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Datasheet for the decision of 12 August 2014

Case Number: T 0972/11 - 3.3.01

Application Number: 05731882.6

Publication Number: 1734823

IPC: A01N43/50

Language of the proceedings: EN

Title of invention:
SYNERGISTICALLY ACTING HERBICIDAL MIXTURES

Patent Proprietor:
BASF Agrochemical Products, B.V.

Opponent:
Syngenta Participations AG

Headword:
Herbicides/BASF

Relevant legal provisions:
EPC Art. 123, 83, 54, 56
RPBA Art. 13(1)

Keyword:
Main request: allowable - non-obvious synergistic herbicidal mixtures

Decisions cited:
T 0631/06

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Case Number: T 0972/11 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 12 August 2014

Appellant: (Patent Proprietor)	BASF Agrochemical Products, B.V. Groningensingel 1 6835 EA Arnhem (NL)
Representative:	Reitstötter Kinzebach Patentanwälte Postfach 21 11 60 67011 Ludwigshafen (DE)
Respondent: (Opponent)	Syngenta Participations AG Schwarzwaldallee 215 CH-4058 Basel (CH)
Representative:	Thwaite, Jonathan Simon Syngenta Crop Protection Münchwilen AG Intellectual Property Schaffhauserstrasse 4332 Stein (CH)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 21 February 2011 concerning maintenance of the European Patent No. 1734823 in amended form.**

Composition of the Board:

Chairman	A. Lindner
Members:	L. Seymour
	O. Loizou

Summary of Facts and Submissions

I. European patent No. 1 734 823 was granted with the following claim 1:

"1. A synergistic herbicidal mixture consisting of

A) Imazamox, including its respective isomers as well as its respective environmentally compatible salts or esters or amides or other derivatives;

and

B) at least one herbicidal compound of the group of chloro acetamides

and, if desired,

C) at least one herbicidal compound selected from the group consisting of clomazone, atrazin, dichlormid, benoxacor, LAB-145138, MG-191, MON-13900, cyometrinil, oxabetrinil, fluxofenim, flurazole, naphtalicacidanhydride, fenchlorim, fenchlorazol, mefenpyr, cloquintocet (including its hydrate(s)), 1-ethyl-4-hydroxy-3-(1*H*-tetrazol-5-yl)-1*H*-quinolin-2-one, 4-carboxymethyl-chroman-4-carboxylic acid, *N*-(2-methoxy-benzoyl)-4-(3-methyl-ureido)-benzenesulfonamide, (3-oxo-isothiochroman-4-ylidenemethoxy)-acetic acid methyl ester including their respective isomers as well as their respective environmentally compatible salts or esters or amides or other derivatives."

II. The following documents, cited during the opposition/ appeal proceedings, are referred to below:

(4) US-B1-6 677 276

(19) R S MacDonald et al., AC 299,263 tank-mixes preplant incorporated, Res. Rep. Expert Comm. Weeds East. Can. 1993, Vol. 1, 618-619

(27) Test report filed with letter dated 14 May 2010, received 18 May 2010

(28) Test report filed with letter dated 13 December 2010, received 14 December 2010

(32) The Pesticide Manual, 13th edition, 2003, 641-642, 668-669

III. The opponent sought revocation of the patent in suit under Articles 100(c), 100(b) and 100(a) EPC (lack of novelty and inventive step).

IV. The interlocutory decision under appeal was based on a main request filed with letter dated 13 December 2010 and auxiliary request 1 filed with letter dated 15 March 2010.

Claim 1 of the main request differed from claim 1 as granted (cf. above point I) in the addition of the following restriction to component B: "which is selected from the group consisting of metazachlor, acetochlor, dimethachlor and pethoxamid".

In auxiliary request 1, component B was further limited to the single component "metazachlor".

The opposition division considered both these requests to fulfil the requirements of Articles 123(2), 123(3), 83 and 54 EPC. The opposition division was of the

opinion that, in view to the examples and selection rules provided in the patent in suit, the invention was sufficiently disclosed. In its analysis of inventive step, the opposition division identified document (19) as representing a more appropriate closest prior art than document (4), and defined the problem to be solved as lying in the provision of alternative synergistic herbicidal mixtures comprising imazamox. Based on structural considerations, it would have been obvious for the skilled person to replace metolachlor, as disclosed in document (19), with acetochlor or dimethachlor, but not with metazachlor. Accordingly, an inventive step was acknowledged for auxiliary request 1, but not for the main request.

V. The patentee and opponent each lodged an appeal against this decision.

VI. In response to a communication by the board sent as annex to the summons to oral proceedings, the appellant patentee filed a new auxiliary request 1 with letter dated 12 June 2014.

VII. With letter of 29 July 2014, the then appellant opponent withdrew its appeal, leaving no requests outstanding. It was explicitly confirmed that the request for oral proceedings was withdrawn.

VIII. In its letter dated 8 August 2014, the appellant patentee withdrew its main request filed with letter dated 13 December 2010, and elevated its auxiliary request 1 filed with letter dated 12 June 2014 to its new main request. In the event that the board considered the latter to be patentable, its request for oral proceedings should be considered to be withdrawn.

The new main request differs from the main request filed with letter dated 13 December 2010 in that "acetochlor" has been deleted from the list of possible options from component B (cf. above point IV, second paragraph), so that this is now defined as being "selected from the group consisting of metazachlor, dimethachlor and pethoxamid".

IX. By communication sent by fax on 8 August 2014, oral proceedings appointed for 12 August 2014 were cancelled.

X. The appellant patentee's arguments submitted in writing, insofar as they are relevant to the present decision, can be summarised as follows:

On the issue of inventive step, the appellant patentee maintained that document (4) and not (19) represented the closest prior art. Document (19) neither addressed the issue of synergism nor could a synergistic effect be derived therefrom. The quantities of imazamox and metolachlor used therein rather pointed to an additive effect.

Starting from document (4), the problem of providing further synergistic herbicidal mixtures had been solved by the claimed mixtures of components A and B. Synergy had been demonstrated for each of these, by means of the data provided in the patent in suit, and in documents (27) and (28). The preferred embodiments and examples of document (4) were focused on combinations comprising glufosinate or glyphosate as component A. There was not hint to replace this component with imazamox and combine it with the claimed chloro acetamides as a solution to the problem posed. Document (19) also did not suggest such a combination.

XI. The arguments of the former appellant opponent, now respondent, submitted in writing, insofar as they are relevant to the present decision, can be summarised as follows:

It was argued that the set of claims submitted with letter dated 12 June 2014 should not be admitted into the proceedings because they were late filed. The requirements of Art 123(2) EPC were also not fulfilled for this subject-matter.

In its analysis of inventive step, the respondent started from document (19). Although it was not explicitly stated that the mixture of imazamox and metalachlor disclosed therein was synergistic, the fact that "excellent control" was observed suggested the presence of synergism.

Concerning the problem to be solved, the respondent argued, with reference to decision T 631/06, that none of the present claims could possibly solve the problem of providing synergistic mixtures across their full scope, since, as soon as the imazamox was applied at rates sufficient to kill 100% of the weeds, there was no synergy and no invention.

Even were the problem to be solved to be defined as providing alternative synergistic mixtures, an inventive step could not be acknowledged. In the light of the similar structure, similar mode of action and overlapping recommended uses, as disclosed in document (32), the skilled person would *prima facie* see metazachlor as an obvious replacement for metolachlor. Document (4) also taught that combinations of metazachlor and imazamox were synergistic.

XII. The appellant patentee requested in writing, as its main request, that the decision under appeal be set aside and that the patent be maintained on the basis claims 1 to 6, originally filed as auxiliary request 1 with letter dated 12 June 2014.

The respondent (opponent) had no requests (see above point VII).

Reasons for the Decision

1. The appeal is admissible.

2. *Admission of main request into appeal proceedings*

The amendment introduced into this request merely relates to the deletion in claim 1 of one of the listed components B, as a straightforward reaction to a communication by the board (cf. above points VI and VIII). This simple restriction did not raise any new issues and could be dealt with without delay. The board therefore decided to admit this request into the proceedings (Article 13(1) RPBA).

3. *Amendments (Articles 123(2),(3) EPC)*

The basis for the present claims can be found in the application as originally filed, in claims 1, 2, 4 and 8 to 10 as originally filed, in combination with page 4, lines 36 and 37, and page 7, lines 21 to 34.

With respect to the claims as granted, restrictions have been undertaken in the definition of component B in claim 1, and dependent claims deleted.

It is therefore concluded that the amendments do not give rise to any formal objections pursuant to Articles 123(2) or 123(3) EPC.

4. *Sufficiency of disclosure (Articles 100(b), 83 EPC)*

The present invention as reflected in claim 1 relates to a herbicidal mixture consisting of an imazamox-based component A, and at least one chloro acetamide selected from metazachlor, dimethachlor and pethoxamid, as component B, and, if desired, an optional component C. As an additional feature of the claim, it is specified that the mixture is synergistic, which is to be understood as imposing a functional limitation on the ratios of components in the mixture (cf. patent in suit, paragraph [0057]).

The patent in suit provides specific examples detailing test systems for establishing synergy, based on the combination of imazamox (Raptor) with metazachlor (Butisan S) (see paragraphs [0066] to [0076], and following tables on pages 10 to 12). Although synergy is not observed in every test run, it can be seen that positive results for the three mixtures tested are obtained in the control of a wide range of weeds. Moreover, these results were later confirmed, also for the combinations imazamox/dimethachlor and imazamox/ pethoxamid, by means of additional test data submitted as documents (27) and (28) (note: in document (27), the composition "Butisan S" has erroneously been designated as containing quinmerac: see patentee's letter dated 13 December 2010, page 3, 3rd paragraph of point 3;

patent in suit, page 8, lines 48, 49; document (28), page 1).

Further details of ranges of ratios and application rates of components, and the types of weeds and crops in which they can be suitably applied are disclosed in paragraphs [0036] to [0065].

It is therefore concluded that the guidance provided in the patent in suit is sufficient to allow the skilled person to establish without undue burden the ratios of the defined components required in order to achieve the synergistic effect as claimed.

Consequently, the requirement of sufficiency of disclosure is considered to be met.

5. *Novelty (Articles 52(1), 54 EPC)*

The board is satisfied that the claimed subject-matter is novel over the cited prior art. In its written submissions during the appeal proceedings, the respondent did not challenge the novelty of the present main request. Hence, no detailed reasoning in this respect is required.

6. *Inventive step (Articles 52(1) and 56 EPC)*

6.1 The parties disagreed on whether document (4) or document (19) should be regarded as constituting the closest prior art.

According to established case law of the boards of appeal, the closest prior art is normally a prior art document disclosing subject-matter conceived for the same purpose or aiming at the same objective as the

claimed invention and having the most relevant technical features in common, i.e. requiring the minimum of structural modifications (see "Case Law of the Boards of Appeal of the EPO", 7th edition 2013, chapter I, section D, page 167, point 3).

The patent in suit relates to synergistic herbicidal mixtures, which are useful in controlling undesirable harmful plants in certain crops, in particular brassica napus (oil-seed rape, canola) (see e.g. paragraphs [0014] to [0016]). According to claim 1, the two mandatory components of these mixtures are imazamox, as component A, and at least one component B selected from metazachlor, dimethachlor and pethoxamid.

6.1.1 Document (4) also relates to mixtures of herbicides comprising components A and B, which act synergistically in an especially advantageous manner when they are employed in the oil-seed rape crops (see column 1, lines 56 to 63).

The following mixtures are specifically disclosed in documnent (4) (see column 9, lines 46 to 65):
(A1.1)+(B1.1), (A1.1)+(B1.7), (A1.2)+(B1.1), (A2.2)+(B1.1), (A2.2)+(B1.7),
wherein,
A1.1 is glufosinate (column 4, line 28);
A1.2 is glufosinate monoammonium salt (column 4, line 29);
A2.2 is monoisopropylammonium salt of glyphosate (column 5, line 15);
B1.1 is metazachlor (column 6, line 66); and
B1.7 is dimethachlor (column 7, line 23).

In Table 2 (column 19), the mixture of A1.2 and B1.1 is demonstrated to be synergistic.

Thus, document (4) relates to the same purpose as the claimed invention, and a single structural modification of the mixtures specifically disclosed therein, namely, the replacement of component A with imazamox, is required to arrive at the claimed subject-matter.

6.1.2 Document (19) reports a field trial using preplant incorporated imazamox (AC 299,263), alone or in combination with further herbicides, in the control of various weeds in soybean crops. In trial 09, 0.05 kg/ha of imazamox and 1.92 kg/ha of metolachlor were employed. The conclusions drawn from the trials performed are as follows:

"AC 299,263 provided excellent control of pigweed at rates of 12.5 g/ha. Lamb's quarters and foxtail were controlled at rates between 50 and 75 g/ha. Excellent witchgrass controlled was achieved at 75 g/ha.
AC 299,263 provided broad-spectrum control at 50 g/ha in tank-mixes with ethalfluralin, trifluralin, pendimethalin, metolachlor and metribuzin.
75 g/ha alone or 50 g/ha tank-mixes were comparable to the standard, imazethapyr+metribuzin. None of these treatments caused visible injury."

With respect to its components, the mixture of imazamox with metolachlor differs from those claimed in the replacement of metolachlor with further components belonging to the class of chloro acetamides, namely, "metazachlor, dimethachlor and pethoxamid".

The parties had divergent views as to whether a further distinguishing feature was to be seen in the lack of disclosure of synergism in document (19). The board agrees with the appellant patentee on this point that

it can neither be derived nor inferred from this document that the components imazamox and metolachlor act synergistically. A prerequisite for establishing synergy is that the components must each be applied separately and in combination (cf. patent in suit, paragraphs [0072], [0073]). This was not the case in document (19), and it cannot be deduced from the mere reference to "excellent control" in the passage reproduced above that synergism was observed. Moreover, as pointed out by the appellant patentee, the suggested application rate of metolachlor was known to be between 1.0 and 2.5 kg/ha (see document (32), page 668). There is therefore no reason to assume that the effects seen with 1.92 kg/ha in trial 09 were anything more than additive.

Consequently, since document (19) does not aim at the same objective, the skilled person would not consider it as a starting point for the present invention.

6.1.3 The board therefore concludes that document (4) represents the closest state of the art.

6.2 The problem to be solved can be seen in the provision of further synergistic herbicidal mixtures.

The solution as defined in claim 1 relates to a composition characterised in that component A is imazamox (cf. above point 6.1.1).

Having regard to the working examples reported in the patent in suit, and in documents (27) and (28), the board is satisfied that the problem has been plausibly solved.

The arguments advanced by the respondent in this context, based on decision T 631/06, do not hold, since the facts at issue are not comparable. In said decision, the claims considered in the discussion on inventive step were method claims "wherein component (1) and component (2) are applied in amounts sufficient to provide synergistic fungicidal effectiveness" (cf. point VII, and point 2 of reasons). In contrast, in the present case, the claims under consideration are product claims, and the rate of application is not a feature thereof.

6.3 It remains to be investigated whether the proposed solution would have been obvious to the skilled person in the light of the prior art.

As outlined above in point 6.1.1, document (4) specifically demonstrates synergy for the mixture of glufosinate-ammonium (A1.2) with metazachlor (B1.1) (see Table 2).

The question therefore arises whether document (4) itself suggests the replacement of said component A with imazamox as a solution to the problem posed.

According to the most general teaching of document (4), the broad-spectrum herbicide component A is to be selected from glufosinate-based component A1, glyphosate-based component A2, imidazolinones A3 or herbicidal azoles A4 (see column 2, lines 1 to 38). More specific lists of active ingredients are provided in column 4, lines 23 to 38; column 5, lines 12 to 18; column 5, lines 38 to 47; and column 6, lines 19 to 29.

Similarly, component B is to be selected from a long list of compounds subdivided into categories B0 to B4

(see column 2, lines 39 to 53; and column 6, line 53 to column 8, line 29).

Faced with these long lists of structurally heterogeneous components, the skilled person would not regard it as credible that a synergistic effect could be obtained for each and every permutation of said classes of components A and B, as listed in column 8, line 52 to column 9, line 45. Indeed, it was demonstrated in document (28) that even small structural modifications within a single class of herbicide could result in loss of synergy (compare Tables 1 to 4 with Tables 5 and 6). Therefore, in looking to solve the problem posed, the skilled person could not rely on the general teaching of document (4), but would have to turn to the passages disclosing individual combinations in order to learn what further types of modifications might be expected to result in a retention of synergy.

The more specific teaching in this respect is to be found in column 9, line 46 to column 10, line 3; in column 10, lines 45 to 61; and in the tables in columns 19 and 20. In all these passages, component A is glufosinate, glufosinate monoammonium salt or the monoisopropylammonium salt of glyphosate (components A1.1, A1.2 or A2.2, respectively).

Therefore, in view of the overwhelming focus in document (4) on the very specific components A1.1, A1.2 or A2.2, the skilled person, starting from the example of Table 2, would not be motivated to replace the component A1.2 with the structurally completely unrelated component imazamox (A3.5), as disclosed in column 2, line 35 and column 5, line 43, in the expectation of retaining synergy. Based on the same

principles, it is concluded that the combination of imazamox with dimethachlor (B1.7) or pethoxamid, which is not disclosed in document (4), are also not foreshadowed as a solution to the problem posed.

Therefore, document (4) taken alone does not direct the skilled person to the solution proposed.

Document (19) also does not suggest the present solution, since, as outlined above in point 6.1.2, it does not teach that the specific tank-mixes disclosed therein act synergistically. Furthermore, the board cannot agree with the respondent's argument based on the *prima facie* obviousness of replacing metolachlor with metazachlor. No evidence was provided that these two compounds were to be regarded as being equivalent in the present context. The only teaching provided in document (19) relates to the herbicidal activity of very specific mixtures, without suggestions of any structural variation that might point towards the present modification.

The respondent did not rely on any further documents in support of its objection of lack of inventive step, and the board is satisfied that none of the further prior art documents in the proceedings renders the proposed solution obvious.

6.4 In view of the above considerations, the board concludes that the subject-matter of claim 1 involves an inventive step. The same applies to the remaining claims of the main request, relating to herbicidal compositions thereof, and methods of application thereof.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent with the following claims and a description to be adapted thereto:

   Claims No. 1 to 6 of the main request, originally filed as auxiliary request 1 with letter dated 12 June 2014.

The Registrar: The Chairman:

R. Schumacher A. Lindner

Decision electronically authenticated