UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SYNGENTA CROP PROTECTION AG,
Petitioner,

v.

INFLEXION POINT TECHNOLOGIES, LLC,
Patent Owner.

Case PGR2025-00045

Patent No. 12,102,027

PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION

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TABLE OF EXHIBITS

Exhibit #	Reference Name
2001	Declaration of Douglas Prairie, PhD

Petitioner Syngenta Crop Protection AG ("Petitioner") has failed to demonstrate that any of the challenged claims of U.S. 12,102,027 ("'027 Patent") are "more likely than not" unpatentable. Inflexion Point Technologies, LLC ("Patent Owner"), respectfully requests that the Board deny the Petition.

I. INTRODUCTION

Petitioner has not carried its burden of demonstrating by a preponderance of the evidence that claims 1-19 of the '027 Patent are unpatentable. Indeed, there is no substantial new question of patentability.

Claims 1-19 of the '027 Patent relate to determining and applying a prescriptive seed-applied treatment at the planter. The primary reference which Petitioner relies upon at best discloses selecting different types of seeds and optimizing planting parameters for different types of seeds at predetermined field sections. As one of the named inventors of the Petitioner's primary reference notes, these are fundamentally different problems and involve different technical solutions. *See* Ex. 2001, ¶¶ 62-71.

Petitioner's Grounds 1-6 fail as a matter of law because Petitioner's Ground 1, anticipation based on the Wagers reference, is legally and factually deficient. As noted by Mr. Prairied, one of the named inventors on the Wagers reference, Wagers does not teach or suggest each limitation of independent claim 1, so Ground 1 should be disregarded. As for Grounds 2-6, Petitioner relies solely on Wagers to disclose

certain elements of the independent claim 1 in Petitioners' obviousness grounds. Because Wagers does not anticipate independent claim 1 (and no other reference is alleged to teach or suggest certain limitations of claim 1), each of Grounds 2-6 necessarily fail.

Moreover, there is no serious question of enablement and Petitioner's arguments apply a wrong legal standard by treating the method claims as product claims requiring every possible species of seed to be separately enabled as opposed to merely enabling the method itself and taking into consideration that this is a mechanical invention and not a biotechnology one and thus accommodating different sizes and shapes of seeds would not require undue experimentation. Petitioner conflates claim scope with technical implementation.

Petitioner's unsupported and legally deficient grounds fall well short of meeting the statutory burden for obtaining post-grant review.[1]

II. TECHNOLOGY BACKGROUND

In conventional agricultural planting systems, seeds are either untreated or treated with chemical, biological or a combination of both types of substances prior to being loaded onto the planter. Treatment typically occurs months or weeks prior to planting, and deterioration of substances (die off of biologicals, rub-off of

[1] This response is preliminary. Patent Owner reserves the right to identify additional and/or alternative arguments and evidence in the event the Petition is granted.

chemicals, etc.) is a material barrier to realizing the full benefit of the substances. These treatments, such as fungicides, insecticides, stimulants and inoculants, are applied in bulk without regard to the specific conditions of the field where the seeds will be planted. A farmer may seek to overtreat seeds on the farm themselves through use of a small-scale treater with associated costs of labor and equipment. Once loaded, the planter dispenses seeds uniformly across the field, with little to no variation in seed type or treatment from one location to another. While this approach is uniform, it limits the types of treatments available, and lacks the precision and dynamic variability needed to optimize yield, manage risk, or reduce environmental impact in increasingly variable field conditions.

Recent advances in precision agriculture have introduced GPS-guided planting, in-furrow treatments within specified zones, and variable planting rate technologies, allowing farmers to make large zonal adjustments to planting density and input levels. However, these systems still rely heavily on pre-treated seed and do not offer dynamic, real-time control over the specific combination of seed, type of seed-applied substances, and amount seed-applied substances either at the zonal or at the individual seed level. Moreover, recent efforts to overcome these limitations often still rely on pre-treated seeds or apply substances in-furrow (applied to the dirt) resulting in imprecise, inefficient delivery and unintended environmental exposure due to overapplication and furrow flooding.

The embodiments disclosed in the ’027 Patent address these limitations by introducing a system that prescriptively selects and applies combinations of seed and seed-applied substances based on a condition in the field during the planting operation itself. Using pre-loaded or real-time data from GPS, sensors, and predictive analytics, the system calculates the precise location where each seed will be planted and determines the optimal treatment for each seed at that location to maximize benefits and minimize costs and detriments such as overspray and other environmental effects. It enables the use of multiple seed-applied substances within a single row unit, allowing for row-by-row and even seed-by-seed customization across the field.

One of the advancements is the system’s ability to apply ultra-low amounts of seed-applied substances with high precision directly to the individual seed, minimizing waste and environmental impact while enabling the use of sensitive biologicals that cannot survive the typical seed pre-treatment processes. This is achieved through advanced applicators, metering mechanisms, timing controls, and seed drop tube belts that synchronize substance delivery with seed placement. Collectively, the embodiments disclosed represent a significant leap forward in prescriptive planting, offering farmers a powerful tool to optimize agronomic outcomes while improving sustainability and operational efficiency.

III. THE ’027 PATENT

The embodiments of the ’027 Patent relate to modern agricultural planting systems that incorporate highly sophisticated technologies that enable prescriptive, site-specific seed and seed-applied substance selection and application based on field conditions. The disclosed system integrates mechanical, electronic, and software components to dynamically determine and execute optimal planting decisions on a seed-by-seed basis. The benefits of such a system include but are not limited to calculating where specific seeds will be planted within a field, enabling the use and changing amounts and types of multiple seed-applied substances within a single row unit as the planter moves through the field, and applying ultra-low amounts of seed-applied substances with precision directly to the seed.

As discussed in the ‘027 Patent, the planter implement (10) comprises a tractor (12) operably connected to a draw bar (14) and a framework (18) that supports multiple row units (16). Each row unit may include a seed hopper (24), seed meter (26), seed drop tube (28), opening disc (32), seed firmer wheels (34), and closing wheels (36), as shown in FIGS. 1A and 1B. *See, e.g.*, ex. 1001, col. 8:58-9:8. Seeds are stored in bins (20), which may be configured as individual row fill or bulk fill systems. *Id.* A bulk input device (22) may also be connected to supply seeds or substances. *Id.* at col. 9:9-14.

Seed-applied substances are stored in substance receptacles (38), which may be partitioned into sub-receptacles (46) and connected to substance delivery tubes (52) and substance applicators (42). *Id.* at col. 10:50-63; 15:15-29; 15:44-60; 16:20-24. These applicators may be located at various points along the seed flow path, including the seed hopper (24), seed meter (26), and seed drop tube (28), as illustrated in FIGS. 3–8.

A controller (54) governs the system, receiving data from sensors (78), GPS (80), and user inputs via a graphical user interface (76). The controller coordinates timing mechanisms (82) and metering mechanisms (50) to ensure precise delivery of seeds and substances.

The system calculates the precise planting location of each seed using a combination of GPS (80), timing mechanisms (82), and controller logic (54). Ex. 1001, col. 38:2-40. As shown in FIG. 10, the process begins with the GPS determining the planter's real-time position. The controller (54) uses this data to identify the corresponding field conditions—such as soil moisture, pest pressure, or nutrient levels—at that location. *Id.* at col. 38:41-49.

Based on these conditions, the controller selects an optimal seed and seed-applied substance combination. The timing mechanism (82) calculates the delay between seed release and ground contact, ensuring that the selected combination is dispensed at the correct moment to apply to the seed as it travels to the intended

planting location. *Id.*at col. 37:11-16. This synchronization enables seed-by-seed customization across the field, even within a single pass of the planter.

The system supports the use of multiple seed-applied substances within a single row unit (16), enabling highly granular prescription planting. Ex. 1001, at col. 23:14-20. Substance receptacles (38) may contain different substances in separate compartments (46), each connected to one or more applicators (42). *Id.*, col. 15:15-29; 16:37-41.

As illustrated in FIGS. 5 and 6A–6D, the controller (54) selects the appropriate seed and seed-applied substance combination based on field conditions. *E.g.*, Ex. 1001, col. 16:48-50. Metering mechanisms (50) regulate the flow of the seed-applied substances, and applicators (42) apply them at designated points in the seed flow path. *Id.*, col. 15:61-65. This configuration allows for dynamic switching between combinations within a single row unit, enabling, for example, one seed to receive a fungicide and another to receive an insecticide, even if both are planted by the same row unit.

A key aspect of some embodiments of the system of the ’027 Patent is its ability to apply ultra-low micro amounts of seed-applied substances with high precision – often measured in ounces per acre. This is achieved through the use of advanced applicators (42), such as atomizers or jet nozzles, capable of delivering controlled micro-doses. *See* Ex. 1001, col. 12:42-48. These applicators are often

positioned within or proximate to the seed drop tube (28), where seeds are singulated and thus ideal for individual treatment. *Id.*, col. 22:53:58. FIGS. 6A-8D show many different examples of embodiments of such applicators and applicator locations.

As shown on the next page in an example embodiment depicted in FIG. 8C of the ’027 Patent, one such example is explained in detail. In the non-limiting embodiment shown, each individual seed is moved through a seed tube (28) within sections (58) separated by adjacent ridges (62). The individual seeds are then sprayed with an amount of the seed-applied substance by one or more substance delivery tubes (52). In this manner, each seed is individually applied with a desired seed-applied substance, which then carries the seed-applied substance to the soil.

Seed is applied with seed-applied substance from substance delivery tubes 52

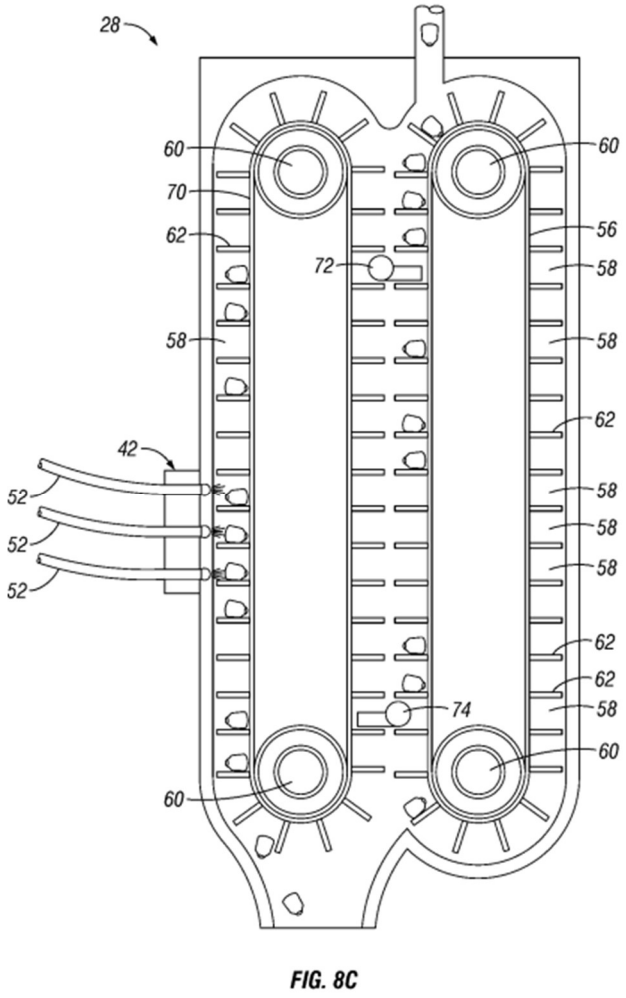


FIG. 8C

Ex. 1001, FIG. 8C

FIG. 8D is another example embodiment of the ’027 Patent. In this embodiment, the desired application amount of the selected type of the seed-applied substance is applied to each seed as it exits the seed drop tube in a predictable, calculated, and calibrated manner. This allows the system to deliver an effective amount of seed-applied substance necessary and simultaneously minimize waste.

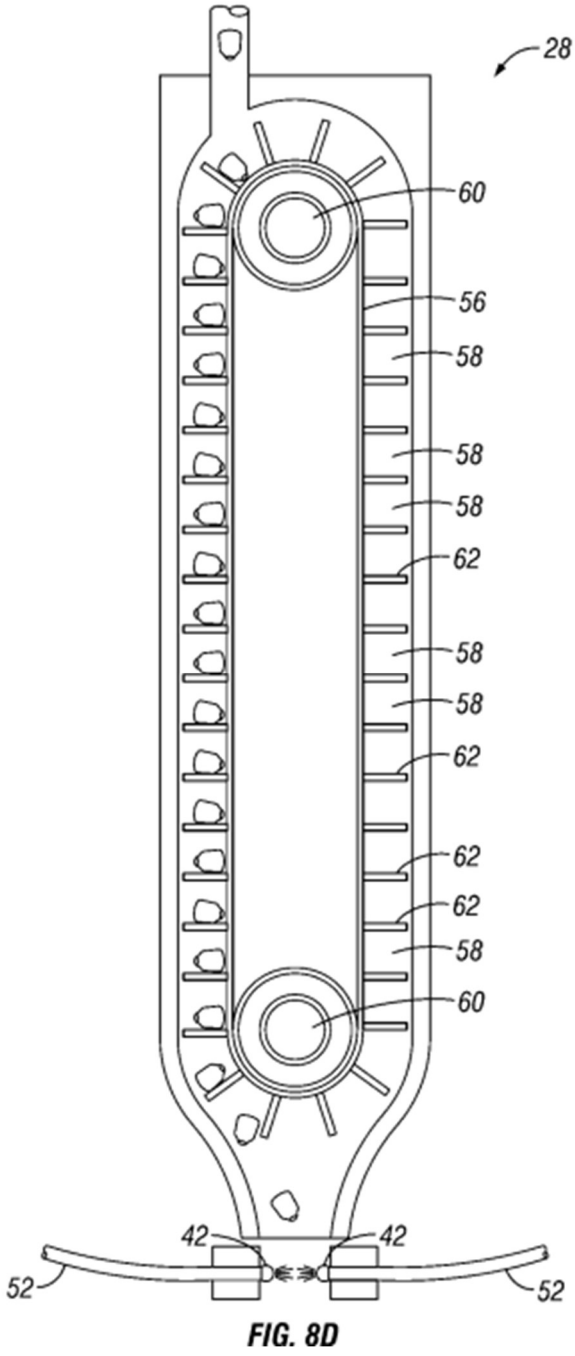


FIG. 8D

Seed is applied with seed-applied substance from substance delivery tubes 52

Ex. 1001, FIG. 8D

Metering mechanisms (50) finely control the flow rate of substances, and the controller (54) ensures that only the necessary amount is applied based on real-time conditions. *Id.*, col. 38:11-41. Timing mechanisms (82) are used in conjunction

with on-board GPS (80) to synchronize the application of the seed-applied substance to the seed as described above with the seed's position in the flow path and its calculated planting point in the field. *Id.* This approach minimizes waste, reduces environmental impact, and enables the use of sensitive biologicals that may degrade under traditional treatment methods.

The disclosed system represents a significant advancement in precision agriculture, enabling real-time, site-specific selection and application of seed and seed-applied substances. Through the integration of GPS, sensors, intelligent controllers, and precision applicators, the system delivers tailored agronomic solutions at the individual seed level. Its ability to calculate exact planting locations, manage multiple seed and substance combinations within a single row unit, and apply ultra-low micro doses of treatment substances positions it as a transformative tool for modern farming operations.

IV. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner's assertion of a POSITA is: "at least a Bachelor of Science degree in Agricultural or Mechanical Engineering with 5-10 years of practical, applied experience in the field of agricultural machinery, including systems integration and fluid handling and sprayer control systems. . . . Further, one skilled in the art would have a good understanding of sensors and actuators used in foundational technologies of precision agriculture." Petition at 16 (citations omitted). Patent

Owner disputes the asserted level of skill in the art, as the proper level of ordinary skill in the art is a Bachelor of Science degree in Agricultural or Mechanical Engineering with 2-4 years of practical, applied experience in the field of agricultural machinery, including systems integration and fluid handling and sprayer control systems, or equivalent experience. Ex. 2001, ¶ 59. The differences in the asserted level of *ordinary* skill should not change the outcome of this Petition.

V. CLAIM CONSTRUCTION

Petitioner states that "[t]he claim terms of the '027 Patent should be afforded their plain and ordinary meaning as understood by one of ordinary skill in the art consistent with the scope of the terms as addressed at 7:25-8:57, and the remainder of the '027 Patent specification." Petition at 17. While Patent Owner agrees in principle, in practice, it is clear Petitioner ignores its own assertion, and instead reads out the teaching of the specification when evaluating the "seed-applied substance" term. Ex. 2001, ¶ 53. Thus, Patent Owner asserts claim construction is necessary and appropriate. *E.g.*, *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc., 200 F.3d 795, 803 (Fed. Cir. 1999)* (noting "only those terms need to be construed that are in controversy, and only to the extent necessary to resolve the controversy").

Claims 1-19 require "a prescriptive seed treatment method comprising the steps of: providing a planter . . . and *a seed-applied substance*." (emphasis added). The '027 Patent provides the definition of a "seed-applied substance," defined to

"include any composition applied to seeds prior to the seeds being planted (e.g., when the seed comes in contact with the soil in a field)." Ex. 1001, col. 7:45-48. Patent Owner asserts "seed-applied substance" should be given its plain and ordinary meaning, consistent with the specification, giving meaning to the language used. Ex. 2001, ¶¶ 54-55. Thus, to the extent a construction is appropriate, the term "seed-applied substance" means "a substance that is applied directly to the seed before the seed comes into contact with the soil in a field)." Ex. 2001, ¶ 55. Notably, this *precludes* Petitioner's apparent definition, which allows the "seed-applied substance" to be applied to the seed (and soil) as the seed lay planted in the soil. *E.g.* Petition at 21-22, 25 ("provide the agricultural product contemporaneously with dispensing and planting the seeds" . . . "granular agricultural products"); *id.* at 46 ("as the seed is about to enter the earth at the lower extremities 10 of the hollow teeth, the liquid is applied to the grain and also to the earth, thus giving the seed and earth at the same time a treatment with the anti-smut liquid compound"). To be clear: the plain and ordinary meaning cited by Petitioner *also* precludes Petitioner's apparent interpretation. *See* Petition at 17 (citing Ex. 1001, 7:25 to 8:57 (defining "seed-applied substance" to "include any composition applied to seeds prior to the seeds being planted (e.g., when the seed comes in contact with the soil in a field)."). Patent Owner's proposed construction is directed towards avoiding a dispute

regarding the plain and ordinary meaning. *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008).

VI. THE BOARD SHOULD DECLINE TO INSTITIUTE REVIEW

In a PGR, the Petitioner bears the burden to show that the information in the petition, if not rebutted, "would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). Petitioner has not met its burden, and institution should be denied. Petitioner relies on Wagers to anticipate each limitation of independent claim 1. As Mr. Prairie, one of the named inventors on Wagers attests, Petitioner's reliance on the Wagers reference is misplaced. Wagers does not anticipate claim 1.

Conceptually the '027 Patent is directed towards the problem of "What treatment should this specific seed get right now based on current conditions?" and provides a solution in the form of a prescriptive seed-applied substance application at the planter in a precise location. Ex. 2001, ¶ 63. Conversely, Wagers is directed towards a different problem of, "Which pre-selected seed type should I plant in this zone and how should I plant it?" and addresses this problem through selecting and optimally planting from pre-existing seed varieties in predetermined locations Ex. 2001, ¶ 64. Wagers simply does not involve applying specific seed-applied substances to seeds at specific locations during the planting process or real-time seed treatment application decisions. Ex. 2001, ¶ 65. **In short, the fundamental concept**

of applying calculated substance treatments to individual seeds during the planting process is entirely absent from Wagers. Ex. 2001, ¶ 66. This is a massive and fundamental difference.

Wagers is directed to a very different technology than the '027 Patent, and does not involve applying a seed-applied substance to each seed before that seed comes in contact with the ground; nor does Wagers disclose utilizing variable types and amounts of seed-applied substances based on conditions in the field. Ex. 2001, ¶ 67. Wagers instead tracks the GPS coordinates of the planter against a "prescription map" and plants the seed type noted on the prescription map, with the predetermined agricultural product listed on the prescription map. Ex. 2001, ¶ 68. Wagers is not concerned with seed treatments. Indeed, Wagers never even uses the term "seed treatment", "treatment", or "treat". *See generally* Ex. 1004 (Wagers); Ex. 2001, ¶ 69. Wagers is directed towards conventional application of chemicals to the furrow as opposed to the seed is nothing new. Ex. 2001, ¶ 70.

Because Wagers cannot anticipate independent claim 1, Ground 1 fails. Grounds 2-6 *also* fail. For Ground 2, Petitioner has not shown that Wagers in view of Mitchell teaches or suggests all elements of independent claim 1 (and in particular, fails to show any reference discloses a "seed-applied substance", or anything other than mass-application of treatment to the seed *and* furrow). For Grounds 3-6, Petitioner asserts *only* Wagers against independent claim 1, and does

not assert any other secondary reference supplements Wagers' disclosure as to independent claim 1. Thus, because Petitioner has not shown Wagers anticipates independent claim 1, Grounds 3-6 necessarily fail. Finally, Petitioner has failed to demonstrate lack of enablement. The mechanical method claimed is not a functional-genus biotechnology claim and Petitioner fails to acknowledge well-established predictable arts doctrine.

A. Ground 1: Petitioner's Anticipation Challenge Based on Wagers Fails Because Petitioner Has Not Shown, by a Preponderance of Evidence, that Wagers Discloses All Claim Limitations

Petitioner has failed to satisfy its burden of showing that claim 1 and dependent claims 2-4, 6, 7, 11, and 13-16 are anticipated by Wagers because Petitioner failed to identify how Wagers discloses each element of claim 1, from which dependent claims 2-4, 6, 7, 11, and 13-16 depend. Anticipation under 35 U.S.C. §§102(a)(1), (a)(2) "requires that all of the claim elements and their limitations are shown in a single prior art reference." *In re Skvorecz*, 580 F.3d 1262, 1266 (Fed. Cir. 2009); *see also Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) (explaining that "invalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently").

Rather than provide argument supporting its Ground, Petitioner largely relies on simple "mapping" of the challenged claim limitations against direct citations to

Wagers, often without explanation. In doing so, Petitioner fails to identify how Wagers teaches or suggests (i) "providing a seed drop tube"; (ii) "a seed-applied substance"; (iii) "calculating a location within a field where the seed will be delivered to the soil by the planter"; (iv) "selecting, based at least in part on a condition, a combination of the seed and the seed-applied substance by selecting a type of seed-applied substance"; (v) "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil"; (vi) "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil"; (vii) "delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting"; or (viii) "wherein the type of the seed-applied substance, and the desired application amount of the selected type of the seed-applied substance can vary as the planter changes locations within the field."

Moreover, it bears emphasis that the claims as drafted are methods claims and Petitioner has not considered that there is some inherent logical and grammatical order. The claims recite a sequence of steps that must be performed in the order presented: "calculating a location where the seed will be delivered" must come *before* selecting the seed and the seed applied substance—because the selection of

the seed and seed applied substance is "based at least in part on a condition" (which can include information about the location, such as soil type). Similarly, "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil" necessarily comes (both logically and grammatically) after the selection of the seed and seed applied substance. And all that must occur prior to "delivering the combination of the seed and the selected type of the seed-applied substance . . ." to the soil. Here, because there is some order to the steps of the method claim based both on logic *and* grammar, to be invalidating, the relied-upon reference must disclose those claimed steps *in the order claimed*. *Telit Cinterion Deutschland GmbH v. 3G Licensing S.A.* No. 23-1497, 2025 WL 401647, at *3 (Fed. Cir. Feb. 3, 2025) (nonprecedential) (citing *Mformation Techs., Inc. v. Rsch. in Motion Ltd.,* 764 F.3d 1392, 1398 (Fed. Cir. 2014)) ("Telit argues that the Board erred by not requiring that the steps be performed in order. We agree. The language of claim 69 requires messages A and B come before messages C and D."). Petitioner's reliance on piecemeal citations to Wagers, without demonstrating that Wagers actually teaches the steps in any specific order is legally insufficient to carry its burden.

In view of these deficiencies, Petitioner has failed to present a legally sound argument that the challenged claims are anticipated by Wagers.

i. Wagers does not teach or suggest a "seed drop tube"

Claim 1 requires "providing . . . a seed drop tube." Ex. 1001 at Claim 1. Wagers fails to disclose or suggest the step of "providing . . . a seed drop tube." Ex. 2001, ¶ 75. For this reason, Petitioner's anticipation argument is unlikely to prevail.

Petitioner points generally to what appears to be element 108 from FIG. 1, indicating that this element is the drop tube. Petition at 20. However, element 108 is described by Wagers as the "seed hopper." Ex. 1004, [0026] ("For instance the multi-seed planter 104 includes a seed hopper **108**."); Ex. 2001, ¶ 73. As discussed in the '027 Patent, a seed hopper is separate and distinct from the claimed seed tube. *E.g.*, Ex. 1001, at 10:8-10; *see also id.* at Claim 11 (separately claiming the "seed hopper."). Petitioner's identification of Wager's "seed hopper" as the seed tube does not make it so.

Petitioner goes on to apparently identify (without explanation) the "coulters, seed metering systems including seed wheels, seed hoppers and the like" and "seed metering system 120" as the seed tube. Petition at 21-22 (dark blue emphasis). Again, these are not seed tubes. *See, e.g.*, Ex. 1001 at 10:7:10 (describing, separately from seed tubes, the presence of seed meters, seed hoppers, and seed wheels); Ex. 2001, ¶ 74.

Perhaps realizing Wagers does <u>*not*</u> disclose a seed drop tube, Petitioner offers expert testimony in lieu of an anticipating disclosure in Wagers. *See* Petition at 31

("As Dr. Giles further explains, a POSA would read and understand the multiseed planters disclosed in Wagers to "necessarily include seed drop tubes below the seed metering wheels for placing the seeds at the rate set by the metering wheel in the furrow set by the coulters.") (citing Ex. 1003, ¶ 89). But Petitioner cannot create missing elements out of thin air. This is improper and should not be considered. "[A] petitioner asserting anticipation cannot rely on its expert to supply disclosure of a claim element that is not expressly or inherently present in the reference." U.S. Patent & Trademark Office, *Patent Trial and Appeal Board Consolidated Trial Practice Guide* 36 (Nov. 2019), https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf; *see also Scripps Clinic & Rsch. Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576–77 (Fed. Cir. 1991), *overruled on other grounds by Abbott Lab'ys v. Sandoz, Inc.*, 566 F.3d 1282 (Fed. Cir. 2009) ("The role of extrinsic evidence is to educate the decision-maker to what the reference meant to persons of ordinary skill in the field of the invention, not to fill gaps in the reference. If it is necessary to reach beyond the boundaries of a single reference to provide missing disclosure of the claimed invention, the proper ground is not § 102 anticipation, but § 103 obviousness."); *Cont'l Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) ("This modest flexibility in the rule that "anticipation" requires that every element of the claims appear in a single reference accommodates situations where the common knowledge of technologists is not recorded in the reference; that

is, where technological facts are known to those in the field of the invention, albeit not known to judges. It is not, however, a substitute for determination of patentability in terms of § 103."). The Board should disregard Petitioner's request to gap-fill Ground 1 with expert testimony.

Worse, Petitioner's cited expert testimony—supposedly filling in the missing seed tube element—fails to identify how seed tubes would be within the knowledge of a POSITA. Instead, Dr. Giles simply states it is so:

> A POSA would read and understand the multi-seed planters disclosed in Wagers (as summarized above and in the attached claim charts) to necessarily include seed drop tubes below the seed metering wheels for placing the seeds at the rate set by the metering wheel in the furrow set by the coulters. Seed drop tubes are a well understood and necessary component ubiquitous in all such multi-seed planters and have been used in planters since the advent of mechanized agriculture over a century ago. *See, e.g*., Mitchell (Ex. 1005), which issued March 14, 1922. The planting precision disclosed in Wagers, as excerpted above, requires the use of seed drop tubes, which are a necessary component of the multi-seed planters disclosed therein.

Ex. 1003, ¶ 89.

Dr. Giles's conclusory testimony that a POSA would understand Wagers to include a seed drop tube is wholly unsupported and should be rejected—Dr. Giles identifies no portion of Wagers that supports this conclusion, and instead cites generally to Mitchell (Ex. 1005) without explaining how *that* supports his assertion either. This conclusory expert opinion is unsupported by any documentation and should be disregarded. *See* Practice Guide at 36 ("Furthermore,...expert testimony

cannot take the place of disclosure from patents or printed publications…."); *see also Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022) (precedential) at 15 ("Dr. Jones does not cite to any additional supporting evidence or provide any technical reasoning to support his statement. Thus, the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight.") (citing 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) ("Lack of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination.") (*quoting Ashland Oil, Inc. v. Delta Resins & Refractories, Inc*., 776 F.2d 281, 294 (Fed. Cir. 1985)); *Carella v. Starlight Archery & Pro Line Co*., 804 F.2d 135, 138 (Fed. Cir. 1986) ("Although in some circumstances unsupported oral testimony can be sufficient to provide prior knowledge or use, it must be regarded with suspicion and subjected to close scrutiny."). Reliance on conclusory expert testimony "is particularly problematic where, like here, expert testimony is offered not simply to provide a motivation to combine prior-art teachings, but rather *to supply a limitation missing*

from the prior art." *Xerox Corp.*, IPR2022-00624, Paper 9, at 16 (emphasis added);[2] *see also Arendi S.A.R.L. v. Apple Inc*., 832 F.3d 1355, 1362 (Fed. Cir. 2016) ("[R]eferences to 'common sense'—whether to supply a motivation to combine or a missing limitation—cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.").

To the extent Petitioner is making an argument that seed drop tubes are inherent in the Wagers reference, this too is unsupported and should be disregarded. Inherent disclosure of a claim limitation requires a showing the limitation is <u>necessarily</u> present in the reference, not merely probable or possible. *See Intas Pharms. Ltd.,* PGR2023-00043, Paper 37 at 47-48 (*citing Endo Pharms. Sols., Inc. v. Custopharm Inc*., 894 F.3d 1374, 1381 (Fed. Cir. 2018)). Critically, the sum of Petitioner's explanation that Wagers inherently discloses a seed drop tube is that (1) seed drop tubes are in the prior art, (2) "Wagers . . . necessarily include seed drop tubes below the seed metering wheels for placing the seeds at the rate set by the

[2] The exception here is when a missing limitation is "unusually simple and the technology particularly straightforward." *Arendi S.A.R.L. v. Apply, Inc*., 832 F.3d 1355, 1361–62 (Fed. Cir. 2016). Petitioner has made no argument that a seed drop tube would be unusually simple; nor could it, as the seed drop tube "plays a major role in the subject matter claimed." *Id.* The '027 Patent teaches that the seed drop tube is a "preferred location" to apply the seed-applied substance (Ex. 1001, col. 14:36-38), which allows for precise application and planting. *See id.*, col. 19:6-28 (describing benefit of utilizing seed drop tube to apply seed-applied substance).

metering wheel in the furrow set by the coulters"; and (3) "The planting precision disclosed in Wagers, as excerpted above, requires the use of seed drop tubes, which are a necessary component of the multi-seed planters disclosed therein." Petition at 31 (citing Ex. 1003, ¶ 89). Again, Petitioner (and Dr. Giles) say it is so because they say it is so. Nowhere has Petitioner explained how or why seed drop tubes would be necessary for Wagers, or why planting precision (if it was actually disclosed[3]) would necessitate seed drop tubes. The Board should disregard this conclusory argument.

Regardless, Wagers does not disclose—either explicitly or inherently—seed drop tubes. Dr. Prairie, a named inventor on the Wagers reference, confirms as much. Ex. 2001, ¶ 75. Even crediting that Petitioners that Wagers discloses "planting precision," such would not be a disclosure of seed drop tubes (nor, for that matter, does Petitioner explain how it would be).

[3] Petitioner does not tell us what it believes Wagers' planting precision disclosure *is*. Rather, Petitioner (and Dr. Giles) state "The planting precision disclosed in Wagers, as excerpted above, requires the use of seed drop tubes, which are a necessary component of the multi-seed planters disclosed therein." Petition at 31; *see also* Ex. 1002, ¶ 89 (same). Neither Petitioner nor Dr. Giles explain which "above" excerpts supposedly discuss planting precision. Nor do they explain how Wagers, which does not use "precision", discloses planting precision Ex. 1004.

Wagers does not disclose or suggest a "seed drop tube," and cannot anticipate the challenged claims through conclusory expert testimony. The Board should reject Petitioner's Ground 1.

ii. Wagers does not disclose "a seed-applied substance"

Petitioner's Ground 1 also fails because Wagers does not teach the element of "providing . . . a seed-applied substance." Ex. 1001, cl. 1; Ex. 2001, ¶ 76. Petitioner argues this is provided by Wagers' disclosure of "liquid fertilizer or herbicide" and "granular fertilizer, herbicide, insecticide or the like." Petition at 21 (teal). In doing so, Petitioner reads out that the '027 Patent discloses a *seed*-applied substance, i.e., a substance *applied to the seed.* Ex. 1001, cl. 1; *id.* at 7:45-48. In the non-limiting embodiment shown in the '027 Patent specification, each individual seed is moved through a seed tube 28 within sections 58 separated by adjacent ridges 62. *E.g.*, Ex. 1001, col. 18:30-56. The individual seeds are then sprayed with the seed-applied substance by one or more substance delivery tubes 52. *Id.* In this manner, each seed is individually applied with the seed-applied substance, which then carries the seed-applied substance to the soil. *Id.*, *see also id.* at FIG 8C (next page).

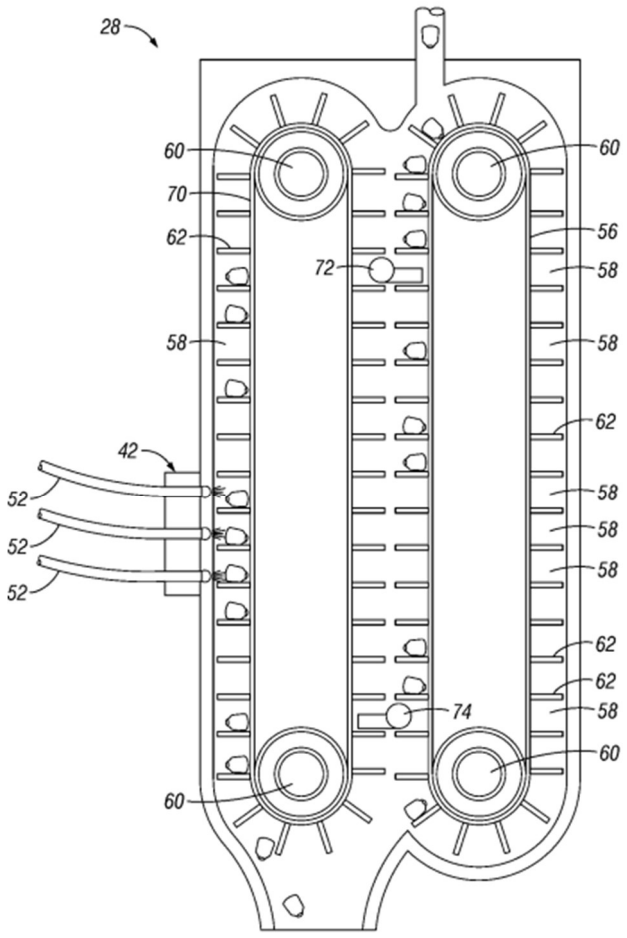


FIG. 8C

FIG. 8D of the ’027 Patent is reproduced on the next page, and depicts another example embodiment including the idea of “individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil.” Ex. 1001, cl. 1.

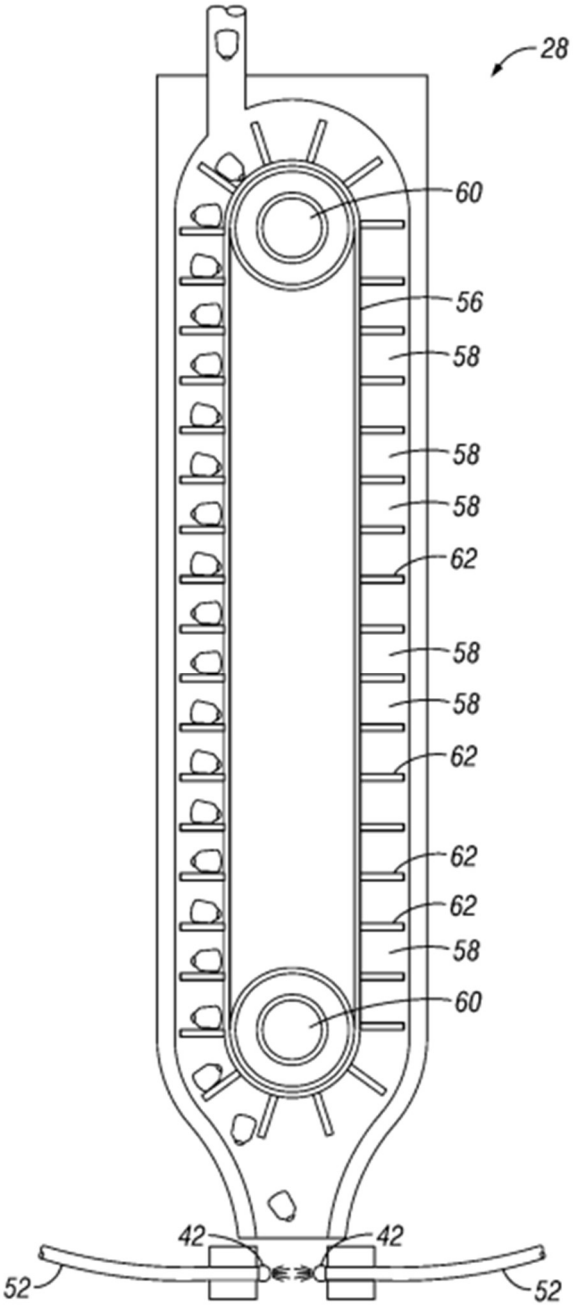


FIG. 8D

As seen above, the seed-applied substance is applied to each individual seed as it passes through the bottom of the seed drop tube 28. It is a benefit of the '027 Patent that the seed-applied substance obviates the need to apply a treatment to the

soil. *E.g.*. Ex. 1001, col. 2:44-55 (negative consequences of chemical application to field).

Wagers discloses bulk-application of fertilizer, insecticide, or herbicide *to the soil itself*. Ex. 2001, ¶ 78. Wagers does not disclose or suggest any mechanism for applying a substance (e.g., a chemical coating, inoculant, or treatment) directly to individual seeds before planting. *Id.* Petitioner erroneously argues that the "seed-applied substance" is disclosed in paragraph [0028]. Paragraph [0028] states that "a liquid fertilizer or herbicide is provided in the agricultural product reservoir 116. In one example the agricultural product reservoir 116 is distributed throughout the row units 114 for instance to corresponding spray units associated with each of the one or more row units 114 or associated with two or more row units 114." Ex. 1004. This is not a disclosure of *seed*-applied substance; rather, as evident throughout Wagers, it is a disclosure of how the row units 114 may spray liquid fertilizer or herbicide *on the rows* (e.g., onto the dirt) while seeds are being dispersed. Ex. 1004, [0028] ("The agricultural product reservoirs 118 are configured to provide the agricultural product contemporaneously with dispensing and planting of seeds."); Ex. 2001, ¶ 79. This is further confirmed by Petitioner's citation to paragraph [0050], which discusses "an agricultural product dispenser 418 such as one or more of a sprayer or pneumatic system for respective liquid ***or granular*** fertilizer, herbicide, insecticide or the like…." Ex. 1004, [0050] (emphasis added). Granular

fertilizer, herbicide, or insecticide logically and physically cannot be applied to seeds themselves, and are instead applied to soil. Ex. 2001, ¶ 80. Wagers goes on to disclose a "shutoff valve" for the "liquid or granular agricultural product to the respective row unit," as well as "rates" the agricultural unit may be applied. Ex. 1004, [0051]. There is no teaching or suggestion in Wagers of the agricultural product being delivered or applied to the seed itself, and certainly not to individual seeds in real-time as they are being planted—nor does Petitioner attempt to argue as much. Claim 1 requires a *seed-applied* substance on a per-seed basis, whereas Wagers describes bulk application of an agricultural product to the soil itself at a rate of choice, with shut off valves if needed. Ex. 2001, ¶ 82. Petitioner has failed to show that Wagers discloses a "seed-applied substance," and thus Ground 1 fails.

iii. Wagers does not disclose "calculating a location within a field where the seed will be delivered to the soil by the planter"

Ground 1 further fails because Petitioner does not demonstrate that Wagers teaches the step of "calculating a location within a field where the seed will be delivered to the soil by the planter." Ex. 1001, cl. 1. Wagers does not teach calculating where to deliver seed; rather, it teaches use of a GPS, along with a premade "prescription map" to plant seeds noted in the prescription map based on the sensed GPS location of the planter. *See* Ex. 1004, [0008] ("The method monitors a planter location on a prescription map of a field, selects a seed type based on the

monitored planter location on the prescription map, and then dynamically changes one or more of the planter characteristics based on at least the selected seed type."); *see also* FIG 3 and [0030] (showing and describing a prescription map demonstrating which seed type should be planted in the particular GPS coordinate); Ex. 2001, ¶ 85. Petitioner's argument that Wagers discloses this step in FIG. 3 and paragraph [0039] misses the point; the claim requires calculation of where each seed will be delivered, not simply matching up the GPS coordinate to the pre-set prescription map to determine what seed type will be delivered in a particular prescription zone. Ex. 2001, ¶ 86.

Petitioner then points (without explanation) to additional paragraphs to support its showing: "[s]ee also paragraphs [0032], [0062], [0067]." Petition at 22-23. These paragraphs do not address calculating where a seed will be delivered. Paragraph [0032] simply references FIG. 3 showing a map disclosing that different prescription zones of the map include different, predetermined characteristics for the seed and the agricultural product applied. Ex. 1004, [0032]; Ex. 2001, ¶ 87. Paragraph [0062] explains that one of the predetermined characteristics includes coulter down pressure based on what zone the GPS determines the planter is currently within. Ex. 1004, [0062]; Ex. 2001, ¶ 88. Paragraph [0067] goes on to explain that one of the inputs to the zone calculations is terrain characteristics such as "moisture content of the soil, accelerometer data corresponding to the roughness

of the terrain, the grade of the terrain and the like." Ex. 1004, [0067]; Ex. 2001, ¶ 89. Notably, Wagers does not reference calculating or calculation *at all*. Ex. 2001, ¶ 90. Instead, Wagers describes using a GPS to locate a planter's location on a prescription map with pre-set prescription zones, each prescription zone corresponding to a pre-identified seed type and agricultural product application. *E.g.*, Ex. 1004, [0056] (describing particular parameters on a zone-by-zone basis); Ex. 2001, ¶ 90.

This is the type of imprecision the '027 Patent is aimed at addressing. Wagers treats all seeds within a prescription zone identically. Ex. 2001, ¶ 90. The '027 Patent notes that is precisely the problem the inventors set out to solve:

> [T]the optimal type and amount of seed treatment often varies from field to field, row to row, and *even seed planting location to seed planting location*. In particular, the field and other conditions can vary greatly across fields, rows and seed planting locations. To that end, farmers have adopted tools and techniques such as variable rate planters, variable blend and variable rate fertilizers, multi-hybrid and multi-variety planters (i.e., planters capable of planting multiple, different types of hybrids during the same planting session), and the like. Thus, a need exists in the art for a prescriptive seed treatment that permits precise selection of which seed and the type and amount of seed treatment substances that should be planted in a particular location, including a need for being able to select immediately prior to or during planting operation, a combination of seed and seed treatment well suited for the location where and the timing when the seed is to be planted based, at least in part, upon historic, current, predictive and/or other field and/or other planting conditions.

Ex. 1001, col. 3:61-4:13. Wagers lacks the agility the '027 Patent adds, and depends only on prescription maps (and prescription zones within those maps), instead of dynamic calculations designed for farmers that are faced with changing conditions.

Petitioner has failed to meet its burden on this critical element, therefore Ground 1 should be rejected.

iv. Wagers does not disclose "selecting, based at least in part on a condition, a combination of the seed and the seed-applied substance by selecting a type of seed-applied substance"

Ground 1 should further be rejected because, as discussed, Wagers does not disclose a seed-applied substance. *See* Supra Section VI.ii. Therefore, Wagers does not disclose selecting, based at least in part on a condition, a combination of the seed and the seed-applied substance by selecting a type of seed-applied substance. Ex. 2001, ¶ 92. Because Wagers does not teach or discuss each limitation of independent claim 1, Ground 1 fails.

v. Wagers does not disclose "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil"

Ground 2 further fails because Wagers does not disclose "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil." Ex. 1001, cl. 1. Specifically, Wagers fails to teach or disclose (1) "calculating a desired amount of the selected type of the seed-applied substance to be applied to [the seed]" or (2) applying the seed-applied

substance to the seed prior to the seed contacting the soil. Ex. 2001, ¶ 94. Wagers fails to disclose or suggest this claim element. For these additional reasons, the Board should reject Ground 1.

First, Wagers does not calculate an amount of the "agricultural product" to apply to the planted seed, as Petitioner suggests. Ex. 2001, ¶ 95. Rather, Wagers teaches uniform application of the agricultural product within a prescription zone, pre-determined and pre-listed on the prescription map. *See* Ex. 1004, [0050] ("In one example the agricultural product input 540 includes but is not limited to a type of agricultural product as well as a rate of dispensing of the agricultural product provided by the controller 402 and based upon the location of the planter (or the respective row unit 114) within a zone of the prescription map (e.g., within the prescription map module 404)."); Ex. 2001, ¶ 95. Because Petitioner does not provide any explanation of how it believes Wagers discloses this limitation, Patent Owner assumes Petitioner intends its citations to paragraphs [0033], [0040], [0050], and [0051] to cover calculating a desired amount of the selected type of the seed-applied substance to be applied to. Petition at 25-26. Critically, these citations fail to disclose *calculating* a desired amount of seed-applied substance, let alone applying said substance *to the seed.* Ex. 2001, ¶ 96.

Paragraph [0033] ties Wagers' application of agricultural product *to the prescription zone*: "the seed type prescribed in each of the zones 302

correspondingly determines one or more planter characteristics of the multi-hybrid planter 104 including for instance . . . the selection of one or more agricultural products and the rate of application of the one or more agricultural products." Ex. 2001, ¶ 97. Wagers teaches having a particular agricultural product, with a particular rate of application, based on the seed type and the prescription zone. Ex. 2001, ¶ 98. This is not calculation; this is inputting a preset into the prescription zone. Nor does paragraph [0033] teach application of the agricultural product *to the seed*; Petitioner does not appear to claim as much.

Paragraph [0050] does not fill in these gaps. Paragraph [0050] instead teaches how to have a particular flow rate for the prescription zone: "a rate sensor 546 is provided on the output side of the control valve 544 to accordingly measure the opening of the control valve 544 and the actual dispensation rate (e.g., as a flow meter) from the agricultural product dispenser 418 . . . to achieve a desired target rate and type of agricultural product dispensation by feedback control." Ex. 1004, ¶ [0050]; Ex. 2001, ¶ 99. Wagers' ability to control its application of agricultural product at a predetermined application rate does not disclose *calculating* an amount of seed-applied substance to be applied to the seed. Ex. 2001, ¶ 100.

Petitioner next relies on paragraph [0051] which provides that "the control valve 544 is used to apply a particular rate of an agricultural product with the

respective row unit 114." Again, this describes implementing a predetermined application rate, not calculating a rate of application to a seed. Ex. 2001, ¶ 101.

Second, nowhere does Wagers disclose applying the seed-applied substance to the seed prior to the seed contacting the soil. Ex. 2001, ¶ 102. The claim is clear: the seed-applied substance is carried to the soil *by the seed*. Ex. 1001, cl. 1 ("calculating a desired application amount of the selected type of the *seed-applied substance to be applied to and carried by the seed to the soil*"). Petitioner relies on paragraph [0028]—but that paragraph only demonstrates that Wagers applies the agricultural product while the seed is planted: the "agricultural product reservoirs 118 are configured to provide the agricultural product contemporaneously with dispensing and planting of seeds." Ex. 1004, [0028] (emphasis added); Ex. 2001, ¶ 103. The agricultural product—discussed throughout Wagers as "liquid or granular fertilizer, herbicide, or insecticide," *see* Ex. 1004, [0050], is applied at a continuous rate throughout a prescription zone. *See id.* at [0050] ("In one example the agricultural product input 540 includes but is not limited to a type of agricultural product as well as *a rate of dispensing* of the agricultural product provided by the controller 402 and *based upon the location of the planter (or the respective row unit 114) within a Zone of the prescription map* (e.g., within the prescription map module 404).") (emphasis added); Ex. 2001, ¶ 104. Wagers operates upon the prior-art principle of planters—with row units that "dig a furrow, plant a dispensed seed type,

optionally apply an agricultural product, and close the furrow." Ex. 1004, [0003]. This is clear through Wagers' reference to *granular* fertilizer, herbicide, or insecticide: granular agricultural product cannot be applied to the *seed*, and is instead broadcast into the furrow. *See* Ex. 1004, [0003]. The '027 Patent calls for more precise application of product *to the seed itself*. *E.g.*, Ex. 1001, col. 5:4-11; col. 7:45-48 ("'seed-applied substance' include[s] any composition applied to seeds *prior to the seeds being planted*") (emphasis added). Thus, Wager's disclosure of agricultural product dispersed to the ground simultaneously with planting does not disclose applying the seed-applied substance before the seed contacts the soil.

Petitioner attempts to fill the gaps in Wagers, again, through expert testimony: "Dr. Giles explains that "[o]ne of ordinary skill in the art would necessarily understand [Wagers's disclosure of metering seeds and applying agricultural product contemporaneously with dispensing of the seed] to necessarily disclose the application of the substance to the individual seed just prior to placement in the ground." Petition at 31 (citing Ex. 1003, ¶¶ 92, 303). A POSITA would not understand Wagers to disclose applying the seed-applied substance before the seed makes contact with the ground. Ex. 2001, ¶ 106. Regardless, the Board should again decline Petitioner's request to gap-fill missing claim limitations with conclusory expert opinion that goes no further than saying "this is necessarily disclosed." *See Xerox Corp.*, IPR2022-00624, Paper 9, at 16 (reliance on conclusory expert

testimony "is particularly problematic where, like here, expert testimony is offered not simply to provide a motivation to combine prior-art teachings, but rather *to supply a limitation missing from the prior art*") (emphasis added).

Wagers fails to disclose or suggest "selecting a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil" and cannot anticipate the challenged claims.

vi. Wagers does not disclose "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil"

Ground 1 also fails because Wagers does not teach "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil." Petitioner argues this is taught in FIG. 4, FIG. 6, and portions of paragraphs [0028], [0040], [0051], [0060], and a reference to paragraph [0061]. Petition at 26-27. Even with these additional citations, it is unclear where Petitioner argues Wagers teaches or suggests the application of a seed-applied substance to each seed *as it is being delivered to the soil*. None of the referenced figures or paragraphs (or Wagers more broadly) disclose (1) applying a seed-applied substance, *see supra* Section VI.ii (noting Wagers' disclosure of an agricultural substance applied to a prescription

zone); or (2) *individually* applying a seed-applied substance *to each seed* ***as*** it is being delivered to the soil, i.e., before contact with the soil. Ex. 2001, ¶ 109.

In fact, Petitioner's citations state that the "agricultural product reservoirs 118 are configured to provide the agricultural product *contemporaneously* with dispensing and planting of seeds," Ex. 1004, [0028] (emphasis added), and "one or more of the for liquid and granular agricultural products are adjusted to provide a desired type and amount of the respective agricultural product based on the seed selected." Ex. 1004, [0060]. These passages disclose applying the agricultural product to the soil, while planting but separately from the seed, in an amount pre-selected based on the seed type. Ex. 2001, ¶ 110. They do not teach or suggest applying the substance to individual seeds before the seeds reach the soil. Ex. 2001, ¶ 110.

Wagers fails to disclose or suggest "individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil" and cannot anticipate the challenged claims.

vii. Wagers does not disclose "delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting"

Ground 1 additionally fails because Wagers does not teach or suggest "delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting."

Petitioner relies on the same disclosures to assert Wagers meets this limitation—FIG. 3 and paragraphs [0028], [0033], and [0041]. As discussed, Wagers does not disclose calculating a location within the field for delivery of the seed. *See supra* Section VI.iii. Nor does Wagers disclose delivery of a seed at a location within the field—rather, Wagers discloses planting a choice of seed throughout a prescription zone previously designated on a prescription map. *See* Ex. 1004, [0050]; Ex. 2001, ¶ 113. Petitioner's citations to Wagers' disclosure of tracking the location of the *planter* against the prescription map does not disclose the precise, seed-by-seed dynamic planting of the '027 Patent.

viii. Wagers does not disclose "wherein the type of the seed-applied substance, and the desired application amount of the selected type of the seed-applied substance can vary as the planter changes locations within the field"

Ground 1 should further be rejected because, as discussed, Wagers does not disclose a seed-applied substance. *See* Supra Section VI.ii. Therefore, Wagers does not disclose that the type of the seed-applied substance and the desired application amount of the selected type of the seed-applied substance can vary as the planter changes locations within the field. Because Wagers does not teach or discuss each limitation of independent claim 1, Ground 1 fails.

B. Petitioner's Obviousness Grounds Fails Because No Combination of Asserted References Teach All Elements and Petitioner Has Failed to Identify Any Motivation to Modify the Prior Art or Reasonable Expectation of Success

A patent is unpatentable as obvious under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter would have been obvious to a POSA at the time of the effective filing date. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). Obviousness requires a showing that each of the claim elements was known in the prior art and evidence that a POSITA would have combined those elements in the specific way that they are recited in the challenged claim. *See id.* at 421 ("[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. . . . [I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."). In other words, "obviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention." *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). "[The Board] must make a finding of a motivation to combine when it is disputed." *In re Nuvasive, Inc*., 842 F.3d 1376, 1382 (Fed. Cir. 2016).

For all obviousness grounds, Petitioner fails to show the asserted combinations disclose each limitation of the challenged claims. Petitioner uses

Wagers as a primary reference in each obviousness ground. As shown in Section VI.A, Wagers does not anticipate Claim 1 of the '027 Patent. Ground 2 is the only ground Petitioner asserts an additional reference (Mitchell) against some elements of Claim 1. Critically, Mitchell does not fill the gaps Wagers fails to teach in Claim 1, and thus Ground 2 fails. For Grounds 3-6, Petitioner does not assert the additional references (Wilkerson, Batcheller, Memory, and Garner) against any limitation of Claim 1; rather, Petitioner argues only that the additional references of Grounds 3-6 supply dependent limitations. Thus, because Wagers does not anticipate Claim 1, Grounds 3-6 additionally fail. *See, e.g.*, *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) ("[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.").

i. Ground 2: Claims 1-7 and 11-16 of the '027 Patent Are Not Obvious over Wagers in view of Mitchell

Ground 2, like Ground 1, relies on Wagers to disclose key elements of independent claim 1. Critically, Petitioner does not assert Mitchell against certain limitations of claim 1 that Wagers fails to disclose. For the limitations Petitioner *does* assert Mitchell discloses, Petitioner failed to demonstrate how Mitchell meets the claim limitations, and instead broadly equates Mitchell's bulk-application of anti-smut product to the soil to the precise, seed-by-seed application of seed-applied substance disclosed in claim 1 of the '027 Patent. Thus, Mitchell does not cure the deficiencies of Wagers, and Wagers in view of Mitchell does not teach or suggest

each limitation of independent claim 1. Specifically, Wagers in view of Mitchell fails to render obvious *at least* (a) a "seed-applied substance"; (b) calculating a location within a field where the seed will be delivered to the soil by the planter; (c) "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil"; and (d) "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil." Petitioner further fails to demonstrate how or why a POSITA would be motivated to combine Wagers and Mitchell to arrive at the claimed invention. The Board should reject Ground 2.

a. Wagers in view of Mitchell does not disclose a "seed-applied substance"

Ground 2 fails because neither Wagers nor Mitchell disclose a "seed-applied substance." As discussed in Section VI.A.ii, Petitioner reads out that the limitation is a "*seed*-applied substance," i.e., a substance *applied to the seed*. Petitioner's assertion that Wagers meets this limitation thus fails because Wagers applies agricultural product to the ground. *See* Section VI.A.ii. As with Wagers, Mitchell

does not disclose or teach a *seed*-applied substance[4] (nor, for that matter, does Petitioner appear to suggest as much). *See* Petition at 44-45 (no identification seed-applied substance in Mitchell reference). Thus, Ground 2 fails because Petitioner has not met its burden of showing each limitation of independent claim 1 is present in the combination of Wagers and Mitchell.

b. Wagers in view of Mitchell does not disclose "calculating a location within a field where the seed will be delivered to the soil by the planter"

Ground 2 also fails because Petitioner has not shown the combination of Wagers in view of Mitchell teaches or suggests the step of "calculating a location within a field where the seed will be delivered to the soil by the planter." Ex. 1001, cl. 1. Petitioner does not assert Mitchell teaches or suggest this claim limitation, and instead relies exclusively on Wagers. Petition at 45-46. As discussed in Section VI.A.iii, Wagers does not disclose this claim limitation. Instead, Wagers teaches use of a GPS, along with a predetermined "prescription map" to plant seeds noted in the prescription map based on the sensed GPS location of the planter. *See* Ex. 1004, [0008]. For this reason, Petitioner's obviousness argument does not disclose each limitation of independent claim 1, and is thus unlikely to succeed.

[4] Later in the Petition, Petitioner discusses Mitchell's anti-smut application. To the extent Petitioner argues that this is a disclosure of a "seed-applied substance," that argument fails for the reasons discussed in Section VI.B.i.d.

c. Wagers in view of Mitchell does not disclose "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil"

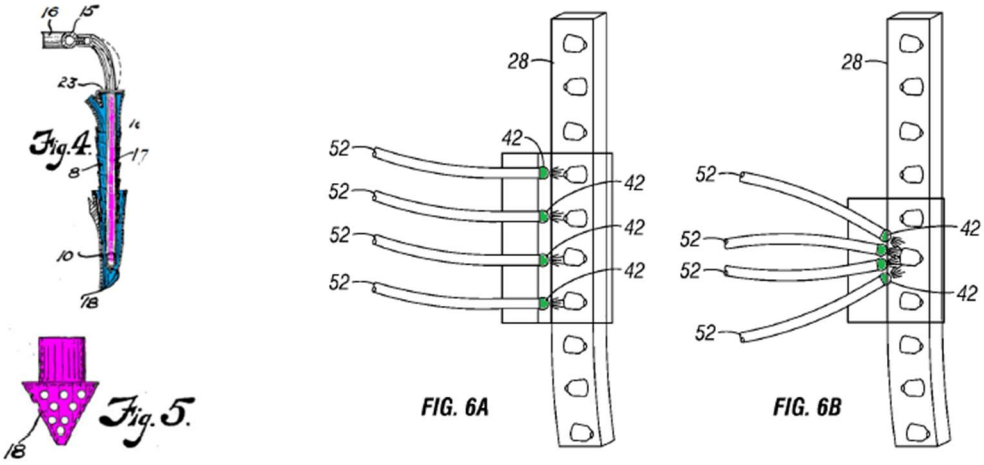
Ground 2 further fails because Petitioner has not shown Wagers in view of Mitchell discloses the step of "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil." Ex. 1001, cl. 1. Petitioner does not assert Mitchell teaches or suggest this claim limitation, and instead relies exclusively on Wagers. Petition at 46. As discussed in Section VI.A.v, Wagers fails to disclose either (1) calculating a desired application amount of the selected type of the seed-applied substance to be applied to seed, or (2) the seed-applied substance being carried by the seed to the soil. Instead, Wagers teaches uniform application of the agricultural product to the furrows within a prescription zone, pre-determined and pre-listed on the prescription map. *See* Ex. 1004, [0050]. For this additional reason, Ground 2 does not disclose each limitation of independent claim 1, and should be disregarded.

d. Wagers in view of Mitchell does not disclose "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil"

Ground 2 additionally fails because Petitioner has not shown Wagers in view of Mitchell discloses the step of "generating the combination of the seed and the

selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil" Ex. 1001, cl. 1. As previously discussed, Wagers does not disclose this limitation because it does not disclose application of the agricultural product *to the seed*, rather than the soil. *See* Supra, Section VI.A.vi. Mitchell suffers the same deficiency, including *extensively* discussing that its "anti-smut" application is to the seed and the "soil or earth in which [the seed] is planted, simultaneously." Ex. 1005, p. 2:36-47; *see also* p. 2:54-64 ("thus giving the seed and earth at the same time a treatment with the anti-smut liquid compound"); p. 2:101-105 ("spraying the seed as it falls and the soil into which it falls with an anti-smut liquid"); p. 2:127-3:2 ("conducting the seed to the earth, an anti-smut liquid tank carried by the seeder, and spraying sprouts in communication with the said tank and arranged to spray the seed with such liquid as it enters the earth."); p. 3:3-6 ("The method of treating seed while being planted"). The figures and specification citations Petitioner cites to in Mitchell in all teach the gross application of an anti-smut liquid to the soil being planted and to all of the grain travelling through the hollow teeth 8. Mitchell does not teach or suggest individual application of the selected amount of seed-applied substance to each seed as it is being delivered to the soil.

The ’027 Patent, on the other hand, is precise, and only applies the seed-applied substance *to the seed*. Comparing the nozzles disclosed shows the difference: Mitchell discloses a spray nozzle (18) pointed to the ground, spraying seed and soil as it is planted (shown below, left). The ’027 Patent, on the other hand, teaches spraying seed with the seed-applied substance with spray nozzles (42) aimed only at the seed (below, right, in green).



Compare Petition at 45 (citing Ex. 1005 at FIG 5, emphasis added by Petitioner) *with* Ex. 1001, FIGS. 6A-6B (green emphasis added).

Neither Wagers, nor Wagers in view of Mitchell, teaches or suggests “generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil.” Instead, these references disclose bulk spraying product on the seed *and*

soil. Petitioner's Ground 2 should be disregarded for failing to teach or suggest each limitation of independent claim 1.

e. No motivation to combine for ground 2

To demonstrate obviousness, Petitioner needed to demonstrate that "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *In re Magnum Oil Tools Int'l, Ltd*., 829 F.3d 1364, 1381 (Fed. Cir. 2016) (citations omitted). Petitioner argues that "'one would have been motivated to incorporate the spray nozzle configuration of Mitchell because of the precision it affords,' and 'incorporating such a configuration in the multi-row planter disclosed in Wagers would have been straightforward.'" Petition at 48. Setting aside that this combination would not meet *any* claim limitation, Petitioner identifies no teaching of Wagers or Mitchell that would motivate a POSITA to combine the two references to arrive at the claimed invention—which involves independent, *seed-by-seed* treatment. Nor does Petitioner provide any explanation as to why a POSITA would be motivated to combine a reference from 1922 (Mitchell) with a reference from 2014 (Wagers). *KSR Int'l Co.*, 550 U.S. at 418–19 (noting it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."). Petitioner simply announces

the combination would be made because it is "straightforward" to do so. Petition at 48. That is not obviousness. *Ex Parte Gerlach and Woerner*, 212 U.S.P.Q. 471, 1980 WL 30192 (PTAB 1980) ("There is nothing in the statutes or the case law which makes 'that which is within the capabilities of one skilled in the art' synonymous with obviousness."); *Leo Pharm. Prod., Ltd. v. Rea*, 726 F.3d 1346, 1354 (Fed. Cir. 2013) ("If the[] discoveries and advances were routine and relatively easy, the record would undoubtedly have shown that some ordinary artisan would have achieved th[e] invention").

ii. Ground 3: Claim 8 of the '027 Patent Is Not Obvious over Wagers in view of Wilkerson

Ground 5 challenges only dependent claim 8, relying on Wagers as a primary reference. As explained above in Section VI.A, however, Wagers fails to teach or suggest each claim limitation of independent claim 1, from which challenged claim 8 depends. Petitioner does not assert Wilkerson discloses any element of claim 1. *See* generally Petition at 54-59 (Ground 3). Accordingly, even if Petitioner was correct in all of its assertions in Ground 3 (it is not), Petitioner still failed to demonstrate that the challenged claims would have been obvious in view of the prior art. Ground 3 should be dismissed for at least this reason.

iii. Ground 4: Claims 9 and 10 of the '027 Patent Are Not Obvious over Wagers in view of Batcheller

Ground 4 challenges only dependent claims 9 and 10, relying on Wagers as a primary reference. As explained above in Section VI.A, however, Wagers fails to teach or suggest each claim limitation of independent claim 1, from which challenged claims 9 and 10 depend. Accordingly, even if Petitioner was correct in all of its assertions in Ground 4 (it is not), Petitioner still failed to demonstrate that the challenged claims would have been obvious in view of the prior art. Ground 4 should be dismissed for at least this reason.

iv. Ground 5: Claim 17 of the '027 Patent Is Not Obvious over Wagers in view of Memory

Ground 5 challenges only dependent claim 17, relying on Wagers as a primary reference. As explained above in Section VI.A, however, Wagers fails to teach or suggest each claim limitation of independent claim 1, from which challenged claim 17 depends. Accordingly, even if Petitioner was correct in all its assertions in Ground 5 (it is not), Petitioner still failed to demonstrate that the challenged claims would have been obvious in view of the prior art. Ground 5 should be dismissed for at least this reason.

v. Ground 6: Claims 18 and 19 of the '027 Patent Are Not Obvious over Wagers in view of Garner

Ground 6 challenges only dependent claims 18 and 19, relying on Wagers as a primary reference. As explained above in Section VI.A, however, Wagers fails to

teach or suggest each claim limitation of independent claim 1, from which challenged claims 18 and 19 depend. Accordingly, even if Petitioner was correct in all its assertions in Ground 6 (it is not), Petitioner still failed to demonstrate that the challenged claims would have been obvious in view of the prior art. Ground 6 should be dismissed for at least this reason.

C. Petitioner's Enablement Ground Fails Because the Method Claimed is Enabled by the Multiple Embodiments Shown

i. Ground 7: Claims 1-19 Do Not Lack Enablement under 35 U.S.C. § 112(a).

Petitioner seeks to impose a heightened enablement standard, requiring strict disclosure of how to plant every type of seed in a commercially successful way. That is not the enablement standard. *See CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1338 (Fed. Cir. 2003) ("Enablement does not require an inventor to meet lofty standards for success in the commercial marketplace. Title 35 does not require that a patent disclosure enable one of ordinary skill in the art to make and use a perfected, commercially viable embodiment absent a claim limitation to that effect."). Rather, enablement requires only that a POSITA, having read the specification, could practice the full scope of the claimed invention without "undue experimentation." *See In re Wands*, 858 F.2d 731, 736-37 (Fed. Cir. 1988). "To prove that a claim is invalid for lack of enablement, a challenger must show . . . that a person of ordinary skill in the art would not be able to practice the claimed invention without 'undue

experimentation.'" *Alcon Rsch. Ltd. v. Barr Lab'ys, Inc.*, 745 F.3d 1180, 1188 (Fed. Cir. 2014) (citing *In re Wands,* 858 F.2d at 736–37); *see also Johns Hopkins Univ. v. CellPro, Inc.,* 152 F.3d 1342, 1360 (Fed.Cir.1998) ("[I]t is imperative when attempting to prove lack of enablement to show that one of ordinary skill in the art would be unable to [practice] the claimed invention without undue experimentation.") (emphasis omitted). That does not mean that the entire scope of the claim must be described in excruciating detail—a specification is not "necessarily inadequate just because it leaves the skilled artisan to engage in some measure of adaptation or testing." *Id.*

The Federal Circuit has repeatedly emphasized that while a disclosure must enable one of ordinary skill in the art to practice the full scope of the invention, "[t]hat is not to say that the specification itself must necessarily describe how to make and use every possible variant of the claimed invention, for the artisan's knowledge of the prior art and routine experimentation can often fill gaps, interpolate between embodiments, and perhaps even extrapolate beyond the disclosed embodiments, depending upon the predictability of the art." *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1244 (Fed. Cir. 2003). The '027 Patent meets the enablement requirement of 35 U.S.C. § 112. The patent specification enables a person of ordinary skill in the art to practice the method of prescriptive seed treatment of individual seeds as the seeds are planted into the furrow through both

its words and corresponding figures. Petitioner's arguments amount to a guess that some seed types would not be commercially successful to plant according to the method of the '027 Patent—*not* that a POSITA would be unable to follow the method of the patent to plant seeds as claimed. The Petitioner has not carried its burden to show the '027 Patent lacks enablement.

a. The '027 Patent is not unpatentably broad

The '027 Patent specification includes detailed descriptions and multiple working examples of the disclosed prescriptive seed treatment—"applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil." *See* Ex. 1001, col. 39:57-59.

The '027 Patent directly addresses how a POSITA could control an individual seed's movement through the seed tube and into the furrow. In the embodiment shown in Fig. 8D, each individual seed is moved through a seed tube 28 within sections 58 separated by adjacent ridges 62. *E.g.*, Ex. 1001, col. 18:53-56. The individual seeds are then sprayed with the seed-applied substance by one or more substance delivery tubes 52. *Id.* In this manner, each seed is individually applied with the seed-applied substance by adjustable applicators through delivery tubes 52, which then carries the seed-applied substance to the soil. *Id.*; *see also id.* at FIG 8D (next page).

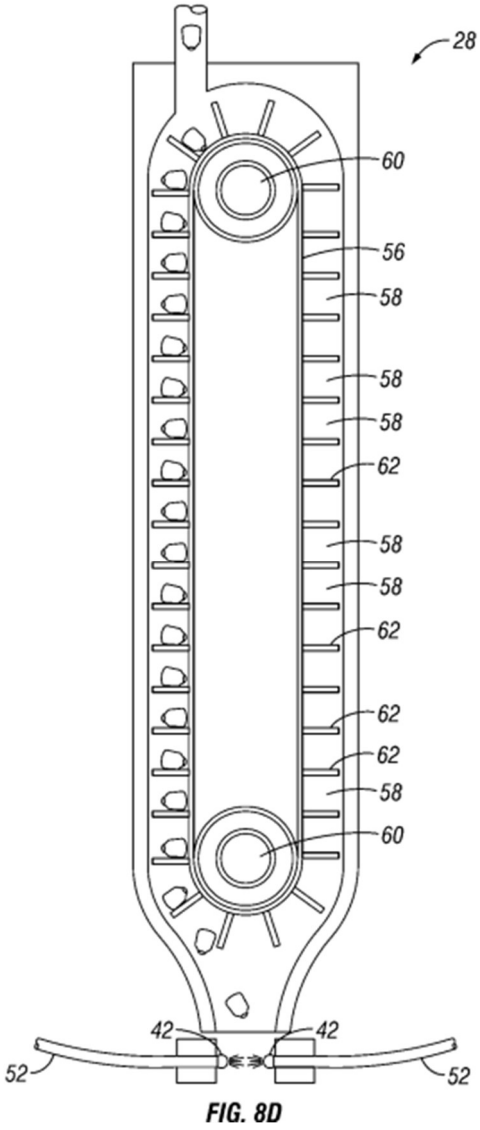


FIG. 8D

Ex. 1001, FIG. 8D.

The seed-applied substance in this embodiment is applied to each individual seed as it passes through the bottom of the seed drop tube 28. The seeds are delivered at consistent, predictable, known intervals, and the spray is directed at the spot where each seed will pass. *See* Ex. 1001, col. 18:53-56. The seeds, no matter the size, shape, mass, or any other characteristic, are guided through the seed drop tube at consistent rates—unable to "bounce off the walls" of the seed drop tube—and are in discrete

compartments 58 which allow for consistent spraying within a compartment to ensure coverage and limit overspray. Ex. 2001, ¶ 124. This embodiment specifically teaches a POSITA how to apply a specific seed treatment to any individual seed.

In fact, the ’027 Patent describes its individualized treatment of individual seeds in such detail that almost no experimentation would be needed to effectuate a working device of the claims.

> For example, one or more substance applicators could be situated to apply the seed-applied substances to one or more seeds as they leave one or more slide gates and/or as they leave one or more metering wheels. Moreover, in some embodiments, the planting location of the seed could be the range of the broadcasting of the seed (e.g., broadcast radius) via the applicable metering wheel (and/or other insertion and/or dispersion device) rather than a single specific seed location or could use algorithms to calculate where each seed will land and use such as the planting location on a seed-by-seed basis.

Ex. 1001, col. 21:l-22:77; *see also* Ex. 2001, ¶ 125.

The figures and language in the ’027 Patent specification clearly enable a POSITA to apply an individualized seed treatment to any individual seed before or as it is being delivered to the soil. Despite this, Petitioner argues the claims in the ’027 Patent are not enabled because they are too broad, in that the claims are drafted to cover the individualized treatment of any one seed as it is being delivered to the soil. *See* Petition at 71. The Petitioner argues that due to the different sizes and masses of any one seed, a POSITA cannot reasonably predict how the seed will

move through the seed tube, such that a POSITA could not apply the individual seed treatment to the individual seed as disclosed in the specification without undue experimentation. *Id.* at 71–72. Petitioner's Ground 7 essentially amounts to an argument that, because the patented invention may not be as financially viable for some seeds, it is not enabled and too broad. *See* Petition at 75 (criticizing the '027 Patent's application to certain seeds such as fruits which are "mostly propagated by tree grafting" and vegetables which are "mostly broadcast seeded."). Commercial success simply is not the test of enablement. *CFMT, Inc*., 349 F.3d at 1338.

Moreover, and contrary to Petitioner's assertions, "[b]readth is not indefiniteness." *Application of Gardner*, 427 F.2d 786, 788 (C.C.P.A. 1970). *See also Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1352 (Fed. Cir. 2009) ("Merely claiming broadly" does not "prevent the public from understanding the scope of the patent."); *Corning Optical Commc'ns Wireless, Ltd. v. SOLiD Inc.*, No. 5:14-CV-03750-PSG, 2015 WL 5096472, at *12 (N.D. Cal. Aug. 19, 2015) ("Because [Defendant and its expert] have merely identified issues of claim breadth, the court finds that the term . . . is not indefinite."). The examples above clearly enable a POSITA to make and use the individualized seed treatment disclosed in the specification. Moreover, enablement does not require the disclosure of every working example, nor does it require that the specification spell out routine details that a POSITA would understand. *See Amgen Inc. v. Sanofi*, 598 U.S. 594,

610–11 (2023). Petitioner's brief treats a mechanical method as it were the kind of functional-genus biotechnology claim at issue in *Amgen*. But *Amgen* itself confirms a specification need not "describe…every single embodiment," and that some "adaptation or testing" may be permissible. *Id.* The law does not require disclosure of every possible variant within the claims, nor commercial success of each. The figures and language in the '027 Patent specification clearly enable a POSITA to apply an individualized seed treatment to any individual seed before or as it is being delivered to the soil without undue experimentation.

b. A POSITA's use of the disclosed invention does not require undue experimentation

The '027 Patent specification equips a POSITA to make and use the disclosed prescriptive seed treatment with routine testing and optimization. As the Federal Circuit has emphasized, "a patent specification complies with the statute even if a 'reasonable' amount of routine experimentation is required in order to practice a claimed invention." *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1371 (Fed. Cir. 1999). Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations. *In re Wands*, 858 F.2d at 737. As written, a POSITA is able to make and use the disclosed prescriptive seed treatment without undue experimentation. Any experimentation that may be required of a POSITA would only involve routine optimization.

A patent owner can rely on a POSITA's knowledge of the industry and the prior art to make and use the claimed invention. *See McRO, Inc. v. Bandai Namco Games America Inc.*, 959 F.3d 1091, 1102 (Fed. Cir. 2020) ("An artisan's knowledge of the prior art and routine experimentation can often fill gaps, interpolate between embodiments, and perhaps even extrapolate beyond the disclosed embodiments, depending upon the predictability of the art, and a patent need not teach, and preferably omits, what is well known in the art."); *see also Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986) ("a patent need not teach, and preferably omits, what is well known in the art.") (citation omitted).

The '027 Patent specifically relies on a POSITA's familiarity with the following components of a row unit: a seed hopper 24, a seed meter 26, a seed drop tube 28, an opening disc 32, seed firmer wheels 34, and closing wheels. Ex. 1001, col. 10:6-l7. ("A person having ordinary skill in the art is familiar with the operation of the above components comprising at least a portion of a seed flow path, which typically can extend from an origination point of the seed within the planter implement 10 (e.g., a bulk input device 22 and/or seed storage bin 20) to just before the seed hits the location where it is planted (e.g., a furrow and/or other location in a field)."). Further, the '027 Patent strategically omits "well known process steps . . . in order to avoid unnecessarily obscuring the described embodiments." Ex. 1001,

col. 6:40-45. Using the prescriptive seed treatment claimed in the '027 Patent, in light of the specification's guidance, involves only routine, not undue, experimentation and known, commonly used agricultural techniques.

Despite this, the Petitioner cites a myriad of unpersuasive reasons as to why the claim language is not specific enough to be enabling, none of which results in a lack of specificity such that a POSITA would have to undergo undue experimentation to make or use the disclosed invention. The Petitioner argues a lack of *specific* teachings in the specifications regarding common practices or materials in the agricultural industry, such as teachings regarding planting rates or planter ground speeds; the specific type of timing mechanism in a seed drop tube; the placement and orientation of a spray nozzle; the specifics of a nozzle control system (such as the type of pump or valve used); the amount of pressure applied to the seed or seed treatment as the seed moves through a seed drop tube; the specific type of seed meter; and the specifics of the flushing mechanism in a seed drop tube. *See generally*, Petition at 77–81. The '027 Patent specification provides enough guidance on *each of these elements* that a POSITA would be able to make and use the claimed invention along with routine optimization. *See* Ex. 1001, at col. 8:40-57 (planting rates and ground speeds are "conditions"); col. 37:11-37 (timing mechanism); col. 12:42-48 (placement and functionality of nozzle; col. 34:47-56 (nozzle control system); col. 18:30-55 (pressure/speed applied to seed or seed

treatment); col. 10:25-28; 14:16-35 (seed meters and seed movement through meters); col. 19:39-51 (flushing mechanism). The experimentation by a POSITA—if any—would be merely considered routine optimization.

The Petitioner relies on *Auto. Techs. Int'l, Inc. v. BMW of N. Am., Inc.* to argue the '027 Patent lacks enablement. *See* Petition at 85–86. This case is distinguishable from the '027 Patent. In *Auto. Techs. Int'l*, the Patent Owner advocated for—and the district court found—that the corresponding structure for a means-plus-function limitation included both mechanical means and electronic means. *See Auto. Techs. Int'l,* 501 F.3d 1274, 1280 (Fed. Cir. 2007). The district court determined, however, that the specification failed to enable the electronic means and found the claims invalid. This case is not applicable here. Unlike *Auto. Techs. Int'l*, the '027 Patent simply does not go beyond the scope of what the specification enables. Petitioner fails to point out a specific claim or limitation that lies beyond the scope of the '027 Patent's specification.

A Petitioner may not create an enablement argument by ignoring the portions of the specification it does not like. The Petitioner has not met its burden of proving that claims 1-19 are not enabled, and Ground 7 should therefore be rejected.

VII. CONCLUSION

For all of the above reasons, Inflexion Point Technologies respectfully requests that the Board decline to institute PGR2025-00045.

Dated: October 17, 2025

/R. Scott Johnson/
R. Scott Johnson
Reg. No. 45,792

Counsel for Patent Owner Inflexion Point Technologies, LLC

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(b)(1), the undersigned hereby certifies that the foregoing Patent Owner's Preliminary Response contains 13,370 words, excluding parts of this Preliminary Response exempted under § 42.24(a)(1), as measured by the word-processing system used to prepare this paper.

Dated: October 17, 2025

/R. Scott Johnson/
R. Scott Johnson
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Counsel for Patent Owner Inflexion Point Technologies, LLC

CERTIFICATE OF SERVICE

Per agreement of the parties and pursuant to 37 C.F.R. ¶ 42.6(e)(1), the undersigned certifies that a copy of this Patent Owner's Preliminary Response to Petition and Exhibit 2001 were served on October 17, 2025, electronically via email on the following:

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