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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ACETO AGRICULTURAL CHEMICALS CORP.,
Petitioner,

v.

GOWAN COMPANY, LLC,
Patent Owner.

Case IPR2016-00076
Patent 8,791,049 B2

Before SHERIDAN K. SNEDDEN, KRISTINA M. KALAN, and CHRISTOPHER G. PAULRAJ, *Administrative Patent Judges.*

PAULRAJ, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Procedural History

Aceto Agricultural Chemicals Corp. ("Petitioner") filed a Petition (Paper 1, "Pet."), requesting institution of an *inter partes* review of claims 6–14 of U.S. Patent No. 8,791,049 B2 (Ex. 1001, "the '049 patent"). Gowan Company, LLC ("Patent Owner") timely filed a Preliminary Response (Paper 8, "Prelim. Resp."). We determined that the information presented in the Petition demonstrated that there was a reasonable likelihood that Petitioners would prevail in challenging claims 6–14 as unpatentable under 35 U.S.C. § 102(b) and/or § 103(a). Pursuant to 35 U.S.C. § 314, the Board instituted trial on May 2, 2016, as to those claims of the '049 patent. Paper 9 ("Institution Decision"; "Inst. Dec.").

Following our institution, Patent Owner filed a Response to the Petition (Paper 24, "PO Resp.") and a Motion to Amend (Paper 25). Petitioners filed a Reply to Patent Owner's Response (Paper 32, "Reply") and an Opposition to the Motion to Amend (Paper 31). Also following institution (Paper 15), and pursuant to our authorization (Paper 22), Patent Owner requested and obtained, under 37 C.F.R. § 1.323, a certificate of correction to correct a typographical error in claim 9 of the '049 patent, such that claim 9 now recites a ratio of "about 0.66:0.8." Ex. 2013. Additionally, we granted Patent Owner's motion to correct the inventorship of Provisional Application No. 61/287,420, to which the '049 patent claims priority. Paper 45; Ex. 2026.

An oral hearing was held on January 9, 2017. The transcript of the hearing has been entered into the record. Paper 50 ("Tr."). Following the oral hearing, we ordered the parties to file supplemental briefs regarding the

proper interpretation of the preamble of claim 6 of the ’049 patent (Paper 46), and the parties filed the supplemental briefs pursuant to our Order (Papers 47 and 48).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Based on the record before us, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 6–14 of the ’049 Patent are unpatentable based on the anticipation and obviousness challenges presented in the Petition. In view of our conclusion that Petitioner has not shown the unpatentability of the challenged claims, we dismiss Patent Owner’s Motion to Amend as moot.

B. Related Proceedings

The Board previously denied institution of a prior petition for *inter partes* review of the ’049 patent in view of Petitioner’s failure to name a related corporate entity, Aceto Corp., as a real party-in-interest. *See Aceto Agricultural Chems. Corp. v. Gowan Co.*, Case IPR2015-01016, slip. op. at 10–11 (PTAB Oct. 2, 2015) (Paper 15). The current Petition names Aceto Corp. as a real party-in-interest. *See* Pet. 1 (“Additionally, Aceto’s parent company, Aceto Corp., is also a real party-in-interest for the present petition.”).

C. The ’049 Patent (Ex. 1001)

The ’049 patent issued on July 29, 2014, and claims a priority date of December 17, 2009. *See* Ex. 1001, at [45], [60].

The ’049 patent relates to compositions comprising both the herbicides halosulfuron and thifensulfuron to provide improved herbicidal efficacy against the weed *Heteranthera limosa*, commonly referred to as

"duck salad," present in rice crops. *Id.* at Abstract, 2:20–28, claim 6. More specifically, the '049 patent describes and claims compositions with different ratios of halosulfuron to thifensulfuron, such as 4:3 (claim 7), 1:0.125 (claim 8), and 0.6:0.08 (claim 9). *Id.* at 18:56–67. According to the '049 patent, "[t]he inventors have surprisingly discovered that the application of the combination of a halosulfuron with thifensulfuron onto rice crops unexpectedly, and it is believed synergistically[,] provided significant control of duck salad in the crop." *Id.* at 2:4–8. The '049 patent further indicates that "the combination of a halosulfuron with thifensulfuron thereof may be applied in any effective amount which is observed to be satisfactory to provide a desired degree of control, or which provides effective eradication of *Heteranthera limosa*." *Id.* at 2:56–60.

The '049 patent includes data comparing the efficacy of compositions that included the combination of both halosulfuron and thifensulfuron with compositions that did not include both herbicides. *Id.* at Table, cols. 14–16. For example, data collected at 14 days "post emergence" showed that application of halosulfuron alone at a rate of 0.67 oz. active/acre provided 78% control of *Heteranthera limosa* (Ex. C4) and application of thifensulfuron alone at a rate of 0.08 oz. active/acre provided 66% control (Ex. C5), while application of both compounds at similar rates provided 96–98% control (Exs. E3–E6). *Id.*

D. Illustrative Claims

Petitioner challenges claims 6–14 of the '049 patent. Independent claim 6 is illustrative, and reproduced below:

> 6. Plant treatment compositions for providing herbicidal efficacy against *Heteranthera limosa* present in rice crops, wherein said plant treatment compositions comprise

synergistically effective amounts of both halosulfuron and thifensulfuron.

E. Patentability Challenges

The following patentability challenges are at issue in this proceeding:

Reference(s)	**Basis**	**Claim(s) challenged**
Isaacs[1]	§ 102(b)	6 and 10
Isaacs	§ 103(a)	7–9
Isaacs and the Merck Index[2]	§ 103(a)	11 and 12
Isaacs, the Merck Index, and Helms[3]	§ 103(a)	13
Isaacs and Hacker[4]	§ 103(a)	14
The 2008 Report[5] and Gee[6]	§ 103(a)	6–10
The 2008 Report, Gee, and the Merck Index	§ 103(a)	11 and 12
The 2008 Report, Gee, the Merck Index, and Helms	§ 103(a)	13

[1] Mark A. Isaacs, et al., *Rimsulfuron Plus Thifensulfuron-Methyl Combinations with Selected Postemergence Broadleaf Herbicides in Corn,* 16(3) WEED TECHNOLOGY, 664–668 (2002) (Ex. 1002).
[2] MERCK INDEX, 795–796, 1420 (Maryadele J. O'Neil et al. eds., 14th ed. 2006) (Ex. 1003).
[3] PCT Publication WO 2009/015064 published on January 29, 2009, to Ronnie Helms et al. (Ex. 1004).
[4] US Patent 5,990,047 issued to Erwin Hacker et al. on November 23, 1999. (Ex. 1005).
[5] Robert C. Scott, University of Arkansas, Division of Agriculture Cooperative Extension Service, EXTENSION WEED CONTROL DEMONSTRATIONS IN RICE, 1–4, 36–40 (2008) (Ex. 1006).
[6] PCT Publication WO 97/08164 published on March 6, 1997, to Stephen Kenneth Gee et al. (Ex. 1007).

Reference(s)	Basis	Claim(s) challenged
The 2008 Report, Gee, and Hacker	§ 103(a)	14

In addition to the teachings of the references, Petitioner relies upon the Declaration of Harold M. Hackworth (Ex. 1008) in support of these challenges. Patent Owner relies upon the Declaration of Eric Webster, Ph.D.. (Ex. 2021) in opposing Petitioner's challenges.

II. DISCUSSION

A. Claim Construction

We interpret claims of an unexpired patent using the "broadest reasonable construction in light of the specification of the patent in which [they] appear[]." 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2146 (2016). Under the broadest reasonable construction standard, claim terms are generally given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). "Absent claim language carrying a narrow meaning, the PTO should only limit the claim based on the specification . . . when [it] expressly disclaim[s] the broader definition." *In re Bigio*, 381 F.3d 1320, 1325 (Fed Cir. 2004). "Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). "The PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review." *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015)

1. *"for providing herbicidal efficacy against Heteranthera limosa present in rice crops"*

The preamble of independent claim 6 of the '049 patent recites "[p]lant treatment compositions for providing herbicidal efficacy against *Heteranthera limosa* present in rice crops." Although we did not construe this phrase in our Institution Decision, based on the arguments presented during the course of this proceeding, we requested supplemental briefing from the parties on the issue of whether the preamble statement should be construed as a limitation. Paper 46. Specifically, we asked the parties to brief the following question:

> Does the phrase "for providing herbicidal efficacy against *Heteranthera limosa* present in rice crops," as recited in the preamble of claim 6, describe an "essence or fundamental characteristic" of the claimed invention or is it necessary to give "life, meaning, and vitality" to the claim such that it should be construed as a limitation?

Id. at 1.

In its Petition and Supplemental Brief, Petitioner takes the position that the preamble has no patentable weight, either on its own or in providing "context" to a construction of "synergistically effective amounts" recited in the body of the claim. Pet. 16–18; Paper 48, 7. Petitioner contends "there is no valid dispute that the preamble of claim 6 includes an intended use phrase," and "does not recite any *structural* elements or features of the claimed compositions." Paper 48, 1–2. In view of Patent Owner's unequivocal statements during prosecution that "*any* combination of halosulfuron and thifensulfuron would provide a synergistic benefit," Petitioner further contends that it is unnecessary to construe "synergistically effective amounts" by reference to the crop and weed to which the

composition is applied as recited in the preamble. *Id.* at 2–3. Petitioner also contends there was no clear reliance on the preamble during prosecution to distinguish the prior art. *Id.* at 3–4. In particular, Petitioner points out that the Examiner was not persuaded by Patent Owner's arguments attempting to distinguish the Isaacs reference, noting that "the use of [Patent Owner's] composition for the treatment of *Heteranthera limosa* in a rice paddy *is deemed an 'intended use' only, and plays* no role *in determining the patentability of the composition*." *Id.* (citing Ex. 1012, 132) (emphasis added by Petitioner). Petitioner additionally contends that "[t]he specification's treatment of herbicidal efficacy as an objective/effect of the composition is another guidepost confirming that the preamble is not limiting." *Id.* at 5.

Patent Owner, in its Supplemental Brief, argues that the preamble's description of "efficacy" gives meaning and context to the term "effective amounts" in the claim body, and should therefore be treated as a limitation. Paper 47, 1–2.[7] As further support, Patent Owner points to the specification's repeated emphasis on the composition's efficacy against duck salad in rice, and further notes that the Examiner clearly and unmistakably relied on the preamble's recitation to distinguish the prior art, including

[7] We note that Patent Owner indicated in its Preliminary Response that "[a]lthough Gowan agrees that this phrase ["for providing herbicidal efficacy against *Heteranthera limosa* present in rice crops"] is not a material limitation, it does provide important context, and antecedent support, for the claim term 'synergistically effective amounts,' which as discussed above are those amounts that provide a desired degree of control or eradication of *Heteranthera limosa*." Prelim. Resp. 16. Patent Owner, however, did not argue that the preamble was not a "material limitation" in its post-institution Response.

Isaacs. *Id.* at 3–6. Finally, Patent Owner asserts that "the correct interpretation limits the claims to compositions *capable of* providing herbicidal efficacy against duck salad in rice crops." *Id.* at 7 (emphasis added).

We determine that Patent Owner has the better position. We recognize that "preambles describing the use of an invention generally do not limit [composition] claims because the patentability of . . . composition claims depends on the claimed structure, not the use or purpose of the structure." *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002). In this case, however, we do not consider the phrase "for providing herbicidal efficacy against *Heteranthera limosa* present in rice crops" to merely describe a non-limiting intended use of the claimed composition. Rather, it provides specific context as to the crop to which composition must be applied, and it provides antecedent basis for the term "effective." *See Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) ("When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention."). Petitioner's expert, Mr. Hackworth, acknowledged that it is important to know which crop an herbicide is going to be applied to "[b]ecause different crops have different tolerances," and further acknowledged that a combination of herbicides could be synergistic against one weed but not against another weed. Ex. 2019, 66:2–16. As such, without the preamble's recitation concerning the weed/crop combination for which the composition provides "herbicidal efficacy," there would be no basis to determine if the combination of

thifensulfuron and halosulfuron is "synergistically effective" as further required by the claims.

Our conclusion is further supported by the '049 patent's repeated emphasis and exclusive focus on controlling *Hereranthera limosa* ("duck salad") in rice crops. The very title of the '049 patent is "Plant treatment compositions particularly effective in the control of *Heteranthera limosa* on rice crops, and methods for their use." *See* Ex. 1001, Title (54). The '049 patent further indicates that "the combination of a halosulfuron with thifensulfuron thereof may be applied in any effective amount which is observed to be satisfactory to *provide a desired degree of control, or which provides effective eradication* of *Heteranthera limosa*." *Id.* at 2:56–60 (emphasis added). The specification, including all the examples, only focuses on this particular application. *Id.* at 12:65–13:2 ("A number of separate test areas were used to evaluate the efficacy of certain treatment regimens for the control of undesired vegetative growth, more specifically, the control of *Heteranthera limosa*, commonly referred to as 'duck salad' in a rice crop planted with rice."). Although the '049 patent indicates that "[t]he plant treatment compositions according to the invention may *also* be effective in controlling further undesired vegetative growth which may be found in rice crops," no other crop other than rice crops is mentioned in the patent. *Id.* at 12:11–13 (emphasis added).

As such, it is clear that the essential feature of compositions described and claimed in the '049 patent is the specific capability to provide herbicidal efficacy against duck salad in rice crops. *See Vizio, Inc. v. Int'l Trade Comm'n*, 605 F.3d 1330, 1340 (Fed. Cir. 2010) ("[T]he 'for decoding' language . . . is properly construed as a limitation, and not merely a

statement of purpose or intended use for the invention, because 'decoding' is the essence or a fundamental characteristic of the claimed invention."); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989) (determining that preamble's recitation of "optical waveguide" was a limitation where the patent "specification makes clear that the inventors were working on the particular problem of an effective optical communication system not on general improvements in conventional optical fibers," and "[t]o read the claim in light of the specification indiscriminately to cover all types of optical fibers would be divorced from reality").

Additionally, the prosecution history shows that the Examiner relied specifically upon the preamble's recitation to distinguish the prior art and find the claims allowable. Petitioner relies upon a statement made by the Examiner that "the use of their composition for the treatment of *Heteranthera limosa* in a rice paddy is deemed an 'intended use' only, and plays no role in determining the patentability of the composition." Ex. 1012, 132. However, after Patent Owner amended the claims to recite "synergistically effective amounts," the Examiner found the claims patentable on the basis that the prior art, including the Isaacs reference relied upon by Petitioner in this proceeding, did not teach the application of a combination of halosulfuron and thifensulfuron to rice crops in order to provide herbicidal efficacy against *Heteranthera limosa*. *Id.* at 14–16. As such, although there was no explicit revocation of the Examiner's earlier statement regarding intended use, none is needed, as the Examiner ultimately did not treat the preamble's recitation as merely a non-limiting intended use in allowing the claims of the '049 patent. Accordingly, we agree with Patent Owner that the claimed compositions must be read in light

of the prosecution history to require herbicidal efficacy against duck salad present in rice crops.[8] *See W.E. Hall Co. v. Atlanta Corrugating, LLC*, 370 F.3d 1343 n.3 (Fed. Cir. 2004) ("In light of this dialogue between the Examiner and the applicants, we think there can be little disagreement that 'single-piece construction,' although located in the preamble, serves as a limit on the claims.").

For the foregoing reasons, we construe the preamble of claim 6 as a limitation on the claims, and determine that claim 6 and all of its dependent claims require compositions capable of providing herbicidal efficacy against duck salad present in rice crops.

2. "synergistically effective amounts of both halosulfuron and thifensulfuron" (claim 6).

Independent claim 6 of the '049 patent additionally recites a composition comprising "synergistically effective amounts of both halosulfuron and thifensulfuron." The parties also dispute the construction of this phrase. In our Institution Decision, we preliminarily construed this phrase to mean "any combination of thifensulfuron with halosulfuron." Inst. Dec. 9.

Petitioner contends that this limitation should be construed as "any combination of thifensulfuron with halosulfuron." Pet. 16. Petitioner relies

[8] Although, as discussed below, Patent Owner argued during prosecution that the synergistic benefit of the claimed composition is not limited to any specific amount of either halosulfuron or thifensulfuron, Patent Owner did not suggest that the particular application recited in the preamble is irrelevant to the claim scope or that any composition that includes the two herbicides will *necessarily* provide herbicidal efficacy against duck salad in rice crops. Ex. 1012, 38–40.

upon the ’049 patent’s teaching that the combination of halosulfuron with thifensulfuron may be applied in “any effective amount which is observed to be satisfactory to provide a desired degree of control, or which provides effective eradication of *Heteranthera limosa*.” *Id.* at 15 (quoting Ex. 1001, 2:56–60). Petitioner further argues that Patent Owner repeatedly averred, during prosecution of the ’049 patent, that “*any* combination of thifensulfuron methyl and halosulfuron methyl *would exhibit a synergistic improvement*.” *Id.* at 16 (quoting Ex. 1012, 40, 44). Specifically, in response to a 35 U.S.C. § 112 rejection by the Examiner, Patent Owner argued the following:

> The above table [referring to data from the specification] makes clear that the benefit of “synergistically effective amounts” of halosulfuron methyl and thifensulfuron methyl are realized when *both* of the foregoing are concurrently present in a composition, and *such does not appear to be limited [by] any specific amount of either the halosulfuron methyl and thifensulfuron methyl*, as the data imparts to the skilled artisan the finding that *the combination of these two compounds is sufficient to provide the synergistic benefit*.

Ex. 1012, 38 (emphases added);

> In view of the foregoing, it is submitted that *any combination of thifensulfuron methyl with halosulfuron methyl would exhibit a synergistic improvement when compared to either thifensulfuron methyl without halosulfuron methyl, or halosulfuron methyl without thifensulfuron methyl even at the same weight percentages of the individual compounds*. Therefore, the claim terms “. . . a plant treatment composition comprising both halosulfuron and thifensulfuron in synergistically effective amounts in order to provide improved herbicidal efficacy against *Heteranthera limosa* present in rice crops . . .” are understood from the specification as being *any combination of thifensulfuron methyl with halosulfuron methyl*

> *when compared to an otherwise like composition having a like amount of thifensulfuron methyl but without halosulfuron methyl, or a like composition having a like amount of halosulfuron methyl but without thifensulfuron methyl*.

Id. at 40 (emphases added).

In its Response, Patent Owner contends that this limitation should be construed "as amounts of both halosulfuron and thifensulfuron that, when combined, provide greater control of duck salad present in rice crop than expected based on the effect of each herbicide applied separately." PO Resp. 12. Patent Owner argues that the phrase "synergistically effective amount" is meaningless absent context provided by the rest of the claim regarding the weed and crop to which the combination of halosulfuron and thifensulfuron is applied. *Id.* at 12, 14. In the context of claim 6, Patent Owner argues that the "compositions" that "comprise synergistically effective amounts of both halosulfuron and thifensulfuron" are "compositions for providing herbicidal efficacy against *Heteranthera limosa* present in rice crops." *Id.* at 14.

As discussed above, we determine that the preamble of claim 6 provides specific context and antecedent basis for the phrase "synergistically effective amounts" recited in the body of the claim, and thus should be construed as a limitation. Nonetheless, with respect to the amounts of halosulfuron and thifensulfuron required for the claimed composition, we have taken into account Patent Owner's unequivocal statements during prosecution that *any* combination of halosulfuron and thifensulfuron would provide a synergistic benefit. Ex. 1012, 38–40. We also recognize that Patent Owner subsequently confirmed to the Examiner that the basis for determining synergism is the industry-accepted "Colby" formula. *Id.* at 16,

18, 65. Because the Colby formula is used to calculate an "expected" response of herbicide combinations, it provides a measure of synergism as an observed response of the combination that is greater than the calculated expected response. *See* Ex. 2010,[9] 20 ("When the observed response is greater than expected, the combination is synergistic…."). However, we do not see any inconsistency between Patent Owner's reliance on the Colby formula to calculate synergism and the earlier statements made during prosecution that are discussed above. Patent Owner has not shown, and the record does not otherwise suggest, that some combinations or ratios of halosulfuron and thifensulfuron applied to duck salad present in rice crops would *not* exhibit synergism based on the Colby formula.

Accordingly, based on the foregoing, we construe "synergistically effective amounts of both halosulfuron and thifensulfuron" as "any combination of thifensulfuron with halosulfuron."

B. Prior Art Relied Upon

Petitioner relies upon the following prior art in its challenges.

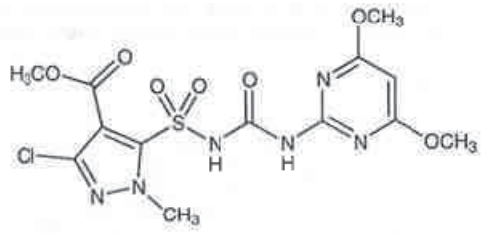
1. Isaacs (Ex. 1002).

Isaacs, a 2002 article in the Weed Technology journal, describes field studies for investigation of various herbicide compositions for weed control in corn. Ex. 1002, Abstract. In particular, Isaacs discloses a composition comprising rimsulfuron in combination with both halosulfuron-methyl (at a rate of 18 or 36 g/ha) and thifensulfuron-methyl (at a rate of 6 g/ha). *Id.* at 665–666, Table 1.

[9] S.R. Colby, *Calculating Synergistic and Antagonistic Responses of Herbicide Combinations*, 15(1) WEEDS 20–22 (Jan. 1967) (Ex. 2010).

2. The Merck Index (Ex. 1003).

Monograph 4602 in the Merck Index shows the structure of halosulfuron-methyl, reproduced below. Ex. 1003, 795.



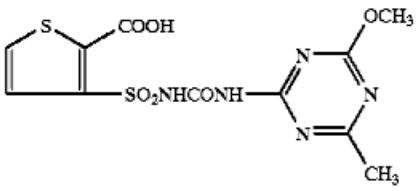
The foregoing chemical structure is for halosulfuron-methyl.

3. Helms (Ex. 1004).

Helms discloses an improved process for the control of undesired vegetation among crops. Ex. 1004, 1. Helms describes "[c]ertain particularly preferred sulfonylurea herbicide compounds which have been observed to be useful," specifically "methyl, 3-chloro-5-(4,6-dimethoxypyrimidin-2-ylcarbamoylsulfamoyl)-l-methylpyrazole-4-carboxylic acid." *Id.* at 11.

4. Hacker (Ex. 1005).

Hacker discloses herbicidal compositions comprising 4-iodo-2-[3-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)ureido-sulfonyl]benzoic esters and/or their salts. Ex. 1005, 1:6–10. Compound B43 in Hacker shows the structure of thifensulfuron, reproduced below. *Id.* at 16:1–10.



The foregoing chemical structure is for thifensulfuron.

5. Gee (Ex. 1007).

Gee discloses certain bicyclic compounds, their agriculturally suitable salts and compositions, and methods of their use for controlling undesirable vegetation. Ex. 1007, 1:4–5. Specifically, Gee discloses "selective control of the growth of weeds especially in such useful crops as rice . . . ." *Id.* at 1:7–8. Gee lists both halosulfuron-methyl and thifensulfuron-methyl among herbicides that may be useful for weed control. *Id.* at 49:9–50:22. Gee also discloses tests for use of its compounds on duck salad (*Heteranthera limosa*). *Id.* at 68.

6. The 2008 Report (Ex. 1006).

The 2008 Report describes "a series of on-farm research trials conducted by the University of Arkansas Cooperative Extension Service." Ex. 1006, 3. The cover page of the Report is dated 2008. *Id.* at 1. The Report discloses information regarding the treatments, rates of application, and application timings for rice weed control research studies during 2008, including Study RS0869 which applied both "Permit" (i.e., halosulfuron) and "GWN-3124" (i.e., thifensulfuron) in Treatments 3 and 5. *Id.* at 13.

C. Analysis of Petitioner's Patentability Challenges

1. Challenges Based on Isaacs

We instituted *inter partes* review based on Petitioner's challenge of claims 6 and 10 as anticipated by Isaacs. Inst. Dec. 17–19; Pet. 23–24. We also instituted *inter partes* review based on Petitioner's obviousness challenges of claims 7–9 and 11–14 based on Isaacs alone, or in combination with the Merck Index, Helms, and/or Hacker. Inst. Dec. 19–23; Pet. 25–33.

With respect to independent claim 6, Petitioner argues that the combination of thifensulfuron-methyl and halosulfuron-methyl disclosed in Table 1 of Isaacs satisfies the recitation of "synergistically effective amounts" because this phrase is to be construed as "any combination of thifensulfuron and halosulfuron." Pet. 24. Alternatively, if the phrase "synergistically effective amounts" is to be construed differently, Petitioner contends that the weight ratios of halosulfuron to thifensuluforn disclosed in Isaacs (which can be normalized as 3:1 and 6:1) are synergistic because they are within the ranges described in dependent claims 7–9, which span from a weight ratio of 8.25:1 to 1.333:1 after normalization. *Id.* Additionally, Petitioner contends that the rimsulfuron disclosed in Isaacs's herbicidal mixture satisfies the requirement of an additional "biologically active material" recited in claim 10. *Id.* at 24–25.

Patent Owner argues that Isaacs "does not disclose control of duck salad, or the application of halosulfuron and thifensulfuron to rice plants." PO Resp. 42. Petitioner does not dispute this point, as Isaacs is directed to herbicide compositions to be used on corn. Ex. 1002, 664. We recognize that Isaacs discloses compositions that include both halosulfuron and thifensulfuron, which satisfies our construction of "synergistically effective amounts of both halosulfuron and thifensulfuron." However, as discussed above, we have also construed the preamble's recitation as a limitation that requires the claimed compositions to be capable of providing herbicidal efficacy against duck salad in rice crops. A preponderance of the evidence establishes that rimsulfuron, an additional component required in the compositions taught by Isaacs, cannot be applied to rice plants. *See* Ex. 2021 ¶¶ 38–40 (Patent Owner's expert, Dr. Webster, explaining that

rimsulfuron significantly injures and/or kills rice); *see also* Ex. 2018 (Matrix® SG product label indicating that rimsulfuron "caus[es] eventual plant death" to sensitive plants, and that rice is one of the "most sensitive crops"). Petitioner's expert, Mr. Hackworth, also acknowledged that rimsulfuron is "not to be used on rice." *See* Ex. 2019 at 135:13–15; *see also id.* at 68:7–12 ("Q. …if I asked if a combination was synergistic for killing a weed in a rice crop and it turned out that that combination killed the rice also, it's not an herbicide you would recommend? A. *Absolutely not.*" (emphasis added)).

In its Reply, Petitioner did not challenge Patent Owner's evidence showing that a composition that includes rimsulfuron, as taught by Isaacs, cannot be effectively used as an herbicide on rice crop. Petitioner, however, points out in its Supplemental Brief that rimsulfuron is one of the herbicides identified in the '049 patent as being an exemplary co-herbicide in the plant treatment compositions of the invention. Paper 48, 6 n.2. The '049 patent only lists rimulfuron as a potential co-herbicide that "may be used" in a laundry list that spans almost two full columns. Ex. 1001, 8:10–9:49; 9:38. In view of the contrary evidence discussed above, including the admission of Petitioner's own expert, we do not find that the single recitation of rimsulfuron in the '049 patent shows that Isaacs's composition including rimsulfuron can be effectively included in an herbicidal composition that is applied to rice.

Accordingly, we determine that Petitioner has not shown that Isaacs anticipates claims 6 and 10. Because the secondary references are not relied upon to make up the foregoing deficiency in Isaacs, we also determine that

Petitioner has not shown that Isaacs in combination with those secondary references renders claims 7–9 and 11–14 obvious.

2. Challenges Based on 2008 Report

We instituted *inter partes* review for Petitioner's obviousness challenges of claims 6–14 based on the teachings of the 2008 Report in combination with Gee, the Merck Index, Helms, and/or Hacker. Inst. Dec. 23–25; Pet. 45–56. Before turning to the merits of these challenges, we must first consider whether Petitioner has shown that the 2008 Report qualifies as a prior art "printed publication," *i.e.* that it was sufficiently accessible to interested members of the public before the December 17, 2009 filing date of Provisional Application 61/287,420 ("the '420 application"), to which the '049 patent claims priority.[10]

To qualify as a "printed publication," a reference "must have been sufficiently accessible to the public interested in the art" before the critical date. *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989). Whether a reference is publicly accessible is determined on a case-by-case basis based on the "facts and circumstances surrounding the reference's disclosure to members of the public." *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009) (quoting *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004)). "A reference is considered publicly accessible if it was 'disseminated or

[10] In its Reply, Petitioner argued that "the '049 patent cannot claim priority to the '420 application, and is thus limited to a priority date of December 13, 2010," because "the '420 application does not name any inventors common with the '049 patent." Reply 19. This argument, however, is rendered moot in view of Patent Owner's correction of inventorship for the '420 application to conform with the inventors listed on the '049 patent. Paper 45; Ex. 2026.

otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art[,] exercising reasonable diligence, can locate it.'" *Id.* (quoting *Kyocera Wireless Corp. v. Int'l Trade Comm'n*, 545 F.3d 1340, 1350 (Fed. Cir. 2008)). Petitioner bears the burden of establishing public accessibility of the prior art references it relies upon for its patentability challenges. *See Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1350 (Fed. Cir. 2016) (finding that petitioner in an AIA proceeding "failed to carry its burden of proving public accessibility").

In our Institution Decision, we found that Petitioner made a sufficient "threshold" showing, for purposes of institution under 35 U.S.C. § 314(a), that the 2008 Report qualifies as a prior art printed publication. In particular, the Petition relies upon the Declaration of Dr. Robert C. Scott, Ph.D., who attests that "[t]he 2008 Report was subsequently published by the University of Arkansas in March 2009," and "a copy of the 2008 Report was mailed to all members of the public who had requested the report from the University of Arkansas." Ex. 1009 ¶ 8. We noted, however, that Patent Owner would have the opportunity to cross-examine Dr. Scott regarding those statements during the course of the proceeding. Inst. Dec. 14. We also noted that the Foreword of the 2008 Report indicates an intent for public dissemination, stating that "[t]hese types of studies . . . can provide information to the grower for use with other information sources, in making production decisions *for the following year's crops*. They also provide a *rapid turn around of information* for support of and use in programs such as . . . ." Ex. 1006, 3 (emphases added).

In its Response, Patent Owner contends that the 2008 Report is not a printed publication. PO Resp. 31–34. In particular, Patent Owner argues

that Dr. Scott's declaration is conclusory and does not show that "the 2008 Report was actually published in March 2009, that the University of Arkansas routinely published documents similar to the 2008 Report, . . . that the 2008 Report was ever indexed, catalogued, or accessible in the University of Arkansas library, or any other depository," or "how interested members of the public could request a copy of the 2008 Report." *Id.* at 31–32.

Based on our consideration of the evidence under the preponderance of the evidence standard applicable to Final Written Decisions, we determine that Petitioner has not established that the 2008 Report qualifies as a prior art printed publication. 37 C.F.R. § 42.1(d). Although the 2008 Report states "2008" on its front cover, Dr. Scott acknowledged during his deposition that the document "doesn't contain an actual publication date." Ex. 2020, 37:19–20. Dr. Scott further acknowledged that the 2008 Report was not published online and that a hard copy was not placed into a public library. *Id.* at 38:1–13. Although Dr. Scott further stated that the 2008 Report was likely put into the graduate student office's library in Fayetteville, Arkansas, he further testified that there was no cataloguing system in that area. *Id.* at 38:14–16.

With respect to his Declaration statement that a copy of the 2008 Report was mailed to members of the public who requested the report (Ex. 1009 ¶ 8), Dr. Scott testified at his deposition that he did not keep records showing who specifically, or even how many members of the public, actually requested the 2008 Report. *See* Ex. 2020 at 40:6–41:5; 42:11–14. Indeed, besides his own testimony, Dr. Scott acknowledged that he did not have any other document supporting the contention that the 2008 Report was published by March 2009. *Id.* at 41:7–16.

In its Reply, Petitioner contends that the March 2009 publication date was determined by looking at the "last printed date" on the computer files for the 2008 Report. Reply 12. Specifically, Dr. Scott testified at his deposition that "we went back and looked at when we put this book together and it appeared from the files on the computer that the last printed date was in March," and "[i]t's possible that the book was published prior to that, but it's not very likely that it was later than that date." Ex. 2020, 37:10–15. Dr. Scott, however, could not corroborate this information. *Id.* at 41:22–42:2 ("I don't know that I can come up with records as to like when it was printed, like a bill from the printer or something like that."). Moreover, even assuming that the 2008 Report was printed no later than March 2009, that testimony does not show that it was available to members of the interested public by that date.

Petitioner also asserts that Patent Owner's expert, Dr. Webster, who knows Dr. Scott, confirmed during his deposition that Dr. Scott normally mailed out copies of his annual report. Reply 13–14. Dr. Webster, however, did not testify that he received the 2008 report specifically, or even when he typically received the annual report from Dr. Scott. Ex. 1015, 67:12–68:18.

In sum, based on our consideration of the evidence as a whole, we determine that Petitioner has not established that the 2008 Report qualifies as a prior art printed publication. Dr. Scott's uncorroborated testimony fails to establish that the 2008 Report was sufficiently accessible to the public interested in the art before the critical date. Neither the testimony of Dr. Scott and Dr. Webster, nor any feature of the 2008 Report itself, demonstrates that the 2008 Report was "disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the

subject matter or art[,] exercising reasonable diligence, could locate it." *Lister*, 583 F.3d at 1311.

Accordingly, Petitioner has not established the obviousness of claims 6–14 based on its challenges relying upon the 2008 Report.

IV. PATENT OWNER'S MOTION TO AMEND

Patent Owner filed a contingent Motion to Amend with proposed substitute claims 22–30 in the event that the patentability of original claims 6–14 are not confirmed. Paper 25. Petitioner opposes Patent Owner's Motion to Amend. Paper 31. In view of our determination that Petitioner has not established the unpatentability of original claims 6–14, we dismiss Patent Owner's Motion to Amend as moot.

V. CONCLUSION

For the foregoing reasons, we conclude that Petitioners have not shown by a preponderance of the evidence that claims 6–14 of the '049 patent are unpatentable under 35 U.S.C. § 102 or § 103.

VI. ORDER

Accordingly, it is:

ORDERED that claims 6–14 of U.S. Patent 8,791,049 B2 have not been shown to be unpatentable under 35 U.S.C. § 102 or § 103;

FURTHER ORDERED that Patent Owner's Motion to Amend is dismissed as moot; and

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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