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**Datasheet for the decision
of 27 June 2007**

Case Number: T 0729/05 - 3.3.01

Application Number: 97916372.2

Publication Number: 0889692

IPC: A01N 57/20

Language of the proceedings: EN

Title of invention:

New use of N-(Phosphonomethyl)Glycine and derivatives thereof

Patentee:

NV MONSANTO EUROPE SA

Opponent:

Bayer Cropscience SA

Headword:

Glyphosate/MONSANTO

Relevant legal provisions:

EPC Art. 54, 56

EPC R. 71(2)

Keyword:

"Main request: Novelty (yes) - no reliable evidence that a later publication reflects accurately the undefined content of a prior presentation at a symposium."

"Inventive step (yes) - no reasonable expectation of success."

Decisions cited:

G 0002/88, T 0348/94

Catchword:

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Case Number: T 0729/05 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 27 June 2007

Appellant 1:
(Patent Proprietor)

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(Opponent)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted
26 April 2005 concerning maintenance of the
European Patent No. 0889692 in amended form.**

Composition of the Board:

Chairman: A. Nuss
Members: P. Ranguis
J. Van Moer

Summary of Facts and Submissions

I. This appeal lodged by the Proprietor of the patent (Appellant 1) and the Opponent (Appellant 2) lies from the decision of the Opposition Division maintaining the European patent No. 889 692 (European patent application No. 97 916 372.2) in amended form.

II. The patent in suit contains ten claims. Claim 1, the sole independent claim, reads as follows

"1. Use of glyphosate or a derivative thereof for the increase of crop yield,
characterised in that the crop is selected from glyphosate tolerant sugar beet, fodder beet, corn, oilseed rape and cotton, and that glyphosate is applied at a usually lethal dose."

III. Notice of opposition had been filed by Appellant 2 requesting revocation of the patent as granted in its entirety on the ground of insufficiency of disclosure (Article 100(b) EPC) or lack of novelty or inventive step (Article 100(a) EPC). *Inter alia* the following documents were cited in the opposition proceedings.

(1) EP-A-0 218 571

(3) WO-A-92/00377

(4) WO-A-92/04449

(21) EP-A-0 481 407

(23) Brants et al, Proc. Int. Weed and Crop Resist. to Herb., 1996, pp 221-222.

IV. In its decision, the Opposition Division held that sufficient information for the provision of genetically

modified glyphosate tolerant plants was made available prior to the filing date of the patent in suit. The person skilled in the art could without undue burden carry out the usual screening to determine which plants were the most appropriate.

Regarding novelty, document (23) disclosed in its Table 1 the treatment of glyphosate tolerant sugar beets with glyphosate. In particular, Table 1 showed an increase in root weight which also meant a yield increase. For this reason Claim 1 as granted lacked novelty over document (23).

V. Oral proceedings before the Board took place on 27 June 2007. The Board was informed by a letter received on 25 June 2007 that Appellant 2 would not be represented at these oral proceedings. The oral proceedings were thus held in the absence of the duly summoned Appellant 2 in accordance with Rule 71(2) EPC.

VI. In the communication accompanying the summons to oral proceedings, the Board noted that document (23) did not show any publication date. It seemed however that both parties were in agreement that this document reflected **in all details** the content of the oral presentation made at the International Symposium On Weed and Crop Resistance to Herbicides, that took place on April 3-6, 1995, in Cordoba, as set out in document

(30) Declaration of I. Brants,

submitted with the statement of grounds of appeal by Appellant 1. Brants declared therein that document (23) corresponded to the Article referred to in paragraphs

[0012] and [0016] of the patent in suit and corresponded to a poster shown at the International Symposium On Weeds and Crop Resistance to Herbicides.

VII. Appellant 1 submitted three auxiliary requests with a letter dated 11 May 2007.

VIII. Appellant 1's arguments may be summarized as follows:

The invention on which the patent in suit was based relied on the discovery that glyphosate treatment over the top of glyphosate-tolerant crops increased the yield of said crops. This effect had never been noticed before. The patent thus related to a second (non-medical) use of glyphosate herbicide (see G 2/88, OJ EPO, 1990, 93, Order, point iii).

Document (23) did not show any publication date. It could not be ascertained that the content of this document reflected the content of the poster shown at the International Symposium On Weed and Crop Resistance to Herbicides, that took place on April 3-6, 1995, in Cordoba. I. Brants, who presented the poster in Cordoba, declared at the oral proceedings before the Board that he could not swear, in particular, that Table I was presented at this occasion.

Regarding inventive step, starting from document (21) as the closest state of the art, the person skilled in the art would have noted that the increase of yield brought about by glyphosate used at sub-lethal dose on normal plants was related to a growth retardation effect, which enabled said plants to accumulate carbohydrate. The metabolism of plants tolerant to

glyphosate treated with glyphosate at usual lethal dose was by contrast quite different. Document (1) taught in that respect that the use of glyphosate at usual lethal dose did not affect the morphology of the plant treated. It was, therefore, unexpected for the person skilled in the art to discover that the treatment of plants tolerant to glyphosate as defined in Claim 1, although not affecting the growth of the plant, resulted in an increase of yield.

IX. In writing Appellant 2 contested the novelty of the claimed subject-matter over document (23). Appellant 2's written submissions did not contain any arguments or evidence aiming at proving the close relationship between the oral communication of I. Brants at the International Symposium On Weed and Crop Resistance to Herbicides and the content of document (23). No date of publication of document (23) was submitted.

Regarding inventive step, Appellant 2 relied on document (21) and

(27) US-A-3 853 530

(28) US-A-3 988 142

(29) DE-A-32 00486

cited in the patent in suit. It was known from those documents, so he argued, that sub-lethal doses of glyphosate increased the yield of non genetically-modified crops. The person skilled in the art would have considered with a reasonable expectation of success to apply this teaching to plants having an increased tolerance to glyphosate by genetic

manipulation. Indeed, the person skilled in the art knowing that glyphosate has an effect on crop yield when applied at sub-lethal doses on crops with normal tolerance necessarily deduces from that teaching that this effect must be maintained if the doses and the level of tolerance are increased by way of genetic manipulation. This motivation would reach the level of a reasonable expectation of success and renders obvious the claimed invention.

- X. Appellant 1 requested that the decision under appeal be set aside and the patent be maintained as granted, or as substantive request on the basis of one of the three sets of claims filed with letter dated 11 May 2007 as first to third auxiliary request.

Appellant 2 requested in writing that the decision under appeal be set aside and the patent be revoked.

- XI. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Novelty*

- 2.1 It was admitted by Appellant 1 that the treatment of glyphosate tolerant sugar beet, corn, oilseed rape and cotton through applying glyphosate at a usually lethal dose was known before the priority filing date of the

patent in suit (see document (1), page 3, lines 15-16, page 18, Claims 25 and 29; document (3), page 5, line 20 to page 6, line 14 and page 52, lines 3 to 7; document (4) page 6, bottom, Claims 26 and 30).

- 2.2 Appellant 1 argued that novelty was based on the discovery that such glyphosate treatment according to Claim 1 increased the yield of the crops defined therein. Such new technical effect conferred novelty on the claimed subject-matter in accordance with the decision of the Enlarged Board of appeal G 2/88 (loc.cit).

Appellant 2 argued that this technical effect had been disclosed in Table 1 of document (23).

- 2.3 Document (23) is a scientific publication from I. Brants et al concerning the application of Roundup Ready[®], a commercial form of glyphosate, on sugar beet rendered tolerant to Roundup Ready[®]. In particular, Table 1 of document (23) is a summary of results obtained after treatment by Roundup Ready[®] at overdosage rates of three hybrid lines of sugar beet rendered tolerant to Roundup Ready[®]. The results were evaluated by measuring the average root weight. This Table 1 is thus decisive to conclude on the novelty of the claimed subject-matter.

- 2.4 Document (23) is dated 1996. However, nothing was submitted by the parties from which the exact date of publication could be established. Since the patent in suit claims the priority of two prior European applications filed on 29 March 1996 and 16 July 1996

respectively, that document cannot, therefore, be considered as part of the prior art.

- 2.5 It seems admitted that document (23) is related to an oral communication made at the International Symposium On Weed and Crop Resistance to Herbicides by I. Brants, co-inventor of this patent. This symposium took place on April 3-6, 1995, in Cordoba, i.e. one year before the first priority date of the patent in suit. However, a written publication which is supposed to be based on a paper previously read at a public meeting held some time earlier, cannot be assumed to be identical to what was orally disclosed but may contain additional information (see T 348/94, point 3.2, not published in the OJ EPO). In the present case, the question appears to be whether Table 1 of document (23) was presented by Brants at this symposium (see point 2.3 above). In view of Brants's declaration, i.e. document (30) submitted with the statement of grounds of appeal, it could be assumed that this was here the case and the Board had informed the parties of this preliminary opinion in its communication (see point VI above).
- 2.6 In response, Appellant 1 submitted that document (23) corresponded rather to a poster shown at this symposium. No oral presentation was made about the content of document (23). The author was present at the symposium and had given explanations with reference to the poster as reflected in his declaration. Brants declared therein that document (23) corresponded to the Article referred to in paragraphs [0012] and [0016] of the patent and corresponded to a poster shown at the International Symposium On Weeds and Crop Resistance to Herbicides. However, at the oral proceedings before the

Board, I. Brants could not "swear that Table 1 was present on the poster". Appellant 1 added that said poster could no longer be found.

Appellant 2 submitted neither fact nor argument in that respect.

2.7 In view of the above, given that the decisive question focuses on the results presented in Table 1 of document (23), the Board disposes of no reliable information to conclude that this Table 1 was eventually presented at the symposium in Cordoba in 1995. Therefore, the undefined content of the presentation at the symposium cannot anticipate the subject-matter of Claim 1.

2.8 Since no prior art before the Board discloses that the treatment of glyphosate at usually lethal dose increases the crop yield of the crops as defined in Claim 1, this technical effect is considered as a new functional technical feature. Therefore, the claimed subject-matter which relates to a new use of glyphosate for increasing crop yield (see point II above) is not open to objection under Article 54(1) EPC (see G 2/88, loc.cit).

3. *Inventive step*

3.1 The patent in suit relates to the use of glyphosate for increasing crop yield of crops as defined in Claim 1.

3.2 The closest state of the art is a documents aiming at the same objective as the patent in suit and having in common the most relevant technical features. The Board concurs with the parties that document (21) meets those

requirements since it discloses a process for increasing the yield of normal crops *inter alia* sugar beet, fodder beet or corn by treatment with glyphosate (see page 1, lines 1-2, compound of formula (II), lines 51-52).

- 3.3 The technical problem to be solved in view thereof can be seen in the provision of a further use of glyphosate as a crop yield increasing agent.

In view of the description of the patent in suit, in particular the examples, the Board is satisfied that the technical problem is solved within the claimed area, namely for the crops defined in Claim 1.

- 3.4 It remains to be decided whether or not the claimed solution was obvious in view of the prior art cited.

- 3.4.1 Appellant 2 argued that the person skilled in the art would have considered with a reasonable expectation of success to apply the teaching of document (21) to plants having an increased tolerance to glyphosate by genetic manipulation as a solution to the above defined technical problem.

Appellant 1, by contrast, pointed out that the increase of yield due to treatment according to the teaching of document (21) was due to an accumulation of carbohydrates which was in direct relationship with a growth retardation effect. This effect of glyphosate on susceptible plants was well known and detailed in the patent in suit by reference to the three documents (27), (28) and (29) cited by Appellant 2 itself at the appeal stage. This growth retardation effect was not observed

when treating plants as defined in Claim 1 with glyphosate. The person skilled in the art would not have, therefore, expected an increase of yield due to this treatment.

- 3.4.2 In the Board's judgment, the question whether a retardation effect occurs in the treatment by glyphosate of normal plants such as sugar beets and whether this effect is present with plants rendered tolerant to glyphosate is crucial to conclude on the basis of document (21) whether the claimed solution is or not obvious.
- 3.4.3 In document (21) the increase of yield is clearly linked to the accumulation of the carbohydrates in the plants such as sugar beets, fodder beets, corn, (see page 2, lines 1-2, 38 to 46, 51-52 and page 3, line 46). Document (21) also teaches that the disclosed process increases the yield of crops without affecting substantially the quality of said crops (see page 3, lines 46 to 48). However that information says nothing about the growth retardation effect.
- 3.4.4 Document (27) describes a method for regulating the natural growth or developments of plants such as silage crops (such as corn, see Test C, col. 10), sugar cane, beets, grapes, melons and fruit trees by means of N-phosphonomethylglycine (glyphosate, note of the Board) or salts thereof. According to this document, it is believed that by retarding or suppressing vegetative growth at an appropriate stage of development, less of the available carbohydrate is consumed as plant food with a consequent enhancement of the starch and/or sucrose content (see col. 1, line 48 to col. 2, line 7;

col. 3, lines 27 to 36 and 53 to 60). The same teaching results from the teaching of document (28), which stems from the same parent application as document (27). Although document (29) relates to treatment of crops such as fodder beet with phosphinothricin, this document also establishes a direct link between the inhibition of the vegetative growth and the increase of carbohydrate content in the plant which is assimilated to an increase of yield (see page 2, lines 1-2, page 3, lines 4 to 6 and 18 to 22).

- 3.4.5 In view of the above the Board is convinced that the increase of yield measured by the content of carbohydrates observed by treating the crops according to the method disclosed in document (21) is due to a growth retardation effect.
- 3.4.6 Document (1) teaches that no growth retardation effect occurs in plants such as cotton, oil seed rape, corn, sugar beet, rendered tolerant to glyphosate, in response to glyphosate spraying ("growing well", see page 18, Table 2). The patent in suit also confirms that no retardation effect is present in the conditions of treatment (see page 3, lines 35-36).
- 3.4.7 From the above, it results that according to document (21), the increase of yield is linked to a retardation effect. In the case of plants rendered tolerant to glyphosate no retardation effect occurs as taught by document (1). The person skilled in the art had, therefore, no reason to expect that the treatment of glyphosate on plants rendered tolerant to glyphosate would increase the crop yield. Consequently, the claimed solution to the technical problem to be solved

consisting in using glyphosate **as a crop yield increasing agent** at a usually lethal dose in crops selected from glyphosate tolerant sugar beet, fodder beet, corn, oilseed rape and cotton, is not obvious for the person skilled in the art. Claim 1 of the main request involves, therefore, an inventive step in the sense of Article 56 EPC.

The same applies to Claims 2 to 10 which represent particular embodiments of Claim 1.

First to third auxiliary requests

4. In view of the above, there is no need for the Board to decide on these requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar

The Chairman

N. Maslin

A. Nuss