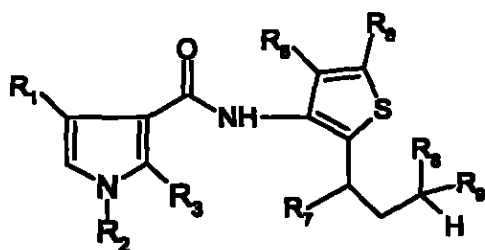
2.17 CF_2H Me H

H H

2.18 CF_3 Me F

H H

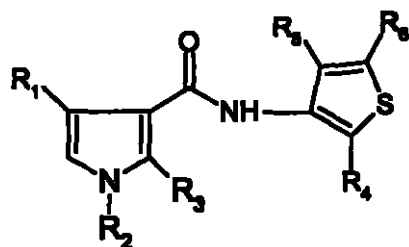
2.19	CF ₃	Me	F		H	H	
2.20	CF ₃	CH ₂ OMe	F		H	H	
2.21	CF ₃	CH ₂ OMe	F		H	H	
2.22	CF ₃	Me	F		H	H	
2.23	CF ₃	Me	F		H	H	176-178
2.24	CF ₃	CH ₂ OMe	F		H	H	
2.25	CF ₃	Me	Me		H	H	

2.26 CF₃ Me Me H HTable 3

1c

Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₇	R ₆	R ₈	phys. data m.p. °C
3.1	CF ₃	Me	H	H	H	Me	Me	Me	oil, MS
3.2	CF ₃	CH ₂ OMe	H	H	H	Me	Me	Me	
3.3	CF ₃	Me	H	H	H	CF ₃	Me	Me	
3.4	CF ₃	Me	H	H	H	Me	CF ₃	CF ₃	
3.5	CF ₃	Me	H	H	H	Me	Me	Et	
3.6	CF ₃	CH ₂ OMe	H	H	H	Me	Me	Et	
3.7	CF ₃	Me	H	6'-F	H	Me	Me	Me	
3.8	CF ₃	Me	H	5'-F	H	Me	Me	Me	
3.9	CF ₃	Me	H	H	H	Me	Et	Et	
3.10	CF ₃	Me	F	H	H	Me	Me	Me	
3.11	CF ₃	CH ₂ OMe	F	H	H	Me	Me	Me	
3.12	CF ₃	Me	F	H	H	Me	Me	Et	
3.13	CF ₃	Me	F	H	H	CF ₃	Me	Me	
3.14	CF ₃	Me	F	H	H	CF ₃	Me	Et	
3.15	CF ₂ H	Me	H	H	H	Me	Me	Me	
3.16	CF ₂ H	Me	H	H	H	Me	Me	Et	
3.17	CF ₂ H	Me	H	H	H	CF ₃	Me	Me	
3.18	CF ₂ H	Me	H	H	H	Me	Me	Me	

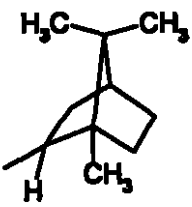
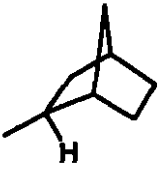
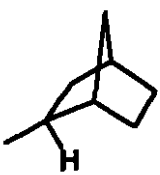
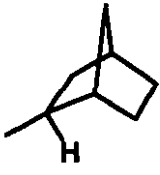
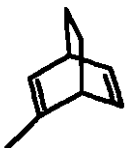
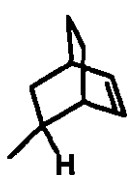
Table 4



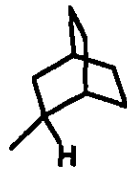
Id

Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	phys.data m.p.°C
4.1	CF ₃	Me	H		H	H	
4.2	CF ₃	Me	H		H	H	resin
4.3	CF ₃	Me	H		H	H	
4.4	CF ₃	Me	H		H	H	resin
4.5	CF ₃	Me	H		6'-F	H	

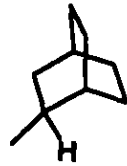
- 27 -

4.6	CF ₃	Me	H		H	H
4.7	CF ₃	CH ₂ OMe	H		H	H
4.8	CF ₂ H	Me	H		H	H
4.9	CF ₂ H	Me	H		H	H
4.10	CF ₃	Me	H		H	H
4.11	CF ₃	Me	H		H	H
4.12	CF ₃	Me	H		H	H

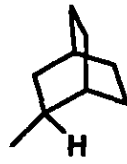
4.13 CF_3 **Me** H H H



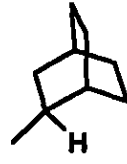
4.14 CF_3 CH_2OMe H H H



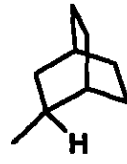
4.15 CF_3 **Me** H 4'-F H



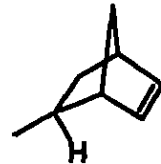
4.16 CF_3 CH_2OMe H 4'-F H



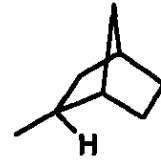
4.17 CF_2H **Me** H H H



4.18 CF_3 **Me** F H H

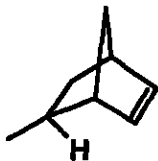


4.19 CF_3 **Me** F H H

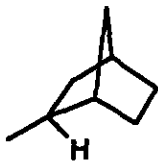


- 29 -

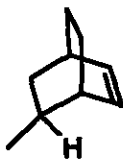
4.20 CF_3 CH_2OMe F H H



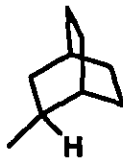
4.21 CF_3 CH_2OMe F H H



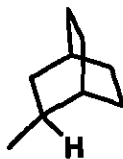
4.22 CF_3 Me F H H



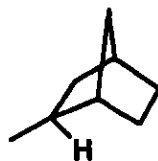
4.23 CF_3 Me F H H



4.24 CF_3 CH_2OMe F H H



4.25 CF_3 Me Me H H



4.26 CF_3 Me Me H H

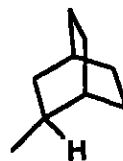
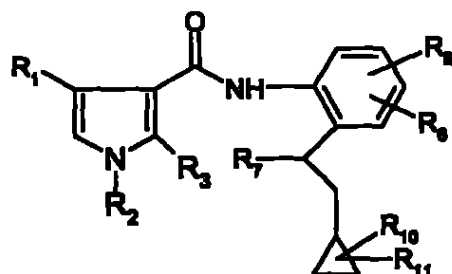
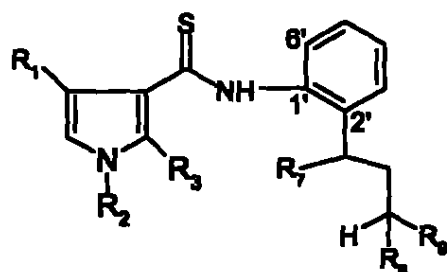


Table 5



Id

Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₇	R ₁₀	R ₁₁	phys.data m.p. °C
5.1	CF ₃	Me	H	H	H	Me	H	H	
5.2	CF ₃	CH ₂ OMe	H	H	H	Me	H	H	
5.3	CF ₃	Me	H	H	H	CF ₃	H	H	
5.4	CF ₃	Me	H	H	H	Me	Cl	Cl	
5.5	CF ₃	CH ₂ OMe	H	H	H	CF ₃	H	H	
5.6	CF ₃	Me	F	H	H	Me	H	H	
5.7	CF ₃	CH ₂ OMe	F	H	H	Me	H	H	
5.8	CF ₃	Me	F	H	H	CF ₃	H	H	
5.9	CF ₃	CH ₂ OMe	F	H	H	Me	H	H	
5.10	CF ₃	CH ₂ OMe	F	H	H	CF ₃	H	H	
5.11	CF ₃	Me	F	H	H	Me	Cl	Cl	
5.12	CF ₂ H	Me	H	H	H	Me	H	H	
5.13	CF ₂ H	Me	H	H	H	CF ₃	H	H	
5.14	CF ₂ H	CH ₂ OMe	H	H	H	Me	H	H	
5.15	CF ₂ H	CH ₂ OMe	H	H	H	CF ₃	H	H	
5.16	CF ₂ H	Me	F	H	H	Me	H	H	
5.17	CF ₂ H	Me	F	H	H	CF ₃	H	H	
5.18	CF ₂ H	CH ₂ OMe	F	H	H	Me	H	H	
5.19	CF ₂ H	CH ₂ OMe	F	H	H	CF ₃	H	H	
5.20	CF ₂ H	Me	H	H	H	Me	Cl	Cl	
5.21	CF ₂ H	CH ₂ OMe	H	H	H	Me	Cl	Cl	

Table 8

1a

(md = mixture of diastereoisomers)

Cmpd. no.	R ₁	R ₂	R ₃	R ₇	R ₈	R ₉	phys. data m.p. °C
6.1	CF ₃	Me	H	Me	Me	Me	resin; ¹ H-NMR; M ⁺ =368
6.2	CF ₃	CH ₂ OMe	H	Me	Me	Me	
6.3	CF ₃	Me	H	CF ₃	Me	Me	
6.4	CF ₃	Me	H	Me	CF ₃	CF ₃	
6.5	CF ₃	Me	H	Me	Me	Et	md; resin; ¹ H-NMR; M ⁺ =382
6.6	CF ₃	CH ₂ OMe	H	Me	Me	Et	
6.7	CF ₃	Me	H	Me	Et	Et	
6.8	CF ₃	Me	F	Me	Me	Me	resin
6.9	CF ₃	CH ₂ OMe	F	Me	Me	Me	
6.10	CF ₃	Me	F	Me	Me	Et	
6.11	CF ₃	Me	F	CF ₃	Me	Me	
6.12	CF ₃	Me	F	CF ₃	Me	Et	
6.13	CF ₂ H	Me	H	Me	Me	Me	
6.14	CF ₂ H	Me	H	Me	Me	Et	
6.15	CF ₂ H	Me	H	CF ₃	Me	Me	
6.16	CF ₂ H	Me	H	Me	Me	Me	

¹H-NMR Table

Compd. No.	¹ H-NMR-data (ppm/multiplicity/number of protons; solvent CDCl ₃)
6.1	0.82/2xd/6H; 1.19/d/3H; 1.35-1.60/m/1H; 3.70/s/3H; 6.99/d/1H; 7.2-7.4/m/4H; 7.61/d/1H; 8.70/s(broad)/1H

6.5 0.75-0.88/m/12H; 1.0-1.65/m/6H; 1.18/d/3H; 1.20/d/3H; 3.0/m/2H;
3.70/s/6H; 7.0/d/2H; 7.2-7.4/m/6H; 7.61/d/2H; 8.7/s/2H

Formulation Examples for compounds of formula I

Working procedures for preparing formulations of the compounds of formula I such as Emulsifiable concentrates, Solutions, Granulates, Dusts and Wettable powders are described in WO 97/33890.

Biological Examples: Fungicidal actions

Example B-1: Action against *Puccinia recondita* / wheat (Brownrust on wheat)

1 week old wheat plants cv. Arina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application wheat plants are inoculated by spraying a spore suspension (1×10^8 uredospores/ml) on the test plants. After an incubation period of 2 days at 20° C and 95% r. h. plants are kept in a greenhouse for 8 days at 20° C and 60% r.h. The disease incidence is assessed 10 days after inoculation. Compounds of Tables 1 to 6 show good activity in these tests (< 20% infestation).

Example B-2: Action against *Podosphaera leucotricha* / apple (Powdery mildew on apple)

5 week old apple seedlings cv. McIntosh are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. One day after application apple plants are inoculated by shaking plants infected with apple powdery mildew above the test plants. After an incubation period of 12 days at 22° C and 60% r. h. under a light regime of 14/10 h (light/dark) the disease incidence is assessed. Compounds of Tables 1 to 6 show good activity in this test.

Example B-3: Action against *Venturia inaequalis* / apple (Scab on apple)

4 week old apple seedlings cv. McIntosh are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application apple plants are inoculated by spraying a spore suspension (4×10^8 conidia/ml) on the test plants. After an incubation period of 4 days at 21° C and 95% r. h. the plants are placed for 4 days at 21° C

and 60% r. h. in a greenhouse. After another 4 day incubation period at 21° C and 95% r. h. the disease incidence is assessed.

Compounds of Tables 1 to 6 show good activity in this test.

Example B-4: Action against *Erysiphe graminis* / barley (Powdery mildew on barley)

1 week old barley plants cv. Express are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application barley plants are inoculated by shaking powdery mildew infected plants above the test plants. After an incubation period of 6 days at 20° C / 18°C (day/night) and 60% r. h. in a greenhouse the disease incidence is assessed.

Compounds of Tables 1 to 6 show good activity in this test.

Example B-5: Action against *Botrytis cinerea* / apple (Botrytis on apple fruits)

In an apple fruit cv. Golden Delicious 3 holes are drilled and each filled with 30µl droplets of the formulated test compound (0.002% active ingredient). Two hours after application 50µl of a spore suspension of *B. cinerea* (4×10^6 conidia/ml) are pipetted on the application sites. After an incubation period of 7 days at 22° C in a growth chamber the disease incidence is assessed.

Compounds of Tables 1 to 6 show good activity in this test.

Example B-6: Action against *Botrytis cinerea* / grape (Botrytis on grapes)

5 week old grape seedlings cv. Gutedel are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. Two days after application grape plants are inoculated by spraying a spore suspension (1×10^6 conidia/ml) on the test plants. After an incubation period of 4 days at 21° C and 95% r. h. in a greenhouse the disease incidence is assessed.

Compounds of Tables 1 to 6 show good activity in this test.

Example B-7: Action against *Botrytis cinerea* / tomato (Botrytis on tomatoes)

4 week old tomato plants cv. Roter Gnom are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. Two days after application tomato plants are inoculated by spraying a spore suspension (1×10^6 conidia/ml) on the test plants. After an

Incubation period of 4 days at 20° C and 95% r. h. In a growth chamber the disease incidence is assessed.

Compounds of Tables 1 to 6 show good activity in this test.

Example B-8: Action against *Pyrenophora teres* / barley (Net blotch on barley)

1 week old barley plants cv. Express are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. Two days after application barley plants are inoculated by spraying a spore suspension (3×10^4 conidia/ml) on the test plants. After an incubation period of 2 days at 20° C and 95% r. h. plants are kept for 2 days at 20° C and 60% r.h. in a greenhouse. The disease incidence is assessed 4 days after inoculation.

Compounds of Tables 1 to 6 show good activity in this test.

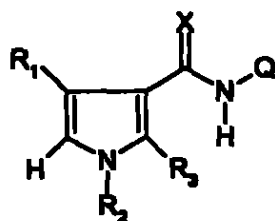
Example B-9: Action against *Septoria nodorum* / wheat (Septoria leaf spot on wheat)

1 week old wheat plants cv. Arina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application wheat plants are inoculated by spraying a spore suspension (5×10^4 conidia/ml) on the test plants. After an incubation period of 1 day at 20° C and 95% r. h. plants are kept for 10 days at 20° C and 60% r.h. in a greenhouse. The disease incidence is assessed 11 days after inoculation.

Compounds of Tables 1 to 6 show good activity in this test.

What is claimed is

1. A pyrrolecarboxylic acid amide or pyrrolecarbothiolic acid amide of the formula I



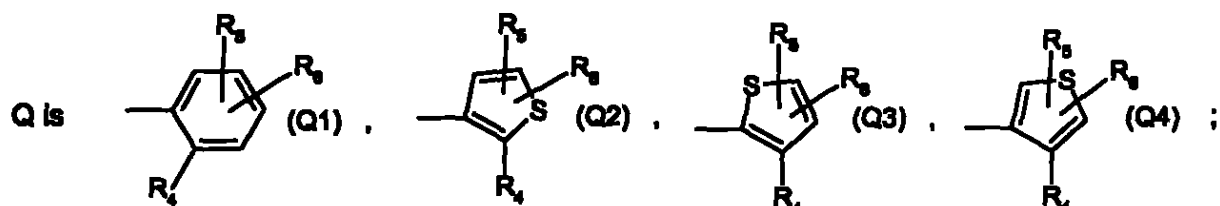
wherein

X is oxygen or sulfur;

R₁ is CF₃, CF₂H or CFH₂;

R₂ is C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy-C₁-C₃alkyl or C₁-C₃haloalkoxy-C₁-C₃alkyl;

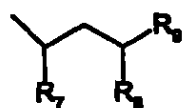
R₃ is hydrogen, methyl, CF₃ or fluoro;



R₄ is C₆-C₁₄bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃;

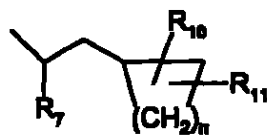
C₆-C₁₄bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃;

C₆-C₁₄bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃; a group of the form



wherein R₇, R₈ and R₉ are independently of each other C₁-C₃alkyl or

C₁-C₃haloalkyl; or a group



wherein R₁₀ and R₁₁ are independently of each other hydrogen or

halogen and n = 1 or 2; and

R₈ and R₉ are independently of each other hydrogen or halogen.

2. A compound of formula I according to claim 1, wherein X is oxygen.

3. A compound of formula I according to claim 1, wherein X is sulfur.

4. A compound of formula I according to claims 2 or 3, wherein

R₁ is CF₃;

R₂ is C₁-C₃alkyl, C₁-C₃haloalkyl or C₁-C₃alkoxy-C₁-C₃alkyl ;

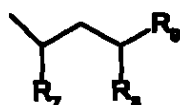
R₃ is hydrogen or fluoro;

Q is Q1;

R₄ is C₆-C₁₀bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃;

C₆-C₁₀bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃;

C₆-C₁₀bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃; a group of the form



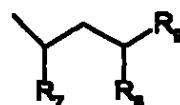
wherein R₇, R₈ and R₉ are independently of each other C₁-C₃alkyl or

C₁-C₃haloalkyl; and

R₆ and R₉ are independently of each other hydrogen, chloro or fluoro.

5. A compound of formula I according to claim 4, wherein

R₄ is a group of the form



wherein R₇, R₈ and R₉ are independently of each other C₁-C₃alkyl or

C₁-C₃haloalkyl.

6. A compound of formula I according to claims 2 or 3, wherein

R₁ is CF₃;

R₂ is C₁-C₃alkyl, C₁-C₃haloalkyl or C₁-C₃alkoxy-C₁-C₃alkyl;

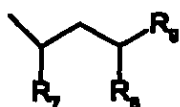
R₃ is hydrogen or fluoro;

Q is Q2, Q3 or Q4;

R₁ is C₆-C₁₀bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF₃;

C₆-C₁₀bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF₃;

C₆-C₁₀bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF₃; a group of the form



wherein R₇, R₈ and R₉ are independently of each other C₁-C₃alkyl or

C₁-C₃haloalkyl; and

R₈ and R₉ are independently of each other hydrogen, chloro or fluoro.

7. A compound of formula I according to claim 6, wherein

Q is Q2.

8. A compound of formula I according to claim 4, wherein

X is oxygen;

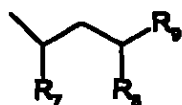
R₁ is CF₃;

R₂ is methyl or CH₂OCH₃;

R₃ is hydrogen or fluoro;

Q is Q1;

R₄ is a group of the form



wherein R₇, R₈ and R₉ are independently of each other CF₃, methyl or ethyl,

preferably methyl; and

R₈ and R₉ are independently of each other hydrogen, fluoro or chloro.

9. A compound of formula I according to claim 8, wherein

R₂ is methyl.

10. A compound of formula I according to claim 8, wherein

X is oxygen;

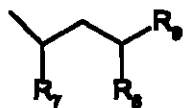
R_1 is CF_3 ;

R_2 is methyl;

R_3 is hydrogen;

Q is Q1;

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other methyl or ethyl,

preferably methyl; and

R_7 and R_8 are independently of each other hydrogen, fluoro or chloro.

11. A compound of formula I according to claim 8, wherein

X is oxygen;

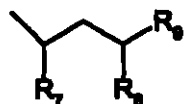
R_1 is CF_3 ;

R_2 is methyl;

R_3 is fluoro;

Q is Q1;

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other methyl or ethyl,

preferably methyl; and

R_7 and R_8 are independently of each other hydrogen, fluoro or chloro.

12. A compound of formula I according to claim 1 selected from

1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

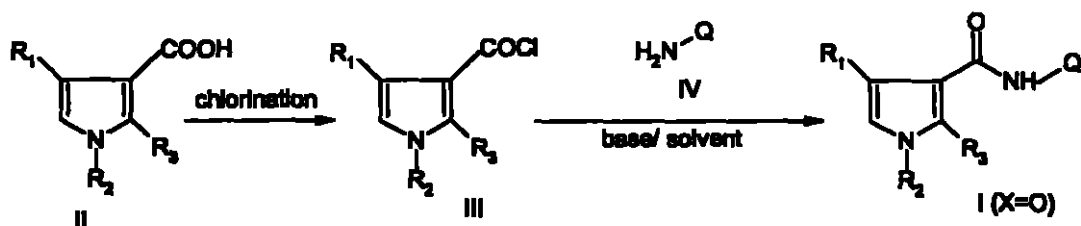
1-methoxymethyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

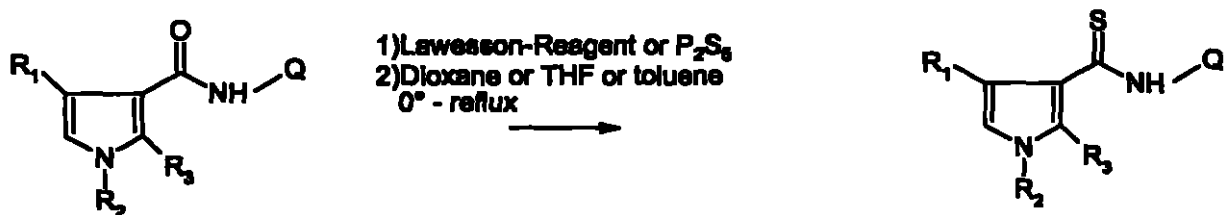
1-methoxymethyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methyl-4-trifluoromethyl-1H-pyrrole-3-carbothioic acid [2-(1,3-dimethylbutyl)phenyl]amide.

13. A process for the preparation of compounds of formula I, which comprises in a first step preparing the compounds of formula I wherein X=O according to the scheme



and optionally converting these compounds to the compounds of formula I wherein X=S according to the following scheme



and wherein R_1 , R_2 , R_3 and Q are as defined for formula I in claim 1.

14. A composition for controlling microorganisms and preventing attack and infestation of plants, wherein the active ingredient is a compound as claimed in claim 1 together with a suitable carrier.

15. Use of a compound of formula I according to claim 1 for protecting plants against infestation by phytopathogenic microorganisms.

16. A method of controlling or preventing infestation of cultivated plants by phytopathogenic microorganisms by application of a compound of formula I as claimed in claim 1 to plants, to parts thereof or the locus thereof.



INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

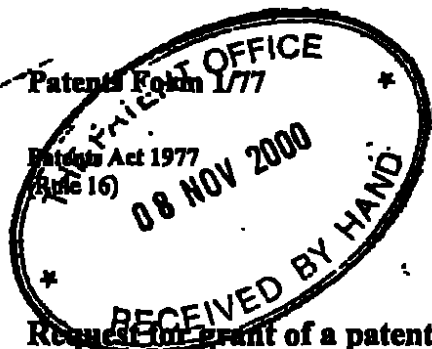
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Signed

Dated 28 April 2003

An Executive Agency of the Department of Trade and Industry



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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office
Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference **PF/5-50034P1**

0027284.9

3. Full name, address and postcode of the or of each applicant
(underline all surnames)

**NOVARTIS AG
SCHWARZWALDALLEE 215
4058 BASEL
SWITZERLAND**

Patent ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

SWITZERLAND

8 NOV 2000

712548760.2

4. Title of invention **Organic Compounds**

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent
(including the postcode)

**B.A. YORKE & CO.
CHARTERED PATENT AGENT
COOMB HOUSE 7 ST. JOHN'S
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MIDDLESEX TW7 6NH**

Syngenta Ltd
Intellectual Property
Jealott's Hill International Research Cent
P.O. Box 3538
Bracknell
GB - Berkshire
RG42 6YA

Patents ADP number (if you know it)

1800001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day/month/year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day/month/year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

Yes

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

(see note (d))

25

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 27

Claim(s) 4

Abstract

Drawing(s)

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents (*please specify*)

11. I/We request the grant of a patent on the basis of this application

Signature

Date

B. H. Zinkert & Co.

B.A. Yorke & Co.

08 November 2000

12. Name and daytime telephone number of person to contact in the United Kingdom
- Mrs. E. Cheetham
020 8560 5847

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After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

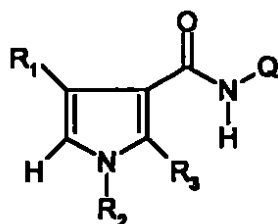
- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
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187

Organic Compounds

The present invention relates to novel pyrrolecarboxamides which have microbicidal activity, in particular fungicidal activity. The invention also relates to the preparation of these substances, to agrochemical compositions which comprise at least one of the novel compounds as active ingredient, to the preparation of the compositions mentioned and to the use of the active ingredients or compositions in agriculture and horticulture for controlling or preventing infestation of plants by phytopathogenic microorganisms, preferably fungi.

The pyrrolecarboxamides of the present invention have the general formula I

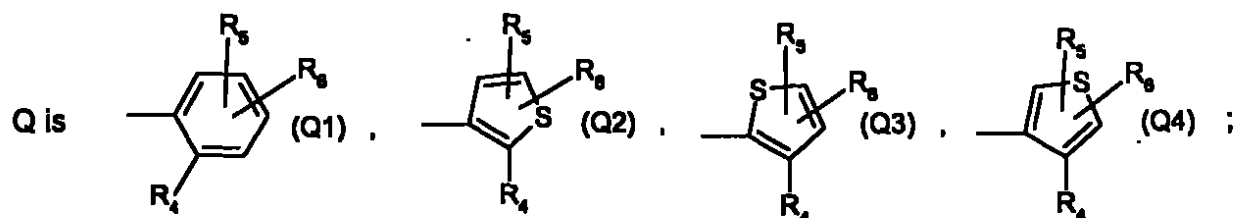


wherein

R_1 is CF_3 , CF_2H or CFH_2 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy- C_1 - C_3 alkyl or C_1 - C_3 haloalkoxy- C_1 - C_3 alkyl;

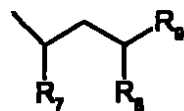
R_3 is hydrogen, methyl, CF_3 or fluoro;



R_4 is C_6 - C_{14} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

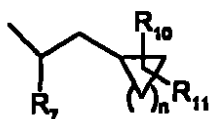
C_6 - C_{14} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{14} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_5 and R_6 are independently of each other hydrogen or halogen.

Surprisingly, it has now been found that the compounds of formula I exhibit improved biological properties which render them more suitable for the practical use in agriculture and horticulture.

Where asymmetrical carbon atoms are present in the compounds of formula I, these compounds are in optically active form. The invention relates to the pure isomers, such as enantiomers and diastereomers, as well as to all possible mixtures of isomers, e.g. mixtures of diastereomers, racemates or mixture of racemates.

Within the present specification alkyl denotes methyl, ethyl, n-propyl and isopropyl. Non-branched alkyl is preferred. Alkyl as part of other radicals such as alkoxy, haloalkyl, etc. is understood in an analogous way. Halogen will be understood generally as meaning fluoro, chloro, bromo or iodo. Fluoro, chloro or bromo are preferred meanings. Halogen as part of other radicals such as haloalkyl, haloalkoxy, etc. is understood in an analogous way.

Bicycloalkyl is, depending on the ring size, bicyclo[2.1.1]hexane, bicyclo[2.2.1]heptane, bicyclo[2.2.2]octane, bicyclo[3.2.1]octane, bicyclo[3.2.2]nonane, bicyclo[4.2.2]decane, bicyclo[4.3.2]undecane, adamantane and the like.

Bicycloalkenyl is bicyclo[2.1.1]hex-4-ene, bicyclo[2.2.1]hept-2-ene, bicyclo[2.2.2]oct-2-ene and the like.

Bicycloalkadienyl is bicyclo[2.2.1]hepta-2,5-diene, bicyclo[2.2.2]octa-2,5-diene, and the like.

Preferred subgroups of compounds of formula I are those wherein

R_1 is CF_3 ; or

R_1 is CF_2H ; or

R_1 is CFH_2 ; or

R_2 is C_1 - C_3 alkyl; or

R_2 is C_1 - C_3 haloalkyl; or

R_2 is C_1 - C_3 alkoxy- C_1 - C_3 alkyl; or

R_2 is C_1 - C_3 haloalkoxy- C_1 - C_3 alkyl; or

R_3 is hydrogen; or

R_3 is methyl; or

R_3 is CF_3 ; or

R_3 is fluoro; or

Q is $Q1$; or

Q is $Q2$; or

Q is $Q3$; or

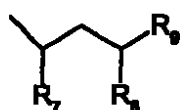
Q is $Q4$; or

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

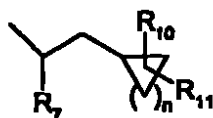
C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; or

R_5 and R_6 are independently of each other hydrogen, chloro, bromo or fluoro; or

R_5 and R_6 are independently of each other hydrogen, chloro or fluoro; or

R_5 is hydrogen and R_6 is chloro or fluoro.

Further preferred subgroups are those wherein

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl or C_1 - C_3 haloalkyl;

R_3 is hydrogen or fluoro;

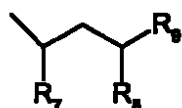
Q is Q1;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

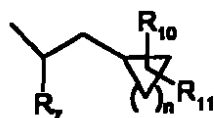
C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; or

R_5 and R_6 are independently of each other hydrogen, fluoro, chloro or bromo; or

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl or C_1 - C_3 haloalkyl;

R_3 is hydrogen or fluoro;

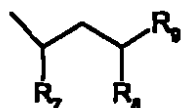
Q is Q2, Q3 or Q4;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

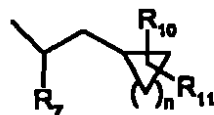
C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; or

a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; or

R_5 and R_6 are independently of each other hydrogen, fluoro, chloro or bromo.

Preferred individual compounds are :

1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

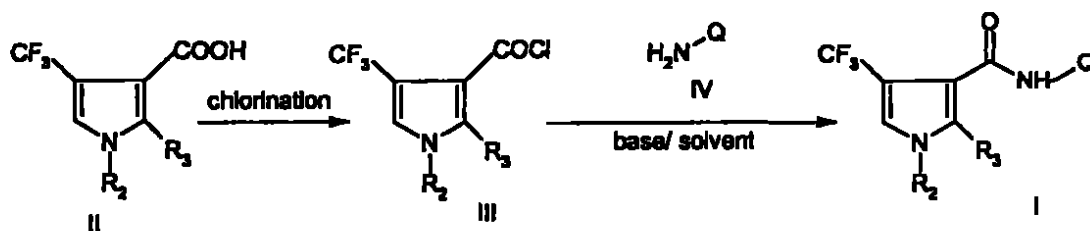
1-methoxymethyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methoxymethyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide.

The compounds according to formula I may be prepared according to the following reaction schemes.

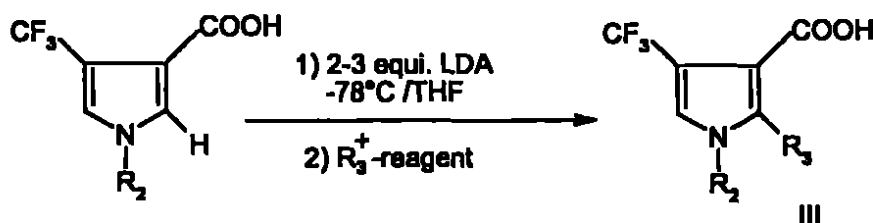
Scheme 1



Synthesis of the pyrrole carboxylic acids

Scheme 2

A)

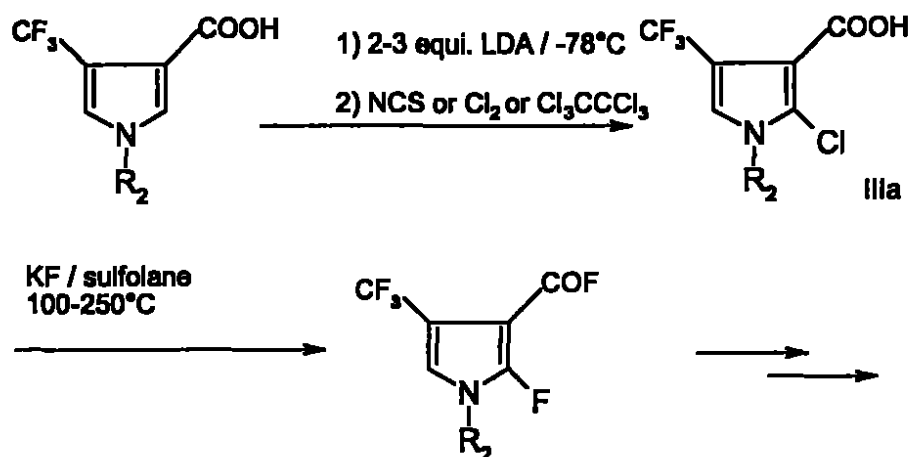


R_3^+ -reagents : F^+ = N-fluoro-bis(phenylsulfonyl)amine, N-fluoro-N-methyl-toluene-4-sulfonamide, 2-fluoro-3,3-dimethyl-2,3-dihydro-1,2-benzisothiazole-1,1-dioxide, 1-fluoro-sym.-collidinumtetrafluoroborate

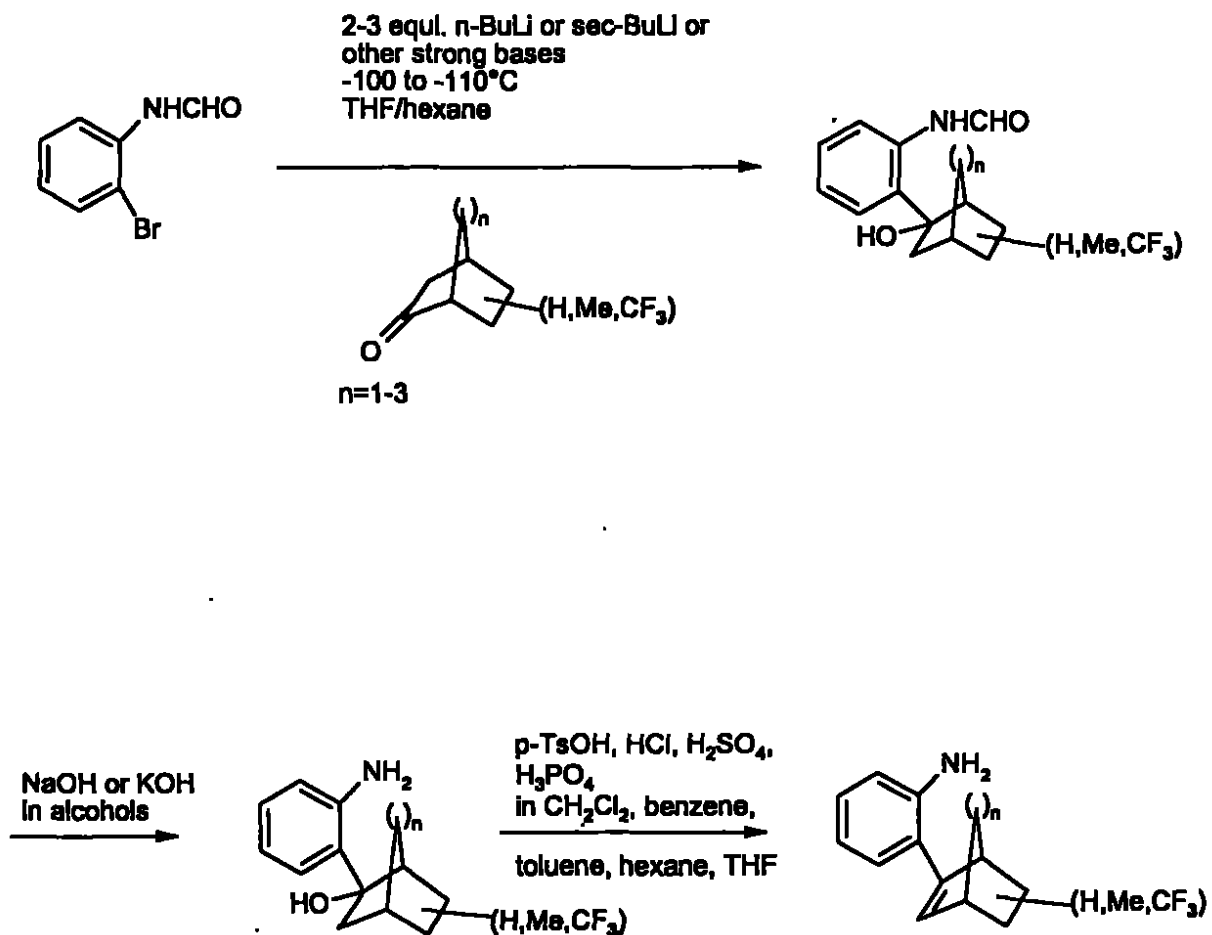
Me^+ = MeI, MeBr, DMS (dimethylsulfate)

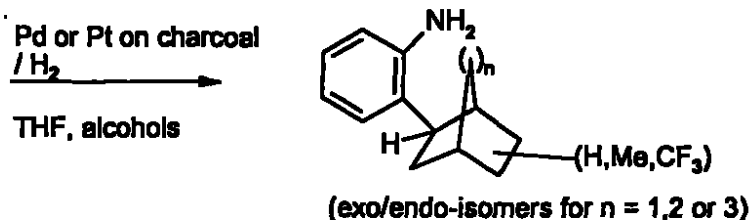
Cl^+ = NCS, Cl_2 , hexachloroethane

LDA = lithiumdiisopropylamide

B) other route for $R_3 = F$ Synthesis of the amines $\text{H}_2\text{N-Q}$, specially $\text{Q} = \text{Q1}$ Scheme 3

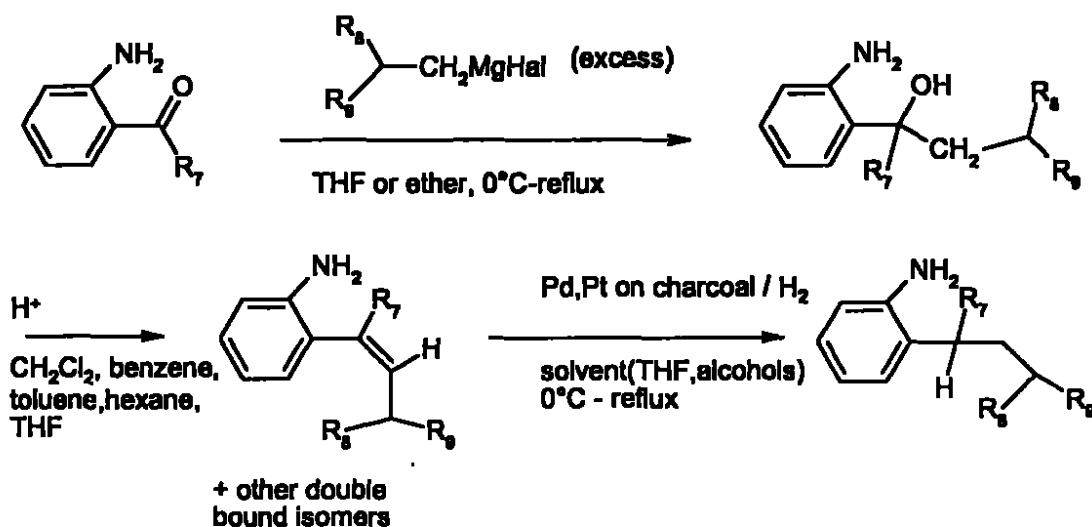
A)





Lit. for the synthesis of 2-bicyclo[2.2.1]hept-2-yl phenylamine and other bicyclosystems : EP-116044.

B)



(other synthesis for ortho-alkylsubstituted anilines see also EP-824099)

The following phenylamine derivatives are new and part of the invention :

2-bicyclo[2.2.2]oct-2-yl-phenylamine;

2-bicyclo[2.2.2]oct-2-en-2-yl-phenylamine; and

2-bicyclo[2.2.2]octa-2,5-dien-2-yl-phenylamine.

Surprisingly, it has now been found that the novel compounds of formula I have, for practical purposes, a very advantageous spectrum of activities for protecting plants against diseases that are caused by fungi as well as by bacteria and viruses.

The compounds of formula I can be used in the agricultural sector and related fields of use as active ingredients for controlling plant pests. The novel compounds are distinguished by excellent activity at low rates of application, by being well tolerated by plants and by being

environmentally safe. They have very useful curative, preventive and systemic properties and are used for protecting numerous cultivated plants. The compounds of formula I can be used to inhibit or destroy the pests that occur on plants or parts of plants (fruit, blossoms, leaves, stems, tubers, roots) of different crops of useful plants, while at the same time protecting also those parts of the plants that grow later e.g. from phytopathogenic microorganisms.

It is also possible to use compounds of formula I as dressing agents for the treatment of plant propagation material, in particular of seeds (fruit, tubers, grains) and plant cuttings (e.g. rice), for the protection against fungal infections as well as against phytopathogenic fungi occurring in the soil.

The compounds I are, for example, effective against the phytopathogenic fungi of the following classes: Fungi imperfecti (e.g. *Botrytis*, *Pyricularia*, *Helminthosporium*, *Fusarium*, *Septoria*, *Cercospora* and *Alternaria*) and Basidiomycetes (e.g. *Rhizoctonia*, *Hemileia*, *Puccinia*). Additionally, they are also effective against the Ascomycetes classes (e.g. *Venturia* and *Erysiphe*, *Podosphaera*, *Monilinia*, *Uncinula*) and of the Oomycetes classes (e.g. *Phytophthora*, *Pythium*, *Plasmopara*). Outstanding activity has been observed against powdery mildew (*Erysiphe* spp.). Furthermore, the novel compounds of formula I are effective against phytopathogenic bacteria and viruses (e.g. against *Xanthomonas* spp, *Pseudomonas* spp, *Erwinia amylovora* as well as against the tobacco mosaic virus).

Within the scope of present invention, target crops to be protected typically comprise the following species of plants: cereal (wheat, barley, rye, oat, rice, maize, sorghum and related species); beet (sugar beet and fodder beet); pomes, drupes and soft fruit (apples, pears, plums, peaches, almonds, cherries, strawberries, raspberries and blackberries); leguminous plants (beans, lentils, peas, soybeans); oil plants (rape, mustard, poppy, olives, sunflowers, coconut, castor oil plants, cocoa beans, groundnuts); cucumber plants (pumpkins, cucumbers, melons); fibre plants (cotton, flax, hemp, jute); citrus fruit (oranges, lemons, grapefruit, mandarins); vegetables (spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes, paprika); lauraceae (avocado, cinnamomum, camphor) or plants such as tobacco, nuts, coffee, eggplants, sugar cane, tea, pepper, vines, hops, bananas and natural rubber plants, as well as ornamentals.

The compounds of formula I are used in unmodified form or, preferably, together with the adjuvants conventionally employed in the art of formulation. To this end they are conveniently formulated in known manner to emulsifiable concentrates, coatable pastes, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granulates, and also encapsulations e.g. in polymeric substances. As with the type of the compositions, the methods of application, such as spraying, atomising, dusting, scattering, coating or pouring, are chosen in accordance with the intended objectives and the prevailing circumstances. The compositions may also contain further adjuvants such as stabilisers, antifoams, viscosity regulators, binders or tackifiers as well as fertilisers, micronutrient donors or other formulations for obtaining special effects.

Suitable carriers and adjuvants can be solid or liquid and are substances useful in formulation technology, e.g. natural or regenerated mineral substances, solvents, dispersants, wetting agents, tackifiers, thickeners, binders or fertilisers. Such carriers are for example described in WO 97/33890.

The compounds of formula I are normally used in the form of compositions and can be applied to the crop area or plant to be treated, simultaneously or in succession with further compounds. These further compounds can be e.g. fertilisers or micronutrient donors or other preparations which influence the growth of plants. They can also be selective herbicides as well as insecticides, fungicides, bactericides, nematocides, molluscicides or mixtures of several of these preparations, if desired together with further carriers, surfactants or application promoting adjuvants customarily employed in the art of formulation.

The compounds of formula I can be mixed with other fungicides, resulting in some cases in unexpected synergistic activities.

Mixing components which are particularly preferred are azoles such as azaconazole, bitertanol, propiconazole, difenoconazole, diniconazole, cyproconazole, epoxiconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imazalil, imibenconazole, ipconazole, tebuconazole, tetraconazole, fenbuconazole, metconazole, myclobutanil, perfurazate, penconazole, bromuconazole, pyrifenoxy, prochloraz, triadimefon, triadimenol, triflumizole or triticonazole; pyrimidinyl carbinols such as ancymidol, fenarimol or nuarimol; 2-amino-pyrimidine such as bupirimate, dimethirimol or ethirimol; morpholines such as dodemorph,

fenpropidin, fenpropimorph, spiroxamin or tridemorph; anilinopyrimidines such as cyprodinil, pyrimethanil or mepanipyrim; pyrroles such as fenpiclonil or fludioxonil; phenylamides such as benalaxyl, furalaxyl, metalaxyl, R-metalaxyl, ofurace or oxadixyl; benzimidazoles such as benomyl, carbendazim, debacarb, fuberidazole or thiabendazole; dicarboximides such as chlozolinate, dichlozoline, iprodione, myclozoline, procymidone or vinclozolin; carboxamides such as carboxin, fenfuram, flutolanil, mepronil, oxycarboxin or thifluzamide; guanidines such as guazatine, dodine or iminoctadine; strobilurines such as azoxystrobin, kresoxim-methyl, metominostrobin, SSF-129, methyl 2-[(2-trifluoromethyl)-pyrid-6-yloxymethyl]-3-methoxyacrylate or 2-[α [(α -methyl-3-trifluoromethyl-benzyl)imino]-oxy]-o-tolyl]-glyoxylic acid-methylester-O-methyloxime (trifloxystrobin); dithiocarbamates such as ferbam, mancozeb, maneb, metiram, propineb, thiram, zineb or ziram; N-halomethylthio-dicarboximides such as captafol, captan, dichlofluanid, fluoromide, folpet or tolyfluanid; copper compounds such as Bordeaux mixture, copper hydroxide, copper oxychloride, copper sulfate, cuprous oxide, mancopper or oxine-copper; nitrophenol derivatives such as dinocap or nitrothal-isopropyl; organo phosphorous derivatives such as edifenphos, iprobenphos, isoprothiolane, phosdiphen, pyrazophos or toclofos-methyl; and other compounds of diverse structures such as acibenzolar-S-methyl, anilazine, blasticidin-S, chinomethionat, chloroneb, chlorothalonil, cymoxanil, dichlone, diclomezine, dicloran, diethofencarb, dlmethomorph, dithianon, etridiazole, famoxadone, fenamidone, fentin, ferimzone, fluazinam, flusulfamide, fenhexamid, fosetyl-aluminium, hymexazol, kasugamycin, methasulfocarb, pencycuron, phthalide, polyoxins, probenazole, propamocarb, pyroquilon, quinoxifen, quintozone, sulfur, triazoxide, tricyclazole, triforine, validamycin, (S)-5-methyl-2-methylthio-5-phenyl-3-phenyl-amino-3,5-dihydroimidazol-4-one (RPA 407213), 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide (RH-7281), N-allyl-4,5-dimethyl-2-trimethylsilylthiophene-3-carboxamide (MON 65500), 4-chloro-4-cyano-N,N-dimethyl-5-p-tolylimidazole-1-sulfonamide (IKF-916), N-(1-cyano-1,2-dimethylpropyl)-2-(2,4-dichlorophenoxy)-propionamide (AC 382042), or iprovalicarb (SZX 722).

A preferred method of applying a compound of formula I, or an agrochemical composition which contains at least one of said compounds, is foliar application. The frequency of application and the rate of application will depend on the risk of infestation by the corresponding pathogen. However, the compounds of formula I can also penetrate the plant through the roots via the soil (systemic action) by drenching the locus of the plant with a liquid

formulation, or by applying the compounds in solid form to the soil, e.g. in granular form (soil application). In crops of water rice such granulates can be applied to the flooded rice field. The compounds of formula I may also be applied to seeds (coating) by impregnating the seeds or tubers either with a liquid formulation of the fungicide or coating them with a solid formulation.

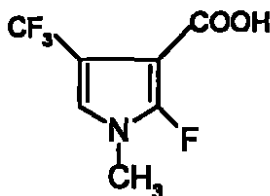
The formulation, i.e. the compositions containing the compound of formula I and, if desired, a solid or liquid adjuvant, are prepared in known manner, typically by intimately mixing and/or grinding the compound with extenders, e.g. solvents, solid carriers and, optionally, surface active compounds (surfactants).

The agrochemical formulations will usually contain from 0.1 to 99 % by weight, preferably from 0.1 to 95 % by weight, of the compound of formula I, 99.9 to 1 % by weight, preferably 99.8 to 5 % by weight, of a solid or liquid adjuvant, and from 0 to 25 % by weight, preferably from 0.1 to 25 % by weight, of a surfactant.

Advantageous rates of application are normally from 5 g to 2 kg of active ingredient (a.i.) per hectare (ha), preferably from 10 g to 1 kg a.i./ha, most preferably from 20 g to 600 g a.i./ha. When used as seed drenching agent, convenient dosages are from 10 mg to 1 g of active substance per kg of seeds.

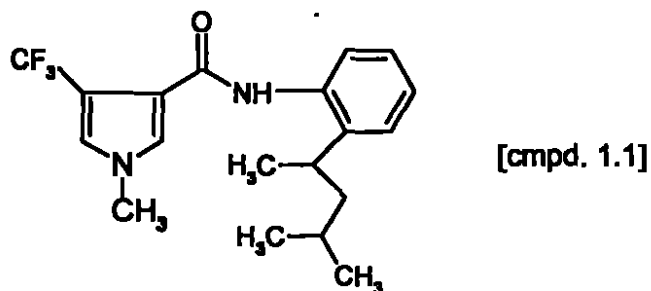
Whereas it is preferred to formulate commercial products as concentrates, the end user will normally use dilute formulations.

The following non-limiting examples illustrate the above-described invention in more detail. Temperatures are given in degrees Celsius. The following abbreviations are used: m.p.= melting point; b.p.= boiling point. "NMR" means nuclear magnetic resonance spectrum. MS stands for mass spectrum. "%" is percent by weight, unless corresponding concentrations are indicated in other units.

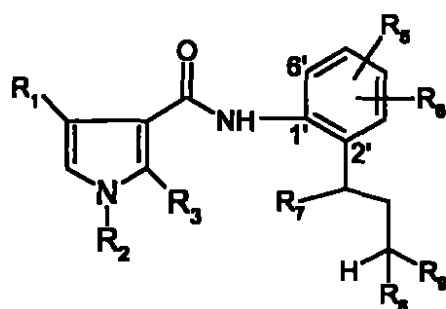
Example 1**2-Fluoro-1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid**

A solution of 1.25g (11mmol) lithiumdiisopropylamide (LDA) à 95% in 20ml absolute THF is dropwise added to a solution of 1.0g (5.2mmol) 1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid in 60ml THF in such a manner that the temperature remains constant at -75°C. After 3 hours stirring at -75°C, a solution of 1.95g (6.2mmol) N-fluoro-bis(phenylsulfonyl)amine in 20ml absolute THF is added in ca. 30 minutes at a constant temperature of -75°C. Then the cooling is stopped and the reaction mixture is stirred for 16hours, thereby slowly warming up to room temperature. Then the solvent is removed in a water jet vacuum and the residue is solved in water. After addition of 1N hydrochloric acid (pH ≈ 1) ethylacetate is added and the organic phase extracted twice with additional water. After separation of the organic phase, drying over sodium sulfate and evaporation of the solvent in a water jet vacuum the raw material is obtained. The crude product is purified by column chromatography over silica-gel (eluant : hexane/ethylacetate = 1/1). Yield : 0.65g 2-Fluoro-1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid in the form of white crystals; m.p. : 190-191°C.

2-Chloro-1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid can be obtained in analogous manner using for example N-chlorosuccinimide as halogenation agent in the reaction described above, m.p. 197-198°C.

Example 2**1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid[2-(1,3-dimethylbutyl)phenyl]amide**

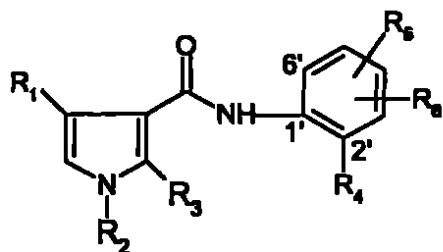
A solution of 0.5g (2.6mmol) 1-methyl-4-trifluoromethylpyrrole-3-carboxylic acid and 0.37g (2.85mmol) oxalylchloride in 20ml methylene chloride is stirred for 3 hours at room temperature in the presence of a catalytic amount of DMF. Then the acid chloride solution is slowly added to a solution of 0.46g (2.6mmol) 2-(1,3-dimethylbutyl)phenylamine, 0.33g (3.4mmol) triethylamine and 15ml methylene chloride. The resulting mixture is then stirred for 16 hours at room temperature. After removal of the solvent in a water jet vacuum, the raw material is taken up in ethylacetate. The ethylacetate phase is washed twice with water and then the organic phase is dried over sodium sulfate. After evaporation of the solvent in a water jet vacuum, the obtained residue is purified by column chromatography over silica-gel (eluant: hexane/ethylacetate = 3/1). Yield: 0.45g 1-Methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid[2-(1,3-dimethylbutyl)phenyl]amide in the form of brownish crystals; m.p. : 83-85°C.

32
CTable 1

1a

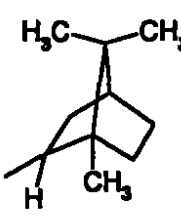
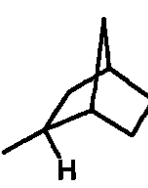
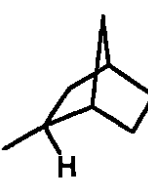
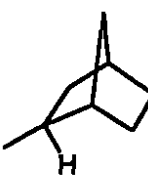
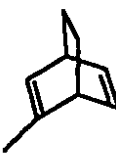
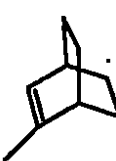
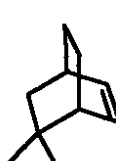
(md = mixture of diastereoisomers)

Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	R ₈	R ₉	phys. data m.p. °C
1.1	CF ₃	Me	H	H	H	H	Me	Me	Me	83-85
1.2	CF ₃	CH ₂ OMe	H	H	H	H	Me	Me	Me	75-77
1.3	CF ₃	Me	H	H	H	H	CF ₃	Me	Me	
1.4	CF ₃	Me	H	H	H	H	Me	CF ₃	CF ₃	
1.5	CF ₃	Me	H	H	H	H	Me	Me	Et	93-97 (md)
1.6	CF ₃	CH ₂ OMe	H	H	H	H	Me	Me	Et	
1.7	CF ₃	Me	H	6'-F	H	H	Me	Me	Me	
1.8	CF ₃	Me	H	5'-F	H	H	Me	Me	Me	
1.9	CF ₃	Me	H	H	H	H	Me	Et	Et	
1.10	CF ₃	Me	F	H	H	H	Me	Me	Me	
1.11	CF ₃	CH ₂ OMe	F	H	H	H	Me	Me	Me	
1.12	CF ₃	Me	F	H	H	H	Me	Me	Et	resin; ¹ H-NMR, MS
1.13	CF ₃	Me	F	H	H	H	CF ₃	Me	Me	resin; ¹ H-NMR, MS
1.14	CF ₃	Me	F	H	H	H	CF ₃	Me	Et	
1.15	CF ₂ H	Me	H	H	H	H	Me	Me	Me	
1.16	CF ₂ H	Me	H	H	H	H	Me	Me	Et	
1.17	CF ₂ H	Me	H	H	H	H	CF ₃	Me	Me	
1.18	CF ₂ H	Me	H	H	H	H	Me	Me	Me	

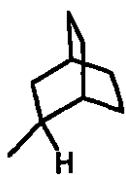
Table 2

1b

Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	phys.data m.p.°C
2.1	CF ₃	Me	H		H	H	
2.2	CF ₃	Me	H		H	H	resin (¹ H-NMR, MS)
2.3	CF ₃	Me	H		H	H	
2.4	CF ₃	Me	H		H	H	136-137
2.5	CF ₃	Me	H		6'-F	H	

2.6	CF ₃	Me	H		H	H	
2.7	CF ₃	CH ₂ OMe	H		H	H	
2.8	CF ₂ H	Me	H		H	H	
2.9	CF ₂ H	Me	H		H	H	
2.10	CF ₃	Me	H		H	H	105-107
2.11	CF ₃	Me	H		H	H	110-112
2.12	CF ₃	Me	H		H	H	

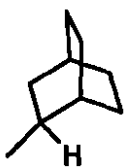
2.13 CF_3 Me H H H 127-129



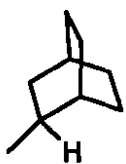
2.14 CF_3 CH_2OMe H H H



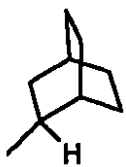
2.15 CF_3 Me H 4'-F H



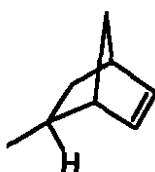
2.16 CF_3 CH_2OMe H 4'-F H



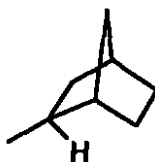
2.17 CF_2H Me H H H



2.18 CF_3 Me F H H

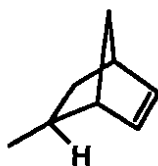


2.19 CF_3 Me F H H



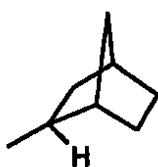
3X
C

2.20 CF₃ CH₂OMe F



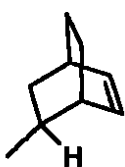
H H

2.21 CF₃ CH₂OMe F



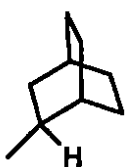
H H

2.22 CF₃ Me F



H H

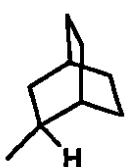
2.23 CF₃ Me F



H H

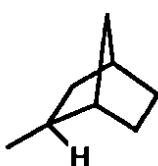
176-178

2.24 CF₃ CH₂OMe F



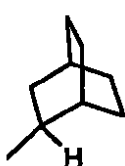
H H

2.25 CF₃ Me Me



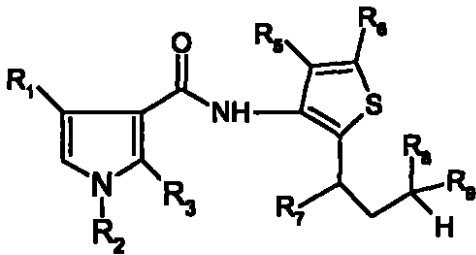
H H

2.26 CF₃ Me Me



H H

Table 3

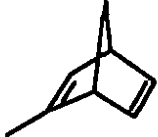
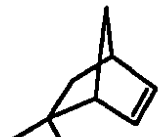
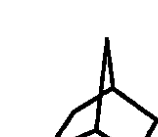


1c

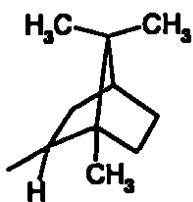
Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₇	R ₈	R ₉	phys. data m.p.°C
3.1	CF ₃	Me	H	H	H	Me	Me	Me	oil, MS
3.2	CF ₃	CH ₂ OMe	H	H	H	Me	Me	Me	
3.3	CF ₃	Me	H	H	H	CF ₃	Me	Me	
3.4	CF ₃	Me	H	H	H	Me	CF ₃	CF ₃	
3.5	CF ₃	Me	H	H	H	Me	Me	Et	
3.6	CF ₃	CH ₂ OMe	H	H	H	Me	Me	Et	
3.7	CF ₃	Me	H	6'-F	H	Me	Me	Me	
3.8	CF ₃	Me	H	5'-F	H	Me	Me	Me	
3.9	CF ₃	Me	H	H	H	Me	Et	Et	
3.10	CF ₃	Me	F	H	H	Me	Me	Me	
3.11	CF ₃	CH ₂ OMe	F	H	H	Me	Me	Me	
3.12	CF ₃	Me	F	H	H	Me	Me	Et	
3.13	CF ₃	Me	F	H	H	CF ₃	Me	Me	
3.14	CF ₃	Me	F	H	H	CF ₃	Me	Et	
3.15	CF ₂ H	Me	H	H	H	Me	Me	Me	
3.16	CF ₂ H	Me	H	H	H	Me	Me	Et	
3.17	CF ₂ H	Me	H	H	H	CF ₃	Me	Me	
3.18	CF ₂ H	Me	H	H	H	Me	Me	Me	

Table 4

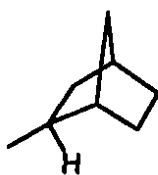


Cmpd. no.	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	phys.data m.p.°C
4.1	CF ₃	Me	H		H	H	
4.2	CF ₃	Me	H		H	H	resin (¹ H-NMR, MS)
4.3	CF ₃	Me	H		H	H	
4.4	CF ₃	Me	H		H	H	136-137
4.5	CF ₃	Me	H		6'-F	H	

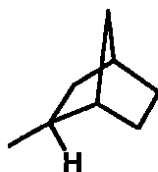
4.6 CF_3 Me H H H



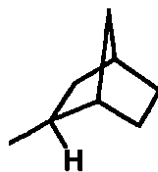
4.7 CF_3 CH_2OMe H H H



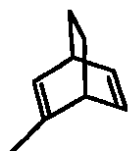
4.8 CF_2H Me H H H



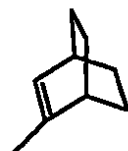
4.9 CF_2H Me H H H



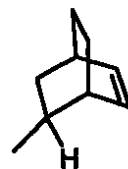
4.10 CF_3 Me H H H



4.11 CF_3 Me H H H

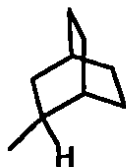


4.12 CF_3 Me H H H

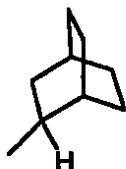


36
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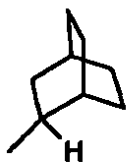
4.13 CF_3 Me H H H



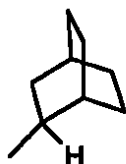
4.14 CF_3 CH_2OMe H H H



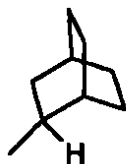
4.15 CF_3 Me H 4'-F H



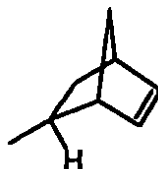
4.16 CF_3 CH_2OMe H 4'-F H



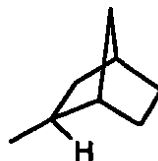
4.17 CF_2H Me H H H



4.18 CF_3 Me F H H



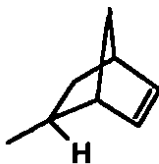
4.19 CF_3 Me F H H



198-

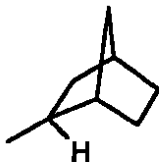
4.20 CF_3 CH_2OMe F

H H



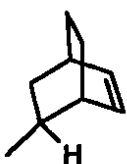
4.21 CF_3 CH_2OMe F

H H



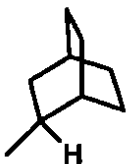
4.22 CF_3 Me F

H H



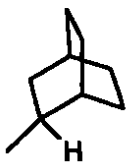
4.23 CF_3 Me F

H H



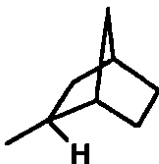
4.24 CF_3 CH_2OMe F

H H



4.25 CF_3 Me Me

H H



4.26 CF_3 Me Me

H H

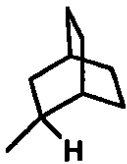
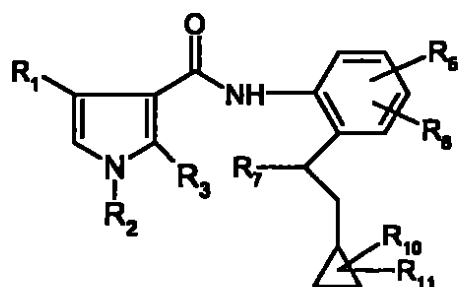


Table 5

Id

Cmpd. no.	R ₁	R ₂	R ₃	R ₅	R ₆	R ₇	R ₁₀	R ₁₁	phys.data m.p. °C
5.1	CF ₃	Me	H	H	H	Me	H	H	
5.2	CF ₃	CH ₂ OMe	H	H	H	Me	H	H	
5.3	CF ₃	Me	H	H	H	CF ₃	H	H	
5.4	CF ₃	Me	H	H	H	Me	Cl	Cl	
5.5	CF ₃	CH ₂ OMe	H	H	H	CF ₃	H	H	
5.6	CF ₃	Me	F	H	H	Me	H	H	
5.7	CF ₃	CH ₂ OMe	F	H	H	Me	H	H	
5.8	CF ₃	Me	F	H	H	CF ₃	H	H	
5.9	CF ₃	CH ₂ OMe	F	H	H	Me	H	H	
5.10	CF ₃	CH ₂ OMe	F	H	H	CF ₃	H	H	
5.11	CF ₃	Me	F	H	H	Me	Cl	Cl	
5.12	CF ₂ H	Me	H	H	H	Me	H	H	
5.13	CF ₂ H	Me	H	H	H	CF ₃	H	H	
5.14	CF ₂ H	CH ₂ OMe	H	H	H	Me	H	H	
5.15	CF ₂ H	CH ₂ OMe	H	H	H	CF ₃	H	H	
5.16	CF ₂ H	Me	F	H	H	Me	H	H	
5.17	CF ₂ H	Me	F	H	H	CF ₃	H	H	
5.18	CF ₂ H	CH ₂ OMe	F	H	H	Me	H	H	
5.19	CF ₂ H	CH ₂ OMe	F	H	H	CF ₃	H	H	
5.20	CF ₂ H	Me	H	H	H	Me	Cl	Cl	
5.21	CF ₂ H	CH ₂ OMe	H	H	H	Me	Cl	Cl	

Formulation Examples for compounds of formula I

Working procedures for preparing formulations of the compounds of formula I such as Emulsifiable concentrates, Solutions, Granulates, Dusts and Wettable powders are described in WO 97/33890.

Biological Examples: Fungicidal actions**Example B-1: Action against *Puccinia recondita* / wheat (Brownrust on wheat)**

1 week old wheat plants cv. Arina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application wheat plants are inoculated by spraying a spore suspension (1×10^5 uredospores/ml) on the test plants. After an incubation period of 2 days at 20° C and 95% r. h. plants are kept in a greenhouse for 8 days at 20° C and 60% r.h. The disease incidence is assessed 10 days after inoculation. Compounds of Tables 1 to 5 show good activity in these tests (< 20% infestation).

Example B-2: Action against *Podosphaera leucotricha* / apple (Powdery mildew on apple)

5 week old apple seedlings cv. McIntosh are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. One day after application apple plants are inoculated by shaking plants infected with apple powdery mildew above the test plants. After an incubation period of 12 days at 22° C and 60% r. h. under a light regime of 14/10 h (light/dark) the disease incidence is assessed. Compounds of Tables 1 to 5 show good activity in this test.

Example B-3: Action against *Venturia inaequalis* / apple (Scab on apple)

4 week old apple seedlings cv. McIntosh are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application apple plants are inoculated by spraying a spore suspension (4×10^5 conidia/ml) on the test plants. After an incubation period of 4 days at 21° C and 95% r. h. the plants are placed for 4 days at 21° C and 60% r. h. in a greenhouse. After another 4 day incubation period at 21° C and 95% r. h. the disease incidence is assessed. Compounds of Tables 1 to 5 show good activity in this test.

Example B-4: Action against *Erysiphe graminis* / barley (Powdery mildew on barley)

1 week old barley plants cv. Express are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application barley plants are inoculated by shaking powdery mildew infected plants above the test plants. After an incubation period of 6 days at 20° C / 18° C (day/night) and 60% r. h. in a greenhouse the disease incidence is assessed.

Compounds of Tables 1 to 5 show good activity in this test.

Example B-5: Action against *Botrytis cinerea* / apple (Botrytis on apple fruits)

In an apple fruit cv. Golden Delicious 3 holes are drilled and each filled with 30 µl droplets of the formulated test compound (0.002% active ingredient). Two hours after application 50 µl of a spore suspension of *B. cinerea* (4×10^5 conidia/ml) are pipetted on the application sites. After an incubation period of 7 days at 22° C in a growth chamber the disease incidence is assessed.

Compounds of Tables 1 to 5 show good activity in this test.

Example B-6: Action against *Botrytis cinerea* / grape (Botrytis on grapes)

5 week old grape seedlings cv. Gutedel are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. Two days after application grape plants are inoculated by spraying a spore suspension (1×10^8 conidia/ml) on the test plants. After an incubation period of 4 days at 21° C and 95% r. h. in a greenhouse the disease incidence is assessed.

Compounds of Tables 1 to 5 show good activity in this test.

Example B-7: Action against *Botrytis cinerea* / tomato (Botrytis on tomatoes)

4 week old tomato plants cv. Roter Gnom are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. Two days after application tomato plants are inoculated by spraying a spore suspension (1×10^5 conidia/ml) on the test plants. After an incubation period of 4 days at 20° C and 95% r. h. in a growth chamber the disease incidence is assessed.

Compounds of Tables 1 to 5 show good activity in this test.

Example B-8: Action against *Pyrenophora teres* / barley (Net blotch on barley)

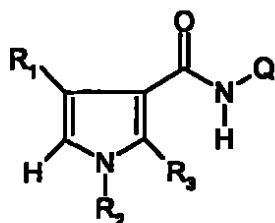
1 week old barley plants cv. Express are treated with the formulated test compound (0.002% active ingredient) in a spray chamber. Two days after application barley plants are inoculated by spraying a spore suspension (3×10^4 conidia/ml) on the test plants. After an incubation period of 2 days at 20° C and 95% r. h. plants are kept for 2 days at 20° C and 60% r.h. in a greenhouse. The disease incidence is assessed 4 days after inoculation. Compounds of Tables 1 to 5 show good activity in this test.

Example B-9: Action against *Septoria nodorum* / wheat (Septoria leaf spot on wheat)

1 week old wheat plants cv. Arina are treated with the formulated test compound (0.02% active ingredient) in a spray chamber. One day after application wheat plants are inoculated by spraying a spore suspension (5×10^5 conidia/ml) on the test plants. After an incubation period of 1 day at 20° C and 95% r. h. plants are kept for 10 days at 20° C and 60% r.h. in a greenhouse. The disease incidence is assessed 11 days after inoculation. Compounds of Tables 1 to 5 show good activity in this test.

What is claimed is

1. A pyrrolicarboxamide of the formula I

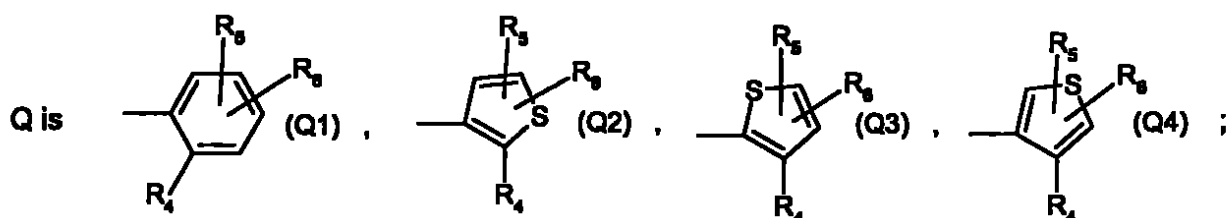


wherein

R_1 is CF_3 , CF_2H or CFH_2 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy- C_1 - C_3 alkyl or C_1 - C_3 haloalkoxy- C_1 - C_3 alkyl;

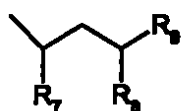
R_3 is hydrogen, methyl, CF_3 or fluoro;



R_4 is C_6 - C_{14} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

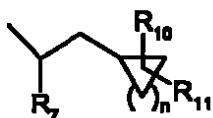
C_6 - C_{14} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{14} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; or a group



wherein R_{10} and R_{11} are independently of each other hydrogen or

halogen and $n = 1$ or 2 ; and

R_6 and R_6 are independently of each other hydrogen or halogen.

2. A compound of formula I according to claim 1 wherein

201

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl or C_1 - C_3 alkoxy- C_1 - C_3 alkyl ;

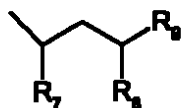
R_3 is hydrogen or fluoro;

Q is $Q1$;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; a group of the form



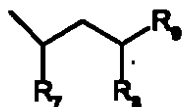
wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; and

R_7 and R_8 are independently of each other hydrogen, chloro or fluoro.

3. A compound of formula I according to claim 2 wherein

R_4 is a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl.

4. A compound of formula I according to claim 1 wherein

R_1 is CF_3 ;

R_2 is C_1 - C_3 alkyl, C_1 - C_3 haloalkyl or C_1 - C_3 alkoxy- C_1 - C_3 alkyl;

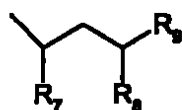
R_3 is hydrogen or fluoro;

Q is $Q2$, $Q3$ or $Q4$;

R_4 is C_6 - C_{10} bicycloalkyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{10} bicycloalkenyl unsubstituted or substituted by methyl, ethyl or CF_3 ;

C_6 - C_{10} bicycloalkadienyl unsubstituted or substituted by methyl, ethyl or CF_3 ; a group of the form



wherein R_7 , R_8 and R_9 are independently of each other C_1 - C_3 alkyl or

C_1 - C_3 haloalkyl; and

R_5 and R_6 are independently of each other hydrogen, chloro or fluoro.

5. A compound of formula I according to claim 4 wherein Q is Q2.

6. A compound of formula I according to claim 1 selected from

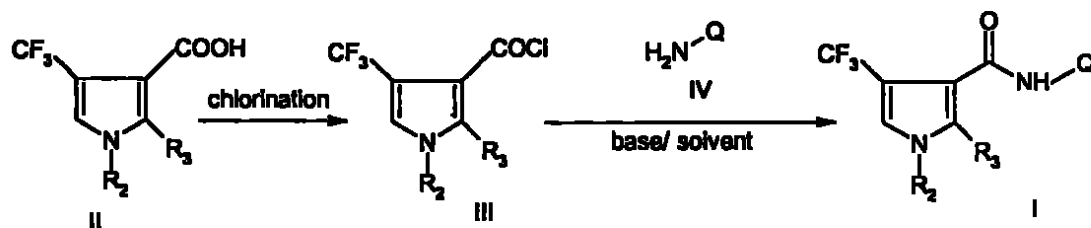
1-methyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methoxymethyl-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide;

1-methoxymethyl-2-fluoro-4-trifluoromethyl-1H-pyrrole-3-carboxylic acid [2-(1,3-dimethylbutyl)phenyl]amide.

7. A process for the preparation of compounds of formula I which comprises reacting the starting materials according to the scheme



8. A composition for controlling microorganisms and preventing attack and infestation of plants, wherein the active ingredient is a compound as claimed in claim 1 together with a suitable carrier.

202

9. Use of a compound of formula I according to claim 1 for protecting plants against infestation by phytopathogenic microorganisms.

10. A method of controlling or preventing infestation of cultivated plants by phytopathogenic microorganisms by application of a compound of formula I as claimed in claim 1 to plants, to parts thereof or the locus thereof.

41 Synthesis P.
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