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**Datasheet for the decision
of 10 November 2021**

Case Number: T 2398/17 - 3.2.04

Application Number: 09744494.7

Publication Number: 2348814

IPC: A01G7/02, A01G7/04

Language of the proceedings: EN

Title of invention:

SYSTEM AND METHOD FOR GROWING A PLANT IN AN AT LEAST PARTLY
CONDITIONED ENVIRONMENT

Patent Proprietor:

Plantlab Groep B.V.

Opponents:

Signify Holding B.V.
Wilk Van der Sande B.V.

Headword:

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

Novelty - (no)

Inventive step - (no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

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Case Number: T 2398/17 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 10 November 2021

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
19 September 2017 concerning maintenance of the
European Patent No. 2348814 in amended form.**

Composition of the Board:

Chairman A. de Vries
Members: G. Martin Gonzalez
 C. Heath

Summary of Facts and Submissions

- I. Three appeals were filed by the proprietor and both appellant-opponents against the interlocutory decision of the opposition division finding that, on the basis of the auxiliary request 1 before it (auxiliary request II before the board), the patent in suit met the requirements of the EPC.

With letter of 9 September 2021 the proprietor withdrew their appeal.

- II. The opposition division held inter-alia that the subject-matter of the maintained claims (patent as upheld) is new and involves an inventive step.

- III. In preparation for oral proceedings the board issued a communication, dated 30 April 2020, setting out its provisional opinion on the relevant issues.

Oral proceedings were held on 10 November 2021 before the board.

- IV. The appellant-opponents request that the decision under appeal be set aside and that the patent be revoked.

The appellant-proprietor requests that the appeal be dismissed (patent as upheld, auxiliary request II), in the alternative that the decision under appeal be set aside and that the patent be upheld in amended form on the basis of one of auxiliary requests III-X, all filed with letter of 9 August 2018.

V. Independent claim 1 of the requests relevant for the present appeal reads as follows:

(a) Auxiliary request II (patent as upheld)

"System for growing a plant (1) in an at least partly conditioned environment, comprising a cultivation base (2) for receiving a culture substrate (3) with a root system (4) of the plant therein, root temperature control means (12) which are able and adapted to impose a predetermined root temperature on the root system, and comprising lighting means (20) which are able and adapted to expose leaves of the plant to actinic artificial light, characterized in that leaf heating means (30) are provided which are able and adapted to impose on the leaf of the plant a leaf temperature varying from an ambient temperature, and in that a control is provided between the leaf heating means and root temperature control means which imposes a mutual dependence on the leaf temperature and the root temperature."

(b) Auxiliary request III

Claim 1 as in auxiliary request II, amended to specify that the environment is a daylight-free environment as follows (emphasis added by the board to indicate amendment):

"System for growing a plant (1) in an at least partly conditioned, daylight-free environment, comprising a cultivation base (2)..."

(c) Auxiliary request IV

Claim 1 as in auxiliary request III, amended to add at the end of the claim the following feature (emphasis added by the board to indicate amendment):

"...which imposes a mutual dependence on the leaf temperature and the root temperature, depending on the plant."

(d) Auxiliary request V

Claim 1 as in auxiliary request IV with the following features added at the end of the claim (emphasis added by the board to indicate amendment):

"...which imposes a mutual dependence on the leaf temperature and the root temperature, depending on the plant, and that, in a normal growth trajectory, cause the leaf temperature following, optionally in a directly proportional manner, a change in the root temperature."

(e) Auxiliary request VI

Claim 1 as in auxiliary request III, amended to specify that the system is a system for plant production as follows (emphasis added by the board to indicate amendment):

"Horticulture system for the plant production (1) ~~for growing a plant~~ in an at least partly conditioned, daylight-free environment..."

(f) Auxiliary request VII

Claim 1 as in auxiliary request VI with the following features added at the end of the claim (emphasis added by the board to indicate amendment):

"...which imposes a mutual dependence on the leaf temperature and the root temperature, and in that the lighting means comprise a set of light-emitting diodes (21), these diodes being able and adapted to emit radiation at different wavelengths and being individually controllable, optionally in groups."

(g) Auxiliary request VIII

Claim 1 as in auxiliary request VII with the following features added at the end of the claim (emphasis added by the board to indicate amendment):

"...optionally in groups, and in that the root temperature control means (12) comprise a closed conduit system for receiving therein, during operation, a liquid flow with a controlled temperature, wherein the conduit system is able and adapted to enter into heat-exchanging contact with the culture substrate."

(h) Auxiliary request IX

Claim 1 as in auxiliary request VIII amended to add the following feature (emphasis added by the board to indicate amendment):

"...and in that a control is provided between the leaf heating means and root temperature control means which imposes a mutual dependence on the leaf temperature and

the root temperature, depending on the plant, in that the lighting means..."

(i) Auxiliary request X

Claim 1 as in auxiliary request IX amended to add the following features (emphasis added by the board to indicate amendment):

"...and in that a control is provided between the leaf heating means and root temperature control means which imposes a mutual dependence on the leaf temperature and the root temperature, depending on the plant, and that, in a normal growth trajectory, cause the leaf temperature following, optionally in a directly proportional manner, a change in the root temperature, in that the lighting means..."

VI. In the present decision, reference is made to the following documents:

(D1) "Onder Glas", No 9, pages 12-17, published September 2008.

(D5) US 2001/0047618 A1.

Judgment of the district court of The Hague, case number C/09/460541/HA ZA 14-250 and C/09/527084/HA ZA 17-176 of 30 May 2018.

VII. The appellant-opponents' arguments can be summarised as follows:

Their appeals are admissible. The representative of the opponent 2 for this case is correctly authorised. The subject-matter of claim 1 of all requests is either not new with regard to D1 or lacks an inventive step

starting from D1 under further consideration of D5 and the common general knowledge of the skilled person.

VIII. The respondent-proprietor's arguments can be summarised as follows:

Both opponents' appeals are inadmissible. Moreover the opponent's 2 representative authorization is defective. Claim 1 of all requests is new and involves an inventive step over the cited prior art.

Reasons for the Decision

1. Admissibility of the opponent's 1 appeal

During the oral proceedings, the respondent-proprietor withdraws the objection to the admissibility of the opponent's 1 appeal. In its communication the board had already opined:

"It is immediately evident in a contextual reading that the statement of grounds of 25 January 2018 by Eisenführ Speiser, is filed on behalf of the opponent 1. The reference on page 1 "on behalf of the proprietor" is an obvious error, as the statement is filed by the same representative who on 27 November 2017 filed the notice of appeal for opponent 1, to which the statement refers, and is directed against the patent. The appeal is thus admissible in this respect, since the opponent 1 has timely filed a statement of grounds, which otherwise complies with the provisions of Article 108 EPC and Rule 99(2) EPC."

As the respondent-proprietor refrained from further comment, the board confirms its preliminary view that the appeal is admissible.

2. Admissibility of the opponent's 2 appeal and opponent's 2 representative authorisation

At the outset of the oral proceedings, the respondent-proprietor contested the admissibility of opponent's 2 appeal and/or the proper authorisation of Mr. Bottema representing opponent 2.

The background of this request and allegation is as follows: The appeal was filed in the name of Wilk Van der Sande B.V. On 27 October 2021, that is, about two weeks prior to the oral proceedings, Mr. Bottema wrote a letter to the European Patent Office indicating that "Wilk van der Sande B.V. has changed into legal entity Certhon Build B.V. that is its successor in title." Attached was a Business Register extract for the company Certhon Build, by whom Mr. Bottema was then authorised in an authorisation filed on the same day. As of the date of the oral proceedings, no change of opponent 2 had been registered by the EPO. Since the last amendment to the company register on behalf of Certhon Build occurred 31 December 2016, the respondent-proprietor concludes that the appeal filed on behalf of Wilk van der Sande was filed by a company no longer in existence. Should the company Wilk van der Sande still be party to the proceedings, the authorisation on behalf of Certhon Build as third party could not authorise Mr. Bottema to represent Wilk van der Sande.

It is established case law that a new opponent acquires party status as opponent only upon filing documentary evidence of the legal succession (decision **T 244/12** of 10 June 2016, point 2.2.2 of the reasons with further references). In the case at issue, not only had no transfer been recorded in the European Patent Register

at the date oral proceedings were held, but the evidence submitted in order to prove a transfer was insufficient in that it only established the existence of a company Certhon Build, but not the relationship, if any, between Wilk van der Sande and Certhon. In these circumstances, the original party to the proceedings continues to have the relevant rights and obligations and is entitled to act unless there is evidence that the party no longer exists. No such evidence has been provided, however.

The power of attorney provided by Certhon Build is thus irrelevant to these proceedings, as it does not imply any revocation of the power of attorney formerly provided to the representative by the original opponent Wilk van der Sande. The representative thus continues to be entitled to act on behalf of the appellant on file, that is, Wilk van der Sande.

The Board thus concludes that Wilk van der Sande continues to be party to these proceedings, and Mr. Bottema continues to be appointed on their behalf.

3. Background

The patent is directed to a system and method for growing plants in a conditioned environment, see specification paragraph [0001]. The system and method of the invention are devised to optimize the three essential factors for the plant development. These are the photosynthesis; the sap flow in the plant pushed upwards under the influence of a prevailing root pressure; and the carbon dioxide assimilation through the leaf system of the plant. To this end, in addition to root temperature control means and lighting means for supplying artificial actinic light, a carbon

dioxide assimilation management of the plant can also be controlled by providing leaf heating means, see specification paragraph [0007].

4. Auxiliary request II (claims as upheld) - Novelty

The appellant-opponents submit that claim 1 lacks novelty over D1. The board holds that the subject-matter of claim 1 is not novel over the system for growing plants as described by D1 at page 15 for the following reasons:

- 4.1 Page 15 of D1 (in an article headed "Praktijkervaringen mit Rootco in rozen en aardbei zijn veelbelovend") describes a system for growing roses in the conditioned environment of a greenhouse, see abstract and the picture at the top of the page. As described in that abstract, the system uses a Rootco heat exchanger system with mats below the root substrate. The Rootco mats heat exchanger is used for cooling and heating, depending on the desired root temperature. The Rootco system therefore provides the known plant growth system with root control means as required by the contested claim. The picture of the greenhouse at the top of page 15 also shows a number of light sources. As the District Court of The Hague noted in the related infringement case C/09/460541/HA ZA 14-250 and C/09/527084/HA ZA 17-176 when analysing D1 (see section 5.16 of the court's decision) although the contours are not altogether clear, the skilled person knows that it is usual in glass greenhouses to use lamps in addition to or as an alternative to sunlight for supplying actinic light. The District Court of The Hague then concludes for these reasons that D1 discloses actinic artificial light in the sense of the contested claim. A

conclusion that is shared by this board for the same reasons.

- 4.2 The characterising portion of the contested claim also calls for leaf heating means that impose a leaf temperature varying from ambient air.
- 4.2.1 According to the respondent-proprietor, the term "to impose" expresses or implies a certain degree of regulation or control. This is not so in the board's understanding. The term "to impose" in its normal sense means "to establish, apply or bring about something (by force or authority)", see Merriam-Webster. Applied to the claim wording, the claim feature is thus understood as requiring the establishing, applying or bringing about of a leaf temperature that is different from ambient temperature. Thus, as also held by the opposition division in section 3.4.6, the term does not require or imply regulation.
- 4.2.2 Although the preferred embodiment for leaf heating means are infrared lamps, alternative ways to obtain leaf heating are described in paragraph [0023] of the patent specification: "Instead of by means of direct infrared lamps, this can also be achieved by means of spiral filaments, heat panels or the like disposed close to the leaf system". Thus, local heating of other kinds close to the leaves is also contemplated by the patent specification itself as leaf heating means in the sense of the invention.

Such local heat sources are described by D1. As discussed during the oral proceedings before the board, document D1 describes grow pipes or growth tubes ("groeibuizen"), see the statement of Marcel Kers in bridging paragraph, columns 2-3 of page 15, D1. As

explained by M. Kers at the oral proceedings, these tubes take heat from the heat exchanger mats and make it available to the crop. As further clarified during the oral proceedings, growth pipes are heating tubes that run through or near the canopy, close to it. Since they run close to the leaf system and at a higher temperature than the leaves, they transfer heat also by radiation to the leaves in their vicinity, thus imposing a leaf temperature varying from ambient air. They therefore anticipate leaf heating means in the sense of the contested claim.

- 4.3 Claim 1 also requires the provision of a control between the leaf heating means and root temperature control means which imposes a mutual dependence of the leaf temperature and the root temperature.
- 4.3.1 The exact meaning of a control between leaf heating means and root temperature control means has been the subject of discussion during the oral proceedings. Indeed, the claimed system requires two different physical devices or subsystems, namely the leaf heating means and the root temperature control means (root heat exchangers). Each subsystem requires its own physical input (e.g. cooling/heating liquid temperature and flow rate or electrical power input level). Thus, the control system provides two separate inputs, one for the root control means and one for the leaf heating means. Against this background, the board understands the claimed feature as an additional constraint between the two input parameters imposed by the control system. The two parameters are thus not regulated independently. They must be jointly regulated so that a mutual dependence of the leaf temperature and the root temperature is imposed or (reading the term as interpreted above) brought about.

The claim does not further qualify the type or nature of the mutual dependence. Mutual dependence in its broad sense, as the Board understands it, does not require some mathematical dependence. Nor does the feature require or imply a closed loop control where for example the leaf and root temperature difference or dependence is measured and fed back to the system as a control parameter. Thus, any kind of dependence that is brought about between root and leaf temperature caused by a coordinated regulation of the two subsystems would anticipate this feature. This could include for instance the root control system and the leaf heating system being mutually regulated so that an increase in root temperature causes an increase in leaf temperature.

- 4.3.2 This is indeed what is obtained by the known control of the Rootco heat exchangers and of the grow pipes ("groeibuizen") described in D1. Indeed, as stated on page 15 in the bridging paragraph of columns 2 and 3 of page 15, the growth pipes take heat from the heat exchanger mats and make it available to the crop. ("Marcel Kers : wanneer je warmte oogst uit de mat en dat via de groeibuizen beschikbaar stelt aan het gewas"). It thus makes use of the heating liquid in the root mats for feeding the growth pipes. Therefore, a variation in the heating liquid temperature for the roots will be followed by a temperature variation of the same sign for the leaf heating means: if root temperature increases leaf temperature increases also. This mutual dependence of the root and leaf temperature is a consequence of the interlinked regulation of the root temperature control system and the leaf heating means, as is claimed.

It follows that the system disclosed on page 15 of D1 also comprises a control between the leaf heating means and root temperature control means which imposes a mutual dependence of the leaf temperature and the root temperature, as required by the contested claim.

4.4 In summary, all features of claim 1 of the auxiliary request II are anticipated by the system described on page 15 of D2. Claim 1 therefore lacks novelty in the sense of Article 54(2) EPC.

5. Auxiliary requests III to X

None of the auxiliary requests III to X are allowable. The subject-matter of claim 1 of all requests is either anticipated by D1, Article 54(2) EPC, or trivial over the prior art, Article 56 EPC. The reasons being as follows:

5.1 Claim 1 of auxiliary request III is amended to specify that the environment is daylight-free. The claim is thus now directed to a "system for growing a plant (1) in a... daylight-free environment...". This means that the system must be suitable for that use. The skilled person knows that the light lamps as can be identified on the picture of page 15 of D1 are also usually used in glass greenhouses as an alternative to sunlight for supplying actinic light during night periods and that therefore the system of D1 is suitable for operation in a daylight-free environment. The board thus considers such use (during night with the lamps providing actinic light) in the greenhouse of D1 as implicitly disclosed. Therefore, claim 1 lacks novelty over D1.

- 5.2 Auxiliary request IV only adds the further feature that the leaf heating means and the root temperature control means are regulated depending on the plant. The board considers this feature also as implicitly disclosed by D1. It is known to the skilled person that greenhouses are controlled and regulated in accordance with the type of crop grown. Naturally this must apply also to the the regulation of the root temperature control system and leaf control means of D1. Claim 1 is thus not new over D1.
- 5.3 Auxiliary request V further requires that the system is so regulated that the leaf temperature follows a change in the root temperature. As explained above for novelty of auxiliary request II, the system of D1, page 15, also meets this limitation. The board notes that the additionally recited feature of "optionally in a directly proportional manner" is optional and thus only a preferred, not required, feature. The subject-matter of claim 1 of auxiliary request 5 is thus also anticipated by D1, Article 54(2) EPC.
- 5.4 Claim 1 of auxiliary requests VI to IX is directed at a horticulture system for plant production. It goes without saying that the greenhouse of D1 is such a system. Thus, this feature does not add any limitation to auxiliary requests VI to IX over the disclosure of D1.

This being the only feature added to claim 1 of auxiliary request VI as compared to that of auxiliary request II, claim 1 of auxiliary request VI lacks novelty over D1 for the same reasons.

- 5.5 Auxiliary Request VII requires that the artificial light source to which the crop is exposed comprises light-emitting diodes (LEDs) that emit radiation at different wavelengths and that are individually controllable, optionally in groups. The use of individually controlled intensity of actinic LED lights of different wavelengths (red and blue) is a known measure in plant growth systems to improve light quality control, see D5, abstract. The skilled person would thus implement, to that effect, such a known actinic lighting system in the greenhouse of D1 as a matter of obviousness. Claim 1 of this request does not therefore involve an inventive step in the light of D1 in combination with D5, Article 56 EPC.
- 5.6 Auxiliary request VIII additionally requires the provision of a temperature controlled liquid flow into a heat-exchanger in contact with the culture substrate as root temperature control means. This feature is however also known from D1. The Rootco heat exchanger mats system below the root substrate, as described in the abstract of the article at D1, page 15, also has these features. Claim 1 (which builds on claim 1 of the preceding request) therefore lacks an inventive step for similar reasons as claim 1 of auxiliary request 7.
- 5.7 Auxiliary request IX adds to claim 1 of auxiliary request 8 that the leaf heating means and the root temperature control means are regulated depending on the plant. As explained above for auxiliary request 4, this is implicitly disclosed by D1. Thus claim 1 lacks an inventive step over the combination of D1 and D5 for similar reasons as auxiliary request 8, Article 56 EPC.

- 5.8 The above conclusion also holds for auxiliary request 10. As explained above (see reasons for auxiliary request 5), the added feature that the system is so regulated that the leaf temperature follows a change in the root temperature is disclosed by D1.
6. For the above reasons, the board finds that the decision was wrong in concluding that the patent as amended according to auxiliary request 2 meets the requirements of the Convention and therefore must be put aside. It also holds for the other requests on file that, taking into consideration the amendments made by the respondent-proprietor, the patent and the invention to which it relates do not meet the requirements of the Convention. The board can but revoke the patent pursuant to Article 101(3)(b) EPC.

Order

For these reasons it is decided that:

1. **The decision under appeal is set aside.**
2. **The patent is revoked.**

The Registrar:

The Chairman:



G. Magouliotis

A. de Vries

Decision electronically authenticated