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**Datasheet for the decision
of 8 December 2015**

Case Number: T 1242/06 - 3.3.04

Application Number: 00940724.8

Publication Number: 1211926

IPC: A01H5/10, A01H1/04

Language of the proceedings: EN

Title of invention:

Method for breeding tomatoes having reduced water content and product of the method

Patent Proprietor:

State of Israel - Ministry of Agriculture

Opponent:

Unilever N.V.

Headword:

Tomatoes III/STATE OF ISRAEL

Relevant legal provisions:

EPC Art. 53(b), 54, 56, 83, 112, 113, 114(2)

EPC R. 31, 115(2)

RPBA Art. 8(2), 15(3)

Keyword:

"Auxiliary request I - exception to patentability (no),
sufficiency of disclosure, novelty, inventive step (yes)"

Decisions cited:

G 0001/08, G 0002/12, T 0793/93

German Federal Court of Justice ("Bundesgerichtshof"), BGH
27.3.1969, X ZB 15/67 "Rote Taube" ("Red Dove")

Catchword:

see points 8 and 9



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Case Number: T 1242/06 - 3.3.04

D E C I S I O N
of Technical Board of Appeal 3.3.04
of 8 December 2015

Appellant: State of Israel - Ministry of Agriculture
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
29 May 2006 concerning maintenance of the
European Patent No. 1211926 in amended form.**

Composition of the Board:

Chairwoman G. Alt
Members: B. Claes
R. Moufang

Summary of Facts and Submissions

- I. Both the patent proprietor and the opponent filed appeals against the interlocutory decision of the opposition division maintaining European patent No. 1 211 926 in amended form on the basis of auxiliary request IIIb then on file. The title of the patent is "*Method for breeding tomatoes having reduced water content and product of the method*".
- II. With its statement of grounds of appeal the patent proprietor (appellant I) requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request, which was identical to the main request before the opposition division, or on the basis of one of newly filed auxiliary requests I to V (auxiliary request V being identical to auxiliary request IIIb before the opposition division). Furthermore, appellant I referred to two new documents and requested that document D9/D9a, admitted into the proceedings by the opposition division, not be admitted into the proceedings.
- III. With its statement of grounds of appeal, the opponent (appellant II) requested that the decision under appeal be set aside and that the patent be revoked. In addition, six new documents were submitted and reimbursement of the appeal fee was requested on the ground that the opposition division had committed a substantial procedural violation by admitting appellant I's auxiliary request IIIb into the proceedings.
- IV. With a letter dated 16 July 2007, appellant I filed a further new auxiliary request VI and thirteen further documents.

- V. After first oral proceedings before this board, albeit in a different composition, which were restricted to the issue of a possible referral to the Enlarged Board of Appeal pursuant to Article 112 EPC 1973, the board referred three questions of law to the Enlarged Board of Appeal by virtue of its first interlocutory decision of 4 April 2008 (OJ EPO 2008, 523). All questions related to the interpretation of the process exclusion contained in Article 53(b) EPC, namely to the circumstances under which processes for the production of plants have to be regarded as "essentially biological".
- VI. The Enlarged Board of Appeal answered the referred questions in its decision G 1/08 of 9 December 2010 (OJ EPO 2012, 206).
- VII. With a letter dated 7 September 2011, appellant I submitted a new main request and auxiliary requests I to III and requested that document D19 not be admitted into the proceedings (see section III). Further auxiliary requests IV and V were submitted by a letter dated 28 October 2011. All of these requests were restricted to claims for products.

The main request was identical to auxiliary request II before the opposition division and its two claims read:

"1. A tomato fruit of the species *Lycopersicon esculentum* which is naturally dehydrated, wherein natural dehydration is defined as wrinkling of skin of the tomato fruit when the fruit is allowed to remain on the plant after a normal ripe harvest stage, said natural dehydration being generally unaccompanied by microbial spoilage.

2. A tomato fruit of the species *Lycopersicon esculentum* characterized by an untreated skin, dehydration of the fruit and wrinkling of the skin, said dehydration being generally unaccompanied by microbial spoilage."

Auxiliary request I was identical to auxiliary request IIIb before the opposition division (see section I) and differed from the main request only in that in both claims the tomato fruit was further characterised as being a "raisin-type" tomato fruit.

VIII. With a letter dated 10 October 2011, appellant II filed further arguments and seven further documents.

IX. Subsequently, with a letter dated 28 October 2011, appellant I requested the board not to admit into the proceedings, of those documents previously filed by appellant II, documents DX2, DX2a, DX2b, DX2c, DX3 and DX4.

X. With a letter dated 3 November 2011, appellant II requested that the board refer further questions of law to the Enlarged Board of Appeal.

XI. The second oral proceedings before the board, again in a different composition, took place on 8 November 2011. Appellant I submitted a new auxiliary request I, which the board admitted into the proceedings. The previous auxiliary request I (see section VII) was renumbered as auxiliary request II.

Claim 1 of this new auxiliary request I was identical to claim 1 of the main request filed with letter of 7 September 2011 (see Section VII, above).

Claim 2 was amended to read:

"2. A dehydrated tomato fruit of the species *Lycopersicon esculentum* characterized by an untreated skin, which permits said dehydration of the fruit so as to obtain wrinkling of the skin, said dehydration being generally unaccompanied by microbial spoilage."

At the end of the oral proceedings the chairman announced that appellant I's main request was refused, that with respect to new auxiliary request I the debate was closed in relation to the requirements of Rule 80, Article 123(2) and (3), Article 84 and Article 53(b) EPC, and that the proceedings would be continued in writing.

XII. In its second interlocutory decision dated 31 May 2012 (OJ EPO 2013, 42) the board decided that claim 1 of appellant I's main request complied with the requirements of Article 123(3) EPC but claim 2 did not. Both claims of auxiliary request I complied with the requirements of Rule 80 EPC and Articles 84 and 123(2) and (3) EPC and the exclusion of plant varieties in Article 53(b) EPC did not apply to the subject-matter of these claims. The board, however, referred the following three questions to the Enlarged Board of Appeal for decision:

"1. Can the exclusion of essentially biological processes for the production of plants in Article 53(b) EPC have a negative effect on the allowability of a product claim directed to plants or plant material such as fruit?

2. In particular, is a claim directed to plants or plant material other than a plant variety allowable even if

the only method available at the filing date for generating the claimed subject-matter is an essentially biological process for the production of plants disclosed in the patent application?

3. Is it of relevance in the context of questions 1 and 2 that the protection conferred by the product claim encompasses the generation of the claimed product by means of an essentially biological process for the production of plants excluded as such under Article 53(b) EPC?"

XIII. The referred questions were answered by the Enlarged Board of Appeal in its decision G 2/12 of 25 March 2015 (OJ EPO 2016, A27, see Order) as follows:

"1. The exclusion of essentially biological processes for the production of plants in Article 53(b) EPC does not have a negative effect on the allowability of a product claim directed to plants or plant material such as a fruit.

2. In particular, the fact that the only method available at the filing date for generating the claimed subject-matter is an essentially biological process for the production of plants disclosed in the patent application does not render a claim directed to plants or plant material other than a plant variety unallowable.

3. In the circumstances, it is of no relevance that the protection conferred by the product claim encompasses the generation of the claimed product by means of an essentially biological process for the production of plants excluded as such under Article 53(b) EPC."

- XIV. In a communication pursuant to Article 15(1) RPBA dated 20 July 2015 accompanying the summons to oral proceedings the board, now in the present composition, noted *inter alia* that the opponent had withdrawn its appeal during the preceding proceedings before the Enlarged Board of Appeal. Accordingly, the patent proprietor was the sole appellant (hereafter referred to now as "appellant") and the opponent had become a party to the proceedings as of right (Article 107 EPC, hereafter referred to now as "respondent"). The board furthermore expressed its preliminary opinion that in view of the ruling in decision G 2/12, *supra*, the subject-matter of the claims of auxiliary request I was not excluded from patentability by virtue of Article 53(b) EPC.
- XV. With a letter dated 6 November 2015 the respondent informed the board that it would not be attending the oral proceedings.
- XVI. In a further communication dated 30 November 2015 the board expressed its preliminary opinion that the claims of auxiliary request I overcame all the outstanding issues under the grounds for opposition pursuant to Article 100(a) EPC (novelty and inventive step) and Article 100(b) EPC, and that document D9/D9a (see section II), document D19 (see section III) and documents DX2a, DX2b, DX2c, DX3 and DX4 (see section VIII) should be admitted into the proceedings. The board indicated that it envisaged setting aside the decision under appeal and remitting the case to the opposition division with the order to maintain the patent on the basis of the claims of auxiliary request I and a description to be adapted thereto. It further noted that if the appellant agreed with the remittal of the case to the opposition division and withdrew its

request for oral proceedings subject to the board proceeding as suggested, the presence of the appellant at the oral proceedings might not be required. The board also considered that, since the respondent had informed the board that it would not be attending the scheduled oral proceedings, its request for oral proceedings was moot. If the appellant were to proceed as suggested by the board, the scheduled oral proceedings would be limited to the announcement of the board's decision.

XVII. With a letter dated 2 December 2015, the appellant agreed to the board remitting the case to the opposition division with the order to maintain the patent on the basis of the claims of auxiliary request I and a description to be adapted thereto, and withdrew its request for oral proceedings subject to the board proceeding in that manner.

XVIII. Oral proceedings took place on 8 December 2015. Neither the appellant nor the respondent was represented, the latter as announced in its letter dated 6 November 2015. At the end of the oral proceedings the chairwoman announced the board's decision.

XIX. After the board had announced its decision, the board received two further *amicus curiae* briefs. These were dated 23 July 2016 and 8 August 2016 and were therefore disregarded.

XX. The following documents are relevant for the decision of the board:

D1: WO 00/05390

D2: US 5,817,913

- D3: The New Rural Industries, A handbook for Farmers and Investors, Keith Hyde (Ed.), published 1997.
- D5: Eshed & Zamir (1995), Genetics, Vol. 141, pages 1147-1162.
- D6: Photographs of IL 4-4 tomatoes
- D8: Bernacchi *et al.* (1998), Theor. Appl. Genet., Vol. 97, pages 170-180.
- D9/D9a: Photographs of TA517 tomatoes
- D10: Lindsey Bareham (1999), The Big Red Book of Tomatoes, pages 12 and 13.
- D11: Declaration I by Dr Schaffer including 9 Exhibits
- D17: Photographs of IL 4-4 tomatoes
- D18: WO 2006/030445
- D19: Photographs of TA517 tomatoes
- D29: Rick, chapter "Tomato" in "Evolution of Crop Plants", Smartt & Simmonds (Eds.), Longman Scientific and Technical Publishing, Essex, U.K. 1995, 2nd Edition, pages 452-457.
- D30: Excerpt from the internet site of the Tomato Genetics Resources Center (TGRC) containing a key for *Lycopersicon* and related *Solanum* species.
- D31: Liu & Zamir (1999), Tomato Genetics Cooperative, No. 49, 26.

- D32: E-mail correspondence of Dr Schaffer and Dr Chatelet concerning the identity of IL 4-4 and TA517 as available at TGRC
- D33: Material Transfer Agreement (MTA) form of TGRC
- D35: Stevens & Rick (1986), In "Genetics and Breeding" in "The Tomato Crop", Atherton & Rudich (Eds.), Chapman and Hall, London, pages 34-65.
- D37: Declaration II by Dr Schaffer including 3 Exhibits
- DX1: Hovav *et al.* (2007), The Plant Journal, Vol. 52, pages 627-639.
- DX2: Declaration by Andy Wallace, 10 October 2011.
- DX3: Photographs of IL 4-4

XXI. The arguments of the appellant which are relevant for this decision can be summarised as follows:

Sufficiency of disclosure (Article 100(b) EPC in connection with Article 83 EPC)

The patent in suit provided a specific breeding programme providing the claimed tomatoes.

The respondent's argumentation regarding lack of sufficiency of disclosure was based solely on allegations and not on serious doubts substantiated by verifiable facts. Thus, the claimed subject-matter complied with the requirement of sufficiency of disclosure.

Novelty (Article 54 EPC)

An implicit disclosure in the prior art had to disclose the claimed subject-matter beyond all reasonable doubt in order to be detrimental to the novelty of claimed subject-matter (see e.g. decision T 793/93). To apply a "balance of probabilities" as the standard in this context was inappropriate.

Neither document D1 nor document D2 disclosed dehydrated tomato fruit as defined in the claims. In fact, the breeding programmes disclosed in these documents would select for *non-wrinkling* fruit since dehydration was a horticulturally undesirable trait in cultivated commercial tomatoes. Accordingly, it could not be argued that tomato fruit as claimed was inherently and unavoidably disclosed by documents D1 and D2.

Documents D5 and D8 disclosed tomato lines IL 4-4 and TA517. No evidence was on file that dehydrated tomatoes of these lines had been produced and made available to the public.

In particular, there was no indication that tomato fruits described in these documents were left to remain on the vine after the point of normal ripening or were kept after harvest, possibly enabling dehydration. Whereas document D5 described that "[u]nder field conditions toward harvest time, every day ~3% of their fruit change their color from green to red" (see page 1148, right-hand column, 3rd paragraph), it also reported that fruits for all lines tested were harvested when 95-100% of the tomatoes of control plants M82 were red (see page 1148, right-hand column, 3rd paragraph). For the produced introgression lines, the value "*percentage green fruit weight (G)*" was determined as a

parameter for the "*relative earliness of the different genotypes*" (see page 1151, right-hand column, last paragraph). 33 of the 49 introgression lines tested, among them IL 4-4, showed significantly late ripening (see page 1152, left-hand column). Accordingly, the data did not demonstrate that the authors inevitably harvested tomato fruit that were past the point of normal ripening.

The photographs comprised in documents D6, D9/9a, D17 and D19 did not demonstrate that the depicted (wrinkled) IL 4-4 and TA517 tomatoes were dehydrated. No documentation was available about details concerning the identity of the objects shown on the photographs, the source of the plant material, the conditions under which it was grown, as to when, where and by whom or under whose supervision the plants and fruits depicted in these documents were obtained and grown. In addition, nothing was known about the ripening or post-ripening stage the displayed tomatoes were in.

It was questionable whether the IL 4-4 and TA571 plants shown in the photographs displayed properties of the IL 4-4 plants and TA571 plants described in documents D5 and D8, because evidence existed that currently available germplasm of the introgression lines IL 4-4 and TA517 was different from that disclosed in documents D5 and D8 (see e.g. documents D30 to D33 and D37).

Document D11, a declaration of the inventor, provided the scientific explanation for the phenotype of the claimed tomatoes, *i.e.* microfissures in the cuticle allowed dehydration in a time frame where microbial spoilage was generally not observed (see section 5). In contrast, the so-called "reticulated epidermis" or

"melon-like skin" phenotype of the IL 4-4 and TA517 tomatoes was due to a different structure of the fruit skin (*i.e.* "suberization"; see section 6). Thus, it was not proven that the tomatoes of lines IL 4-4 and TA517 underwent dehydration as defined in the claims.

Inventive step (Article 56 EPC)

There was no hint in the prior art that the phenotype of natural fruit dehydration known from the (wild) bush tomato plant (*Solanum centrale*), a species taxonomically remote from the cultivated tomato, could be established in such a cultivated tomato, or that the phenotype could be bred into the cultivated tomato by interspecific crossing.

Of the species belonging to the genus *Solanum*/*Lycopersicon*, only the closest relatives were known to interspecifically cross with the cultivated tomato *L. esculentum* (see document D29, page 453, right-hand column, 3rd paragraph). In fact, it was known that from the *Lycopersicon*-like complex of plants within the former genus *Solanum*, only *S. lycopersicoides* yielded sexual hybridisation with *L. esculentum* (see document D35, page 61, 3rd paragraph).

The skilled person had no incentive to try and solve the technical problem of providing dried tomato products in a more easy, reliable and gentle manner, nor was there any reasonable expectation that it could be solved as proposed by the invention successfully.

XXII. The arguments of the respondent which were made during these appeal proceedings on the requirements of sufficiency of disclosure, novelty and inventive step, which apply to auxiliary request I and which are relevant for this decision can be summarised as follows:

Sufficiency of disclosure (Article 100(b) EPC in connection with Article 83 EPC)

The patent in suit disclosed one single cross between the Volcani Center-owned *L. esculentum* parental breeding line BL1630 and pollen of the wild species *L. hirsutum* (LA1777). The single cross resulted in two F2 plants which in turn resulted in one F3 plant with fruit according to the invention (see example 1 of the patent). The cross involved meiosis which randomly determined the genetic make up, and the invention was therefore not repeatable without undue burden.

Neither the breeding line BL1630 nor any of the lines resulting from the breeding process of the patent in suit with the desired phenotype was deposited in accordance with Rule 31 EPC.

The disclosure in the patent was insufficient "as explained in the *Red Dove* decision. In the *Red Dove* decision, a technical repeatable decision was denied because: 'the breeder would not be providing a person skilled in the art with a teaching of how to breed a new variety; instead, he would merely be informing the general public of the physical existence in his possession of a product of a breeding method. Instead of instructions to anyone skilled in the art how to arrive

at the same result, this situation would produce a true monopoly on the product itself, derived solely from the single application of the breeding method. This type of monopoly is foreign to patent law."

Novelty (Article 54 EPC)

The photographs in documents D6, D9/D9a, D17, D19 and DX3 showed that tomatoes grown on plants of introgression lines IL 4-4 and TA517, which were disclosed in documents D5 and D8 respectively, demonstrated wrinkling of the skin and dehydration. Document DX2 documented where, when, by whom and under which conditions the plants were grown and the photographs in documents D9, D17 and D19 were taken (*i.e.* in the years 2004 and 2006).

The inventor had confirmed that IL 4-4, and likewise TA517, showed the natural dehydration trait of the invention (see e.g. documents D11, D18 (page 39, line 4) and document DX1). Since the "reticulated epidermis" feature was not a technical feature of the claims, it could not be used to distinguish the claims over the prior art.

The IL 4-4 tomatoes depicted in documents D6 and D17 were the same as those of IL 4-4 plants disclosed in document D5, even if not grown from seed propagated from the seed disclosed in document D5, because the part of the genome which mattered was the introgressed part which was homozygous in the introgression line (see also documents D30 and D31). Furthermore, natural dehydration was caused by one gene in the introgressed part of IL 4-4, *i.e.* *Cwp1* (see document D18). Therefore, any

theoretical recombination in possible heterozygous loci outside the introgression was irrelevant. The same held true for the TA517 tomatoes disclosed in document D8 and depicted in documents D9/D9a and D19.

The claims thus lacked novelty over tomatoes of plants of these lines as disclosed in documents D5 and D8.

Document D5 disclosed that typically 3% of the tomatoes on a tomato plant turned ripe every day (page 1148, column 2, under the heading "Phenotyping"). For an optimal harvest a time was chosen when most tomatoes were ripe, thereby inevitably including tomatoes well past the point of being ripe. Consequently, documents D1, D2, D5 and D8 inevitably disclosed overripe tomatoes having all features according to claims 1 and 2, *i.e.* dehydrated.

Inventive step (Article 56 EPC)

It was known to the skilled person that the (wild) bush tomato (*Solanum centrale*) had the phenotype of a naturally dehydrating fruit (see documents D3 and D10). The only difference between *S. centrale* and *L. esculentum* was the introduction of this feature into another species of the same taxon. Accordingly, the objective technical problem to be solved was how to introduce the dehydrating phenotype from one tomato species into another tomato species.

The disclosures in documents D5 and D8 suggested to the skilled person that new phenotypes could be created by crossing *L. esculentum* with *S. habrochaites* (*L. hirsutum*) or *S. pennellii* (*L. pennellii*). Therefore a skilled person would have arrived at the tomato fruit as claimed by routine experimentation.

Reasons for the Decision

Procedural issues

Right to be heard (Article 113 EPC)

1. With a letter dated 6 November 2015 the respondent informed the board that it would not be attending the oral proceedings on 8 December 2015 (see section XV). Subsequently, in a communication dated 20 November 2015 (see section XVI), the board informed the parties that it intended to set aside the decision under appeal and to remit the case to the opposition division with the order to maintain the patent on the basis of the claims of auxiliary request I and a description to be adapted thereto. The board also considered that, since the respondent had informed the board that it would not be attending the scheduled oral proceedings, its request for oral proceedings was moot.
2. The respondent did not react to the communication of the board and did not attend the oral proceedings on 8 December 2015. The board accordingly announced the decision, as earlier foreshadowed in its communication, in the absence of the parties in accordance with Rule 115(2) EPC and Article 15(3) RPBA.

Admission of documents into the proceedings

3. In its communication dated 30 November 2015 (see section XVI), in preparation of the oral proceedings, the board indicated that document D9/D9a, document D19 and documents DX2, DX2a, DX2b, DX2c, DX3 and DX4, all filed by the respondent, were to be admitted into the proceedings contrary to the request of the appellant

(see sections II, VII and IX). The board notes that these documents are the documents most relevant to and essentially relied upon for the arguments of the respondent. The board notes furthermore that it has not been argued by the appellant that it did not have enough time to deal with the documents, and the board too had no problems in dealing with them when reaching its decision.

4. Accordingly, at the oral proceedings the board decided to confirm the discretionary decision of the opposition division to admit document D9/D9a into the proceedings and to admit the other documents referred to into the proceedings in accordance with Article 114(2) EPC.

Ratio decidendi

5. In its second interlocutory decision dated 31 May 2012 referring questions of law relating to the interpretation of Article 53(b) EPC to the Enlarged Board of Appeal (OJ EPO 2013, 42; see section XII, above), the board, in a different composition from the present one, held that the appellant's main request filed with letter of 7 September 2011 was not allowable. It decided that claim 1 complied with the requirements of Article 123(3) EPC, but claim 2 did not (see points 5 to 8 of the reasons for the decision). The board further held that both claims of auxiliary request I (filed during the oral proceedings on 8 November 2011, see section XI above) complied with the requirements of Rule 80 and Articles 84 and 123(2) and (3) EPC. The board was furthermore of the view that the exclusion of plant varieties in Article 53(b) EPC did not apply to the subject-matter of the claims of auxiliary request I.

6. The appellant's main request and auxiliary request I are the same as those considered by the board in its second interlocutory decision, *supra*. The *ratio decidendi* of this decision therefore applies to these requests. Moreover, according to Article 8(2) RPBA, each new member of a board of appeal is bound to the same extent as the other members by an *interim* decision which has been taken by the board as composed previously.
7. It follows that the main request is not allowable, that the claims of auxiliary request I fulfil the requirements of Rule 80 and Articles 84 and 123(2) and (3) EPC and that the subject-matter of the claims of auxiliary request I is not excluded from patentability in view of the exclusion of plant varieties in Article 53(b) EPC.

Auxiliary request I

Article 53(b) EPC - process exclusion

8. The ruling in decision G 2/12 of the Enlarged Board of Appeal (OJ EPO 2016, A27, see section XVII above) has clarified that the process exclusion contained in Article 53(b) EPC has no negative impact on the allowability of product claims as contained in the appellant's auxiliary request I. The respondent has not submitted any arguments that the ruling in decision G 2/12 does not apply to the subject-matter claimed. In a communication (see section XVI) the board announced that it had none either.
9. Accordingly, the board decides that the subject-matter of the claims of auxiliary request I is not excluded from patentability pursuant to Article 53(b) EPC.

Sufficiency of disclosure (Article 100(b) EPC in connection with Article 83 EPC)

10. In examples 1 and 2 the patent in suit discloses a particular parental line of the species *Lycopersicon esculentum* and of the species *L. hirsutum* which were interspecifically crossed as well as a further breeding programme for the resulting plants leading to the successful identification of plants carrying tomato fruits with the characteristics as claimed.
11. It is established case law of the boards of appeal that a successful objection of lack of sufficiency of disclosure presupposes that there are serious doubts, substantiated by verifiable facts, that the skilled person, using common general knowledge, was unable to carry out the invention. The burden of proof in this respect is upon the opponent (see Case Law of the Boards of Appeal of the EPO, 7th Edition 2013, II.C.8).
12. The respondent has argued that the interspecific cross disclosed in the patent in suit involved meiosis which randomly determined the genetic make-up of the resulting plants and further generations. As such this event was not repeatable exactly without undue burden. It was furthermore argued that the parental *L. esculentum* line BL1630 was a proprietary line not deposited in accordance with Rule 31 EPC. More significantly, none of the lines with the desired phenotype resulting from the breeding process of the patent in suit was deposited either.
13. The board agrees with the respondent that, due to the fact that meiosis is a random process, an exact repetition of the crosses described in the examples 1 and 2 may not be possible for the skilled person.

However, the board considers that for acknowledgement of sufficiency of disclosure such an exact repeatability is not required in the case at hand. In fact, there is no apparent necessity either to reproduce exactly the same tomatoes as disclosed in the examples of the patent in suit or to start a breeding programme from the exactly the same parental lines as those described.

14. The relevant question in the context of sufficiency of disclosure is rather whether or not the patent in suit provides the skilled person with sufficient guidance and knowledge to produce tomatoes like those that are the subject-matter of the claims. In the present circumstances the board has no reason to doubt that the patent in suit demonstrates that appropriate crossing and selection steps (initially based on high sugar content) starting from appropriate parental lines eventually lead to the identification of tomatoes in accordance with the claims. This has not been contested by the respondent either. Accordingly, there is in the present case also no necessity for a deposit pursuant to Rule 31 EPC of either the parental lines or the resultant plants which fall under the terms of the claims.

15. The board furthermore does not see how the reference by the respondent to a decision of the German Bundesgerichtshof from 27 March 1969 (X ZB 15/67 "Rote Taube") could change the board's view on sufficiency of disclosure in relation to the claimed invention. In fact, in the board's view, in the passages cited by the respondent, the court gives reasons why the requirement of repeatability must be fulfilled for the products of breeding processes (see the whole of point 18 of the cited decision). The board agrees with the court in principle and notes that also under the EPC sufficiency

of disclosure is a requirement for the grant of a patent. In the present case, however, unlike in the patent application to which the decision of the Bundesgerichtshof, *supra*, referred, the board has come to the conclusion that the patent in suit discloses sufficient technical detail for carrying out the invention as claimed (see point 13).

16. In view of the above consideration the board concludes that the respondent has not successfully established that the disclosure in the patent is insufficient for a skilled person to carry out the claimed invention.

Novelty (Article 54 EPC)

17. In the impugned decision the opposition division held that the subject-matter of the claims of the main request now before the board (which was then pending as auxiliary request II) lacked novelty (Article 54 EPC 1973). However, it held that the subject-matter of the claims of auxiliary request II now before the board (which was then pending as auxiliary request IIIb) was novel.
18. The subject-matter of both claim 1 and claim 2 of auxiliary request I is a (naturally) dehydrated tomato fruit of the species *L. esculentum*.
19. Although the respondent has not submitted arguments specifically designed to attack the novelty of the claims of auxiliary request I during the appeal proceedings, the board notes that the disclosures in documents D1, D2, D5 and D8 have been referred to in the course of the opposition and appeal proceedings in the context of novelty.

Novelty with respect to the disclosures in documents D1 and D2

20. Document D1 discloses a breeding process for controlling starch synthesis in tomatoes with the aim of improving the value of industry tomatoes and the taste of fresh market tomatoes (see page 1, lines 7 to 11). Document D2 discloses a method for breeding tomatoes with superior taste characteristics by increasing the soluble solids (sugars) content. Both documents disclose breeding processes which are, at least in part, identical to the breeding processes described in examples 1 and 2 of the patent in suit. Both documents also disclose tomato plants with the same identification numbers as plants recited in the patent (*i.e.* the F2 plant F2-82 in the case of document D1 and the F3 plant 203-10 in the case of document D2). However, and in keeping with the aim of the disclosed breeding processes, neither of the two documents discloses explicitly the decisive process steps and observations of the patent in suit, *i.e.* that the plants were grown, that the fruit was allowed to remain on the vine after a normal ripe harvest stage and that the fruit showed the characteristic of natural dehydration as evidenced by wrinkling of the fruit skin.

21. The respondent has argued that tomatoes having all features according to claims 1 and 2 were implicitly disclosed in documents D1 and D2. With reference to document D5, which disclosed that typically 3% of the tomatoes on a tomato plant turn ripe every day (see document D5, page 1148, right hand column, under the heading "Phenotyping") and in view of the fact that for an optimal harvest a person skilled in the art would choose a time when most tomatoes had ripened, the respondent argued that, thus, such a harvest inevitably included tomatoes which were well past the point of being ripe and consequently were dehydrated.

22. Documents D1 and D2 disclose tomato research projects aiming at developing tomatoes with advantageous characteristics, *i.e.* controlled starch synthesis and superior taste, respectively, which is substantially different from the aim pursued by the patent in suit, namely to develop tomatoes with the ability to naturally dehydrate. There is no evidence before the board that the skilled person, in the context of the research projects described in documents D1 and D2, would have left tomatoes on the vine beyond a normal ripe harvest stage or would have applied the harvesting scheme disclosed in document D5, *i.e.* that the skilled person would have waited to harvest until most if not all of the tomatoes on an individual vine had ripened. In the latter context in particular, the board notes that the scheme disclosed in document D5 and referred to by the respondent is applied "under field conditions" and is in fact not the scheme which was used for the actual assays described in document D5, *i.e.* the tomatoes of the introgression lines were harvested when 95-100% of the tomatoes of the M82 plants (controls) were red (see D5, page 1148, right-hand column, 3rd paragraph), whereby IL 4-4 plants showed significantly late ripening (see D5, page 1152, left-hand column, 1st paragraph).
23. The board cannot conclude from the above that documents D1 and D2 implicitly disclose dehydrated tomatoes because the skilled person reproducing their teaching would inevitably produce such dehydrated tomatoes. The board accordingly cannot come to the conclusion that the tomato fruits disclosed in documents D1 and D2 are detrimental to the novelty of the subject-matter of the claims.

Novelty with respect to the disclosures in documents D5 and D8

24. Document D5 discloses a population of 50 introgression lines (ILs) originating from a cross between the green-fruited species *L. pennellii* and the cultivated tomato line cv M82. Each of the lines contains a single homozygous *L. pennellii* chromosome segment, defined by restriction fragment length polymorphism (RFLP), and together the lines provide complete coverage of the genome and a set of lines nearly isogenic to M82. At least 23 quantitative trait loci (QTL) for total soluble solids content and 18 for fruit mass were revealed. For finer mapping of a QTL affecting fruit mass, the introgressed segment was recombined into smaller fragments that allowed the identification of three linked loci. At least 16 QTL for plant weight, 22 for percentage green fruit weight, 11 for total yield and 14 for total soluble solids yield were identified (see abstract). Similarly, document D8 discloses results of QTL-mapping for a battery of agronomic traits of interest of a set of near isogenic lines (NILs) developed from studies in which *L. pimpinellifolium* and *L. hirsutum* were used as donor parents (see Introduction).

25. The respondent has emphasised in particular the disclosure of the line IL 4-4 in document D5 (see e.g. Figure 1 on page 1152) and of the line NIL TA517 in document D8 (see e.g. Figure 1 on page 172). Both lines comprise a substantial part of chromosome 4 of the donor species, replacing the corresponding part in the recipient genome. It was demonstrated in post-published document D18 that the gene responsible for the phenotype of the tomatoes as subject-matter of the claims is the *cwp* (cuticular water permeability) gene which is located on the parts of chromosome 4 present in these

introgression lines. Documents D5 and D8 describe qualitative, quantitative and phenotypic observations for several agronomically important traits. The board notes however that neither document discloses observations regarding dehydration of the produced fruit or the nature of its skin, in particular not for the lines particularly referred to by the respondent. The respondent has not argued so either.

26. However, with the colour photographs contained in documents D6 and D9/D9a, depicting tomato fruit produced on plants grown from the IL 4-4 introgression line of document D5 or from the NIL TA517 plants of document D8 respectively, the respondent successfully convinced the opposition division that these tomatoes have a wrinkled skin, show no signs of microbial spoilage and that the wrinkled tomatoes shown in the photographs were dehydrated. The opposition division concluded therefrom that the IL 4-4 plants disclosed in document D5 (together with document D6) and the NIL TA517 plants of document D8 (with document D9) fell under the scope of claims 1 and 2 of auxiliary request II then on file. During the appeal proceedings the respondent has filed further colour photographs, *i.e.* documents D17, D19 and DX3, of tomato fruits produced on these lines.
27. In document D11, a declaration by Dr Schaffer, the sole inventor of the patent in suit, explains that the tomatoes of lines IL 4-4 and TA517 as described in documents D5 and D8 respectively "*do not show the phenotype of natural dehydration*" of the tomato fruits as claimed. They may show wrinkling of the skin, but this was of a kind different from that observed in the patent in suit. In fact, tomatoes of these lines were later described as having "*reticulated epidermis*" or

- "melon-like skin", due to a suberisation of the fissured epidermis (see document D11, point 6).
28. Similarly as for the disclosure in documents D1 and D2, the respondent has argued that document D5 and D8 inevitably disclosed dehydrated IL 4-4 and TA517 tomatoes respectively, because of the nature of tomato ripening and the usual manner of harvesting as disclosed in document D5 (see point 21, above).
29. It was not disputed by the appellant that the total body of evidence referred to in point 21 above, along with the declaration (document DX2) submitted by the respondent, depict the phenotype of plants and tomatoes grown from the IL 4-4 line as disclosed in document D5 and from the TA517 line as disclosed in document D8 (see document D11), that these tomatoes are *capable* of dehydration (see document D11 and D18) and that these lines are the lines disclosed in documents D5 and D8.
30. However, what needs to be established in view of the respondent's argument is whether or not the skilled person, by proceeding as disclosed in documents D5 and D8, would have inevitably obtained the dehydrated tomatoes as claimed. This question is not answered by the body of evidence available to the board, *i.e.* the evidence does not establish that documents D5 and D8 implicitly disclose that the tomatoes grown should be left on the vine until they would naturally dehydrate and show all the characteristics of the tomatoes specified in claims 1 and 2. In particular there is no evidence that the skilled person would have used a harvesting scheme as applied in field conditions (see point 22 above) or that the skilled person would for other reasons have left the tomatoes on the vine to become dehydrated.

31. Accordingly, the board cannot come to the conclusion that the tomato fruits disclosed in documents D5 and D8 are detrimental to the novelty of the subject-matter of the claims.

Inventive step (Article 56 EPC)

Closest prior art and technical problem

32. The bush tomato, *Solanum centrale*, also known as the desert tomato, is a small wild shrub mainly grown in Australia with grey to green leaves. The tomato fruits turn from green to yellow when ripe and dry on the plant to resemble a raisin (see e.g. documents D3 and D10).
33. The appellant has acknowledged that these bush tomatoes have the phenotype of natural fruit dehydration characteristic for the tomatoes which are the subject-matter of claims 1 and 2. Tomatoes of the bush tomato plant are thus considered to represent the closest prior art.
34. The subject-matter of claims 1 and 2 therefore differs from dried bush tomatoes in that the claimed tomatoes belong to the species *L. esculentum* instead of the wild *S. centrale*.
35. Based on these differences the respondent has argued that the problem to be solved was the introduction of the natural dehydration feature in *L. esculentum* and that for solving this problem the disclosures in document D5 and D8 (see point 24 above) provided ample suggestion that new phenotypes could be created by interspecific crosses of tomato species.

Obviousness

36. For the evaluation of the obviousness of the claimed subject-matter the question to be answered is whether or not the skilled person would have been motivated to insert the trait of natural dehydration known from the wild bush tomato into the agronomically relevant tomato *L. esculentum*.
37. The appellant has argued in this respect that, irrespective of whether or not the cultivated tomato is taxonomically ranked as *Lycopersicon* or *Solanum*, it was known to the skilled person that sexual hybridisation of the bush tomato *S. centrale* cross with the cultivated tomato (see document D35, page 61, 3rd paragraph) was unlikely to be successful.
38. The board notes furthermore that the respondent has not identified in the prior art either a hint for the skilled person that the natural fruit dehydration phenotype as known in the bush tomato could be established in the cultivated *L. esculentum* tomatoes, or an incentive to attempt to establish such a phenotype by means of interspecific crosses similar to those disclosed in documents D5 and D8 or crosses of *L. esculentum* with *Solanum centrale*. The board has not identified such a hint or incentive either.
39. The board therefore considers that the respondent, also in this respect, has not made a sufficient case for the board to conclude that it would have been obvious for the skilled person to embark on crosses between the bush tomato and the cultivated tomato to establish the tomatoes defined in claims 1 and 2.

40. In view of the above considerations the board concludes that the subject-matter of claims 1 and 2 involves an inventive step.

Original request of the respondent for reimbursement of the appeal fee

41. In its statement of grounds of appeal, the opponent (formerly appellant II, now respondent) requested reimbursement of the appeal fee on the ground that the opposition division had committed a substantial procedural violation by admitting the patent proprietor's auxiliary request IIIb into the proceedings (see section III).
42. With a letter dated 28 June 2012, the respondent has withdrawn its appeal. Consequently, this request is no longer pending.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the claims of auxiliary request I as filed during the oral proceedings on 8 November 2011 before the board of appeal and a description to be adapted thereto.

The Registrar:

The Chairwoman:



P. Cremona

G. Alt

Decision electronically authenticated