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Datasheet for the decision of 8 July 2010

Case Number: T 1360/08 - 3.3.04

Application Number: 05250580.7

Publication Number: 1561375

IPC: A01H 5/10

Language of the proceedings: EN

Title of invention:
Improved pasture, forage and seed production technology through pod and leaf retention on annuals of the medicago genus (annual medics)

Applicant:
Pristine Forage Technologies Pty Ltd

Opponent:
-

Headword:
Annual medics/PRISTINE FORAGE TECHNOLOGIES PTY LTD

Relevant legal provisions:
EPC Art. 53(b), 54, 56, 123(2)
EPC R. 26(5)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Main request: added matter (no) - novelty (yes) - inventive step (yes) - exclusion from patentability (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1360/08 **-** 3.3.04

D E C I S I O N
of the Technical Board of Appeal 3.3.04
of 8 July 2010

Appellant: (Applicant)
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 13 February 2008 refusing European patent application No. 05250580.7 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. Rennie-Smith
Members: R. Gramaglia
B. Claes

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision of the examining division on the refusal under Article 97(1) EPC 1973 of European patent application No. 05 250 580.7 (publication number EP-A-1 561 375) entitled "Improved pasture, forage and seed production technology through pod and leaf retention on annuals of the *Medicago* genus (annual medics)".

II. The following documents are referred to in the present decision:

D1 Oba S. et al., Field Crops Research, Vol. 66, pages 269-276 (2000);

D9 Declaration of Dr K.G. Boyce dated 8 May 2008;

D15 Information sheet relating to *Serradella* seed production published in 2001 by the New South Wales Department of Primary Industries.

III. The examining division decided that the claims before them lacked novelty and inventive step over document D1. The decision under appeal also comprised some additional *obiter* comments about the non-patentability of method claims 5 to 10 under Article 53(b) EPC.

IV. Claims 1 and 5 before the first instance read as follows:

"1. A plant of an annual medic of the genus *Medicago*, said plant characterized in having a mutant form of the

gene for pod shedding whereby the majority of seed pods, upon reaching maturity, remain attached to their respective pedicels."

"5. A method for producing a cultivar, variety, line or plant of an annual medic of the genus *Medicago* characterized in having a "pod holding" trait whereby the majority of seed pods, upon reaching maturity, remain attached to their respective pedicels, said method comprising:
(i) subjecting a known cultivar or wild-type variety of an annual medic of the genus *Medicago* to treatment by a mutagenic agent; and
(ii) selecting for the aforesaid "pod holding" trait."

Claims 2 to 4 and 6 to 10 before the first instance related to specific embodiments of the plant according to claim 1 or the method of claim 5, respectively.

Claims 11 to 14 before the first instance related to a plant produced by a method according to claims 5 to 10.

V. Oral proceedings were held on 8 July 2010, during which the appellant filed an amended main request.

Independent claims 1 and 5 of this request read as follows:

"1. A plant of an annual medic of the genus *Medicago*, said plant characterized in having a mutant form of the gene for pod shedding via formation of an abscission layer between maturing seed pods and their respective pedicels, whereby the majority of seed pods, upon reaching maturity, remain attached to their

respective pedicels and are held on the vine after the plant is mature and dried off."

"5. A method for producing a plant of an annual medic of the genus ***Medicago*** characterized in having a "pod holding" trait resulting from a mutant form of the gene for pod shedding via formation of an abscission layer between maturing seed pods and their respective pedicels, whereby the majority of seed pods, upon reaching maturity, remain attached to their respective pedicels and are held on the vine after the plant is mature and dried off, said method comprising:
(i) subjecting a known cultivar or wild-type variety of an annual medic of the genus ***Medicago*** to treatment by a mutagenic agent; and
(ii) selecting for the aforesaid "pod holding" trait."

Claims 2 to 4 and 6 to 10 related to specific embodiments of the plant according to claim 1 or the method of claim 5, respectively.

VI. The submissions by the appellant, insofar as they are relevant to the present decision, can be summarized as follows:

Article 123(2) EPC

– The features in claims 1 and 5 of the main request (i) "via formation of an abscission layer between maturing seed pods and their respective pedicels" and (ii) "are held on the vine after the plant is mature and dried off" had a basis on page 2, lines 7-8 and page 6, lines 6-8, respectively, of the application as filed.

Article 54 EPC

– The claims of the main request specified that the mutant gene was the gene for pod shedding via formation of an abscission layer between maturing seed pods and their respective pedicels and that the majority of seed pods, upon reaching maturity, remained attached to their respective pedicels and were held on the vine after the plant was mature and dried off. Not only was there no reference in document D1 to any annual medic having these features but document D1 actually referred to wild-type plants in which the "mature" seed pods detached from the plant at a completely different abscission point.

Article 56 EPC

– Document D1 was silent as to any of the difficulties associated with harvesting pods for seed production. Therefore, the known machines for "vacuum harvesting" represented the closest prior art in relation to the presently claimed subject-matter.

– The problem to be solved was the provision of means enabling the harvesting of annual seed pods without the utilisation of vacuum harvesting.

– The solution proposed in claim 1 was not defined by a result to be achieved but rather by a trait clearly and easily observable in the field. Moreover, the skilled person following the

technical information provided in the application was able to arrive at plants according to claim 1 without undue burden because a single gene needed to be mutated.

– The skilled person wishing to genetically improve medic cultivars in the light of document D1 would not arrive at the claimed mutants in an obvious way (see points 17-20 of the "reasons" for more detail).

Article 53(b) and Rule 26(5) EPC

– The process according to claim 5 and dependent claims included a step of treatment by a mutagenic agent, which step could not be regarded as a natural phenomenon such as crossing or selection.

VII. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the main request filed at the oral proceedings.

Reasons for the Decision

Article 123(2) EPC

1. Claim 1 of the main request before the board differs from claim 1 as filed by the deletion of the references to "cultivars", "varieties" and "lines" and by the addition of two features: (i) "via formation of an abscission layer between maturing seed pods and their respective pedicels" and (ii) "are held on the vine after the plant is mature and dried off". A basis for

feature (i) is present on page 2, lines 7-8 of the application as filed (corresponding to paragraph [0005], lines 47-50 of the published "A1" application), whereas a basis for feature (ii) is present on page 6, lines 6-8 of the application as filed (corresponding to paragraph [0020], lines 22-25 of the published "A1" application).

2. Claims 2 to 5 and 8 differ from claims 2 to 5 and 8 as filed by the deletion of the references to "cultivars", "varieties" and "lines".

Claims 6 and 7 are identical with claims 6 to 7 as filed

Claims 9 and 10 are based on claims 9 and 10 as filed.

3. In view of the foregoing, the board is satisfied that the conditions of Article 123(2) EPC are complied with.

Novelty

4. The gene responsible for pod shedding which characterises the annual medic plants according to claim 1 is a mutant form of the gene for pod shedding via formation of an abscission layer between maturing seed pods and their respective pedicels. In the plants having the mutant form of this gene, the majority of seed pods, upon reaching maturity, remain attached to their respective pedicels and are held on the vine after the plant is mature and dried off (see point 13 below for more detail).

5. It should be established whether or not plants having the property of retaining fully mature seed pods on fully mature plants under normal field conditions are disclosed, either explicitly or implicitly by document D1. The examining division (see paragraph 2.1.2 of the decision under appeal) considered that the plants disclosed in document D1, which exhibited a gene responsible for "shedding tolerance", anticipated the claimed annual medic plants.

6. Document D1 is concerned with investigations on the pod-shedding mechanism in annual *Medicago* species. This document confirms the pod-shedding characteristic of these plants, in which the pods become prone to shedding as they mature, although some varieties are more resistant than others to shedding. The passage bridging page 273 and 274 lists "shedding-tolerant" lines, such as *M. sativa* and *M. polymorpha*.

7. However, the board observes that said "shedding-tolerant" lines exhibit low breaking strengths at ripening. This is shown by the graphs in Fig. 1 (page 272), from which it can be derived that the breaking strength at ripening (DAF = 48) either decreases or falls to zero. Therefore, these pods possess no resistance to mechanical disturbance and gravity alone would simply cause them to fall off under their own weight. In contrast, the claimed plants comprise a trait that is not naturally occurring and are characterized by the property that the majority of seed pods, upon reaching maturity, remain attached to their respective pedicels and are held on the vine after the plant is mature and dried off. That the medic plants described by document D1 as "shedding tolerant"

do not display this latter property in the field is confirmed by evidence from an independent expert (see document D9, paragraph 14).

8. Since there is no disclosure in document D1 of any annual medic plant having the features recited in claim 1, the claims of main request are novel over document D1.

Inventive step

Closest prior art and problem to be solved

9. The difficulty of harvesting and cleaning the seeds has always been a well recognised problem of pasture legume cultivation. At maturity, seed pods were dropped from the plant and the harvesting of the seeds involved vacuum harvesting of the pods from the ground. The harvesting process was therefore slow and required specialised and powerful equipment, with large fuel inputs (see paragraph [0002] of the published "A1" application).

10. Document D1 is silent as to any of the difficulties associated with harvesting pods for seed production. Therefore, the board considers that the known machines for "vacuum harvesting", as referred to on e.g. page 2 of document D15 may be regarded as the closest prior art in relation to the presently claimed subject-matter.

11. The problem to be solved is considered as the provision of means enabling the harvesting of annual seed pods without the utilisation of suction harvesting.

The solution proposed in claim 1 is a mutant annual medic plant which retains the majority of the seed pods at plant maturity and thus allows seed harvesting with a non-vacuum farm machine.

Has the problem been solved?

12. As regards this question, the examining division (see paragraph 2.2.1 of the decision under appeal) concluded that the claimed subject-matter did not solve any technical problem because claim 1 was defined by a result to be achieved.

13. However, in the board's opinion, claim 1 specifies the presence of a mutant form of the gene for pod shedding, the expression of which gene results in the majority of seed pods remaining attached to their pedicels at maturity and are held on the vine after the plant is mature and dried off. This is an objectively observable phenotype resulting from the presence of the mutant form of the gene. As taught in paragraphs [0015] to [0017] and Fig. 2 of the published "A1" application, the trait is clearly and easily observed in the field.

Moreover, the skilled person following the technical information provided in paragraphs [0013] to [0017] of the published "A1" application is able to arrive at plants according to claim 1 without undue burden because a **single** gene needs to be mutated (see paragraphs [0018] of the published "A1" application). Thus the frequency of pod-holding mutants is about one in 15,000 (i.e., 3:40,000-50,000; see column 3, lines 45-46 and line 55 of the published "A1"

application). If more than one gene had been involved, difficulties would have arisen (see point 20 infra).

In view of the foregoing, the board is satisfied that the problem set out above (see point 11) has been solved.

14. The relevant question to be answered is whether or not the proposed solution could be derived in an obvious way from the prior art.

15. Document D1 is silent as to any of the difficulties associated with harvesting pods for seed production (see point 10 supra). Thus, in the board's view, this document did not provide any incentive to go in the direction of selecting pod-holding mutants.

16. But even assuming (as did the examining division in paragraph 3.3 of the decision under appeal) that the skilled person wished to genetically improve medic cultivars (see document D1, page 270, r-h column, lines 1-2) in the light of the teaching in document D1, he/she would not arrive at the claimed mutants in an obvious way, for the reasons explained in detail below.

17. The present application demonstrates that natural shedding of fully mature pods under natural circumstances occurs as a result of the formation of an abscission layer at the base of the pod (see Fig. 1 and 3 of the present application showing the pedicels still attached to the plant). In contrast to this, document D1 focussed on investigating abscission layers between plant and pedicel. The methodology used by the

authors of document D1 could thus not reveal the "ph+" (pod-holding trait) according to claim 1.

18. Moreover, this "ph+" trait had to be detected at full plant and pod maturity and the tests in document D1 did not cover this period. It is true that the authors of document D1 collected some data at ripening. However, these data focused on the significant differences between species as to the "shedding tolerance" (see page 272, r-h column, first paragraph and Fig. 3). But the decisive test was not to study the "ph+" and "ph-" traits (assuming the authors of document D1 had this scope in mind) **between species** but rather **within one species**.

19. Furthermore, the authors of document D1 concluded that species-specific factors seemed to be responsible for shedding tolerance of late stage pods (see the 3rd paragraph beginning on page 273 and Fig. 5). This would have led the skilled person away from the finding by the present inventors that "ph+" and "ph-" traits were irrespective of species.

20. Finally, the species-specific factors above suggested a multigenic control underlying "pod shedding tolerance" in medic plants (see the wording "a small number of discrete genes" on page 275, l-h column, line 24). In view of this multigenic control, the skilled person had no expectation of success that using random mutations (e.g. through γ-radiations) would achieve *Medicago* plants carrying a useful pod-holding mutation. This is because it was known that the probability of obtaining a useful (in this case: pod-holding) mutant would have decreased exponentially with the number of genes

involved in the desired trait (if the probability was 1/N for one gene, it became $1/N^2$ for two genes and $1/N^3$ for three genes, etc, wherein N is the number of irradiated seeds).

21. In summary, the subject-matter of claim 1 of the main request satisfies the requirements of Article 56 EPC. This conclusion extends to the remaining claims.

Patentability under Article 53(b) and Rule 26(5) EPC

22. In paragraph 3.1 of the decision under appeal, the examining division maintains that the methods of claims 5 to 10 relate to essentially biological methods for the production of plants which are excluded from patentability in accordance with the provisions of Article 53(b) EPC and Rule 26(5) EPC.

23. However, the process according to claim 5 and dependent claims includes a step of "subjecting a known cultivar or wild-type variety of an annual medic of the genus ***Medicago*** to treatment by a mutagenic agent", which step cannot be regarded as a natural phenomenon such as crossing or selection. It is rather a step of a technical nature which introduces by itself a new trait into the genome of the plant produced. Therefore the method of claim 5 cannot be said to consist entirely of natural phenomena which are excluded from patentability in accordance with the provisions of Article 53(b) EPC and Rule 26(5) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

   – claims 1 to 10 of the main request filed during the oral proceedings;

   – pages 1 and 3 to 10 of the application as filed;

   – page 2 of the description filed during oral proceedings;

   – the drawings of the application as filed.

The Registrar: The Chairman:

P. Cremona C. Rennie-Smith