

The Rise of Oat Matzos¹

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The Mishnah (*Pesachim* 2:5) teaches that flour from any of the Five Grains – wheat, barley, spelt, oats, or rye² – may be used to bake matzah. However, Rama (*Orach Chaim* 453), records from Maharil the established minhag that preference is given to wheat. In *Hilchos Afiyas Matzah*, Maharil proffers a source for the custom from the Talmud which consistently refers to wheat as the main component of matzah, instead of employing a generic term like grain or flour. *Chayei Odom* (*Klal* 128) offers a reason for the minhag that wheat is generally more enjoyable, and thereby eating wheat matzah is a *hiddur mitzvah*.

According to *Tiferes Yisroel*, the reason wheat should be used for baking matzah is to minimize the possibility of chometz formation in the dough.³ He derives this assertion from the Talmudic discussion (*Pesachim* 40a) about using tempered grain (where some water is added to the raw kernels before milling to improve flour yield) for Pesach. Even if permitted for wheat kernels, tempering is prohibited for barley; wheat is hardier and thus takes longer to form chometz than barley.⁴ What about the other grains? Halachically, rye and oats are regarded as subsets of barley.⁵ Therefore, chometz formation is also deemed to occur more quickly in rye and oats than in wheat.⁶ Consequently, the minhag to use wheat for matzah pertains even for those who generally favor other grains throughout the year.



Outside Streit's matzah factory on Rivington Street in the Lower East Side, 1935. The factory officially closed in 2017. Note the prominent signage for "Gluten Products", in Yiddish and English, over the storefront and on the delivery truck cab. (Source: The Atlantic)

¹ לע"נ א"מ יעקב גוטמאן בן יהושע ע"ה

² תמשת מיני דגן: חטים, שעורים, פסמיו, שיפון, שבלת שועל.

³ Commentary to Mishnah, 2:5.

⁴ Ultimately, halachah disallows this step for wheat too.

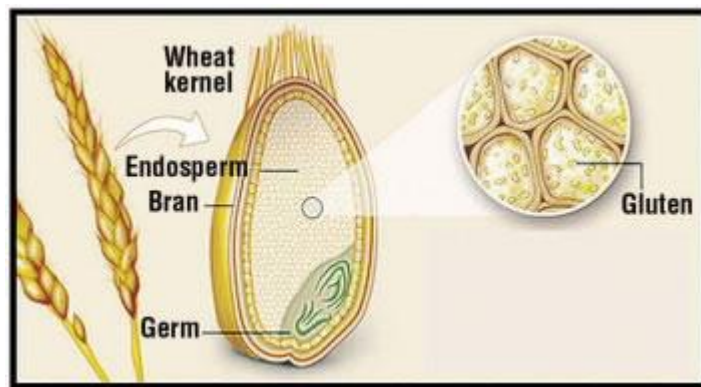
⁵ With respect to combining their doughs for amassing the volume required to separate *challah*, *Pesachim* 35a, *Shulchan Aruch Y.D.* 324:2.

⁶ *Magen Avrohom* 453:5,9; *Kaf Hachaim* 453:3.

Alternatives to Wheat

If someone with a wheat allergy can tolerate spelt, matzah made from spelt is an ideal alternative.⁷ Spelt and wheat are closely related both structurally and halachically.⁸ Additionally, some suggest that the order of grains in the Mishnah has significance.⁹ Thus, spelt, which appears third in the list, takes precedence over rye or oats. Others reject this notion and hold that position on the list does not indicate hierarchy for matzah.¹⁰

What are the options for people who suffer from celiac disease, an inherited autoimmune disorder identified in the 1950s as being triggered by gliadin peptides (small proteins) in gluten? If the severity of the condition allows, after consultation with a competent medical opinion, one can eat a single *kezayis* of regular wheat (or spelt) matzah to fulfill the mitzvah on a Torah level. In this instance, one would skip *Motzi Matzah* and *Koreich* and eat the *kezayis* for *Afikoman*, at the end of the *seudah*.¹¹ But if even this minimal amount isn't tolerated, Acharonim debate whether there is any merit to ingesting less than a *kezayis*.¹² Otherwise, the individual is an *anus* and exempt from the mitzvah.



Oat Matzos Enter the Scene

That's how it was until the early 1980s when Rabbi Ephraim Kestenbaum, an industrial chemist in Golders Green, London,¹³ was prompted by his young daughter, who was diagnosed with celiac, to solve the dilemma.¹⁴ He had the novel idea to take advantage of oats being included on the list of Five Grains. Different from the other four, oats are an outlier since they alone do not contain

⁷ Spelt contains a more delicate and soluble variety of gluten than wheat. It also has higher fiber content which aids digestion.

⁸ *Kaf Hachaim* 453:3 and *Shulchan Aruch Y.D.* 324.

⁹ There is a discrepancy among sources if the last item on the list is oats or rye.

¹⁰ In contrast to *maror*; see *Chok Yaakov, Tevuos Shor Y.D.* 6.

¹¹ *Magen Avrohom* 482:1; see *Minchas Asher III*, siman 43.

¹² See *Minchas Chinuch*, mitzvah 10; *Mikra'ei Kodesh, Pesach II*:190.

¹³ Rabbi Kestenbaum (5687-5779/1927-2019) received his scientific education at Johns Hopkins University in Baltimore.

¹⁴ His father was Reb Dovid Kestenbaum, who emigrated with his family from Germany to Brooklyn in 1936. Reb Dovid and his brother Jacob were very active in *Vaad Hatzalah*, working with Rav Avrohom Kalmanowitz and Rav Aharon Kotler providing affidavits and support to rescue Jews from Europe during the Holocaust. They were instrumental in helping to sustain the Mir Yeshivah in its journey from Vilna to Shanghai and helped Rav Aharon found Beth Medrash Govoha in Lakewood. See the story of their heroic efforts in *Jewish Action*, Winter 2019.

gluten naturally.¹⁵ Although, care must be taken during cultivation and processing to protect the oats from becoming cross-contaminated by gluten particles lingering in fields or on equipment shared with other products. He embarked on an unprecedented venture to make matzah from oat flour.

The first ordeal he encountered was locating oats that were both gluten-free and could be used for the mitzvah. After some effort he succeeded in finding a farm north of Edinburgh, Scotland, with an oat patch sufficiently distant from wheat fields.¹⁶ Under supervision of the Manchester Beis Din, the oats were harvested and transported to Manchester for milling. From there, the flour was brought to London for baking.

Next, he needed to devise how to bake it into matzah. The absence of gluten in oats is a blessing for those with celiac but a challenge for those wishing to bake with oat flour. Lacking a robust gluten network – *gluten* is the Latin word for *glue* – to trap carbon dioxide emitted from fermenting starch sugars that gives other doughs its elasticity, texture and form, oat dough is dense and brittle. A dough made from oats readily hardens and collapses into crumbs before reaching the oven. After much experimentation and persistence, Rabbi Kestenbaum was able to produce a small amount of matzah suitable for his daughter.

Before long, word of Rabbi Kestenbaum's innovation spread, and he grew the enterprise to service the broader community of celiacs. By 5748 (1988) Rabbi Kestenbaum moved production to a factory in the Atarot industrial park north of Yerushalayim and added machine oat matzah to his offerings.¹⁷

Rabbi Ephraim Kestenbaum, inventor of modern oat matzah, in his production factory. (Source: tzedek-tzedek.blogspot.com by David Morris, his son-in-law)



At the wedding of his grandson to the granddaughter of HaRav Meshulam Dovid Soloveitchik and HaRav Boruch Dov Povarski (Source: tzedek-tzedek.blogspot.com)

¹⁵ Oats have a different water-insoluble protein called avenin, 15% of its total protein, compared to wheat where gluten is about 85% of protein content. Oat toxicity is extremely uncommon even among celiacs.

¹⁶ Until the 1800s, Scotland and Ireland were the only places in the developed world that grew oats for human food and not just for animal feed.

¹⁷ See Appendix at the end of this article regarding the identification of oats on the list of the Five Grains, and its future halachic ramifications for cultivated de-glutenized wheat.

Heat-Treated Oats: Halachic Deliberations

A serious halachic quandary that Rabbi Kestenbaum encountered early on stemmed from a measure taken to improve the taste of the matzos. Oats contain a high concentration of enzymes and lipids which become decompartmentalized during milling. Their interaction leads to a rancid aroma and bitter taste in a matter of days. Commercially available shelf-stable oats are produced by deactivating the enzymes before milling, in a process called *kilning* which involves heating groats (the name for oat kernels whose hulls have been removed) with live steam injected into a long vertical cylinder, followed by radiant heat to evaporate excess moisture. The kilning process is not an option for Pesach as the moist steam causes the oats to become chometz. Therefore, to produce edible oat matzah, Rabbi Kestenbaum conceived a technique of heating the groats with dry air. While not as effective as steam, it helps somewhat to mitigate bitterness in the final product.

From the beginning, Rabbi Kestenbaum partnered with the Manchester Dayan, Rav Osher Y. Westheim, who provided kashrus certification. In consultation with other *dayanim* in England,¹⁸ production with this method was allowed to proceed. However, the former Chief Dayan in Manchester, Rav Yitzchok Yaakov Weiss, author of *Minchas Yitzchak*, who by then had assumed the helm of the Eidah HaCharedis in Yerushalayim, wrote a *teshuvah* in which he explains why matzos made from barley and its subsets – rye and oats – are prohibited even on a level of *bedi'eved*.¹⁹ His primary concern was for the hastened formation of chometz in these grains. Subsequently, Rav Westheim met with Rav Weiss who issued a partial retraction, allowing oat matzos for severe *cholim* (sick people), provided they were made in small batches for personal use.²⁰

As the oat matzos reached communities beyond England, more *shailos* arose. In 5755 (1995), a few years after Rav Weiss's passing, Rav Westheim and his colleagues approached Rav Shmuel Wosner in Bnei Brak, author of *Shevet HaLevi*, for halachic guidance. Among the questions he dealt with was the matter of the groats emitting a considerable amount of *zeyyah* (moist vapor) while being heated. This moisture has the status of *mei peiros* (literally, fruit juice). Although they emerge completely dry, perhaps there is concern that some of the moisture was re-absorbed into the groats before evaporating and escaping through vents.

Bei'ur Halachah (siman 462) deliberates similar scenarios where *mei peiros* inadvertently fell on wheat kernels or flour and then dried. The Chofetz Chaim cites different viewpoints and rules that if the *mei peiros* are fully absorbed in the grain before contacting any water, then in a *sha'as hadchak*, extenuating circumstance without a reasonable alternative, there is grounds to rule leniently. Perhaps this leniency, issued in reaction to an abnormal, unexpected situation (*bdi'eved*), can be extended to allow producing oat matzah on an ongoing basis (*lechatchilah*) for a community with a restrictive diet.

¹⁸ Namely, Rav Chanoch Dov Padwa of London, author of *Cheshev HaEifod*, and Rav Betzalel Rakow of Gateshead.

¹⁹ *Minchas Yitzchok* IX:49, dated 5743 (1983), addressed to Dayan Yaakov Yechezkel Posen, *poseik* in the Breuer's community of Washington Heights, who was corresponding at the behest of Rav Shimon Schwab, *mara d'asra* of the *kehillah*.

²⁰ For many years, in deference to Rav Weiss's stance, the Eida HaCharedis did not allow their widely recognized flowery symbol to adorn boxes of oat matzah and allowed only their printed name. More recently, they have allowed the symbol to be displayed as well.

Another challenge submitted to Rav Vosner was one raised previously by Rav Moshe Heinemann, Rabbinic Administrator of STAR-K. Halacha states that *kilayos*, roasted kernels, cannot become chometz when mixed with water.²¹ Applying heat not only deactivates the enzymes in oats but also renders them *kilayos* and prevents them from ever becoming chometz. Why is that a problem? Because the Gemara (*Pesachim* 35a) derives a relationship between chometz and matzah: only something capable of becoming chometz is fit to become matzah. Essentially, even if oat matzos made from *kilayos* are deemed kosher for Pesach, they can't be used to fulfill the mitzvah at the *Seder*.

Some *poskim* felt this issue was resolved with a precedent established by *Chayei Odom*.²² He was presented with a comparable case of wheat that was harvested while the stalks were still moist; to inhibit mold growth during storage, they were dried in an oven – like *kilayos*.²³ He asserts their eligibility for matzah hinges on a dispute between Rambam and Ramban.

Chayei Odom understands the Rambam as holding it's sufficient that grain comes from a *species* that has the potential to become chometz given the right circumstances, even if this specific batch of dough will not form chometz. Hence, Rambam would allow *kilayos* to be used for making matzah. On the other hand, Ramban holds this *specific* dough must be a precursor for chometz.²⁴ Matzah is the product of dough whose formation of chometz was arrested upon placement in a hot oven – thus excluding *kilayos* from the mitzvah. *Chayei Odom* rules that one may rely upon the lenient view of the Rambam in a *sha'as hadchak*; it follows that heat-treated matzah may be used for the mitzvah. But *Pri Megadim* (*Mishbetzos* 461:2) and *Shulchan Aruch Harav* (462:1) both adopt the Ramban's strict stance. As a result, some *rabbonim* advised not making a bracha of *Al Achilas Matzah* on oat matzos, lest it be a *bracha levatala*.

Rav Heinemann differs with the *Chayei Odom*'s analysis of the Rambam. He draws a distinction between flour mixed with fruit juice, the case discussed by Rambam, and the application of *kilayos*. The Rambam (*Chometz U'Matzah* 5:2) holds that dough kneaded exclusively with fruit juice can never become chometz.²⁵ He also rules (6:5) that such a mixture of flour mixed with fruit juice is fit for matzah. Taken together, this demonstrates there is no requirement for a particular dough to have the potential for becoming chometz in order to become matzah. But notably, Rambam is addressing a situation of plain flour that itself would have been transformed into chometz had it been mixed with water. In the case of *kilayos*, the nature of the grain was changed to inhibit chometz formation no matter the liquid. There is no indication the Rambam would allow *kilayos*

²¹ *Pesachim* 39b; Rambam, *Chometz U'Matzah* 5:3.

²² *Hilchos Pesach*, *shailah* 15.

²³ Generally, great care is taken to harvest wheat for matzah when it is relatively dry (below 14% moisture content), after the morning dew has evaporated. It can also not be too dry. See *O.Ch.* 467:5.

²⁴ Ramban in *Milchemes*, *Pesachim* 10b, cited anonymously in *Maggid Mishneh*, *Chometz U'Matzah* 6:5. (Both Ramban and *Maggid Mishneh* were Torah leaders in the Girona region of Spain about a century apart.) See Rabbeinu Chananel *Pesachim* 35a, who also clearly holds like Ramban.

²⁵ This is also the position of Rabbeinu Tam (*Tosafos*, *Pesachim* 35b), in disagreement with Rashi (*Pesachim* 36a) and Raavad (*Hasagos* 5:2) who hold that dough made with *mei peiros* will become *chometz nukshah*. Rama (462:3) rules *lechumrah* like Rashi and Raavad but allows a *choleh* to rely on Rambam and Rabbeinu Tam.

for matzah. As such, Rav Heinemann did not feel there was adequate basis to allow using heat-treated oats for the mitzvah of matzah and would not certify such matzos for Pesach.

Despite the challenges, other bakeries in Eretz Yisroel and the U.S. eventually followed Rabbi Kestenbaum's lead and began producing their own versions of oat matzah. Initially, kosher certification was granted by individual *rabbonim* and not major kashrus organizations. Labels featured a prominent cautionary note advising that only those with a real medical need should consume the product.

Ingenuity and Improvements

Over the years, the methods of oat matzah production evolved. An important change took place in advance of Pesach 5773 (2013), the year Rabbi Kestenbaum sold his matzah business.²⁶ It was reported that the temperature and duration for heating groats used in matzos was reduced from 350°F for 35 minutes to 270°F for 11 minutes. Apparently, when dough made from these oats was left unbaked, it fermented and exhibited signs of chometz. Based on this information, Rav Heinemann was satisfied that there was no longer a question of *kilayos* and allowed their use to fulfill the mitzvah at the *Seder*, for those who need it.

A far more significant change occurred in recent years. Starting around 5780 (2020), oat matzah bakeries stopped heating groats prior to milling, thus circumventing the predicament of *kilayos* entirely. How do they mitigate the adverse taste which results from the enzymatic reaction? By milling the oats onsite and baking with the flour a few days later.²⁷ In the broader food industry, seven days is accepted as the time frame during which the negative impact on taste is minimal. Indeed, straight from the oven, oat matzah evokes the smell and taste of toasty Cheerios fresh from a newly opened box. Still, by the time the matzos are consumed at the Seder – months after they were baked – taste deteriorates, sometimes significantly, and other interventions are necessary.

Since general food producers use heat to stabilize the enzymes and caramelize the oils in oat groats before milling, efforts to diminish the natural effect on taste are almost exclusive to the matzah industry. Furthermore, oats have a considerably higher fat content than wheat and emit an oily residue during grinding which makes it difficult to obtain a clean flour that is both easy to handle and stays tasty. Each oat matzah bakery implements systems, some considered proprietary, for improving the final consumer experience.

Many bakeries have found that grinding and re-grinding oats very finely, multiple times, yields a more workable and edible flour. Some bakeries carefully package the prized oat matzos inside heat-sealed foil pouches soon after exiting the oven and cooling down. A bakery in Eretz Yisroel, besides milling finely, also sifts and re-sifts the oat flour many times, resulting in a loss of up to a half of their original stock, to reach a standard of cleanliness their customers will enjoy.

Other bakeries, however, cannot introduce sifting to their process and must rely on other quality improvement measures. The reason is because their oat matzos are certified by an accredited third-party certification body as Gluten Free (GF). This achievement entails sourcing certified gluten-

²⁶ His brand name, "Kestenbaum's Oat Matzos," still endures and is available in the marketplace.

²⁷ Flour must sit a day or two between milling and kneading to dispel any residual friction heat (*O.Ch.* 453:9).

free raw oats and adhering to detailed requirements imposed in the baking facility. Grain storage and milling equipment must be dedicated solely to GF oats. Moreover, the entire baking facility must be shut down for a few days and undergo a thorough washdown from any traces of gluten, including flushing out airborne particles from the air filtration system.²⁸ To sift oat flour, these GF facilities would need to invest in an entirely separate sifting apparatus, apart from the wheat flour sifters, an expense that they – and their customers – are not ready to incur, yet.



Differentials: Process and Cost

The process of producing matzah from wheat has been practiced and honed over millennia. Until recently, adapting the process for oat matzos has been uncharted territory. In addition to differences in the way oats are prepared, as described above, there are noticeable variations between the way bakeries work with oat and wheat flours and doughs.

Oats are more absorbent than wheat and roughly 10% more water must be added to the recipe so the gluten-less fragile dough will hold together.²⁹ Wheat dough stays pliable for a long time, certainly the entire time it is rolled, but the wetter and crumblier oat dough stiffens quickly and must be rolled and baked within a shorter time span. To increase the chance the dough will stay intact during *reddlen* (perforation with a spiked roller) and its journey to the oven, oat matzos must be rolled thicker, and fashioned with a smaller diameter, than their wheat counterparts.

But thicker matzah poses a risk: when the outside surfaces are baked, the matzah must be removed from the oven to prevent burning – but the possibility exists that the inside is not fully baked. This could lead to the matzah becoming chometz once outside the oven. For this *chashash* alone, STAR-K withheld certification on some oat matzos in the past. With advancements in milling, the dough can be rolled to an acceptable degree of thinness for thorough baking without this problem, albeit still thicker than the norm.

²⁸ Because preparing for a GF production run involves so much downtime, the week of Chanukah is most conducive for baking certified GF oat matzah. While gluten is cleaned from all surfaces and is filtered from the factory's air system, employees can enjoy a Friday-Sunday break, which is rare during the busy matzah baking season that has been in full swing since early Cheshvan. Also, the slower rate of production when working with oat flour and its reduced output accommodates an earlier closing time for menorah lighting.

²⁹ As with all matzah production, regulating the water-to-flour ratio is an art requiring continual adjustment to account for various factors like temperature and humidity and flour density. Wheat flour is much denser than oat flour.

Working with oat dough compels bakeries to curtail some of the techniques introduced into industrial hand matzah production over the past few decades. For instance, most bakeries today use stainless steel rolling tables and pins. But for oat matzos, tables are covered with paper and wooden rollers are used to absorb the excess moisture.

Also, in commercial bakeries, after the wheat flour and water mixture is kneaded into a lump of dough (called a *mayre* in Yiddish), and before it's divided into puck-sized pieces for rolling and shaping into flat circles, there is an intermediate step called *finning*. This involves pounding the dough vigorously with a long, heavy metal bar that pivots on a fulcrum, compressing the dough to impart increased elasticity and strength so it can be rolled very thinly without ripping. Oat dough will simply break apart from the impact force and cannot undergo *finning*.



Another difference is oven temperature and baking duration. In regular production, to maximize efficiency, hand matzah ovens are kept at over 1100°F.³⁰ At that level of heat, matzos can endure a maximum of approximately 15 seconds before they are burnt. The thicker and moister oat matzos are baked at about 850°F and remain in the oven for over 50 seconds so they can bake all the way through, thereby slowing down the rate of production considerably.³¹

Ensuring that the grain is not *chodosh* is another issue with which bakeries must contend that is particular to oat matzos. In North America, oats for human consumption are a summer crop, planted after Pesach. Therefore, bakeries must arrange to harvest the oats in July or August, have them dehulled and carefully stored in an approved Kosher for Pesach manner for another entire year-and-a-half, before milling and turning them into matzah. Wheat grown for matzah is always a winter crop and invariably *yoshon*.

Understanding these factors that are all well beyond the pale of standard wheat matzah production provides legitimate justification for the significantly higher cost of hand oat matzah, which is at least three times greater than its wheat equivalent. The additional steps and expenses involve in procuring, storing, and milling; factory downtime and diminished worker productivity; increased

³⁰ Ovens are fueled with coal, along with large amounts of specially procured and dried wood which provide matzos with its unique taste. Some bakeries use gas, which doesn't get as hot as coal. Rav Elyashiv in *Kovetz Teshuvos* I:51 rules that gas is an acceptable fuel provided the oven gets hot enough. Like matzah ovens, traditional pizza ovens are also fired with coal and wood. In New York City, both are threatened by new regulations, introduced in 2023 and taking effect in April 2024, that impose the installation of very pricey filtration systems to reduce emissions by 75%.

³¹ This lower temperature and slower baking time is an advantage in the eyes of some Poskim. Rav Yosef Eliyahu Henkin (d.5733/1973; *Lev Ivra*, p.40; *Teshuvos Ivra* p.20) cautioned that rapid baking can result in outer surfaces being baked while the inner layer remains raw and prone to chometz. He advocated keeping ovens at no more than 850°F. Rav Moshe Feinstein also shared this concern. Therefore, Rav Moshe would check freshly baked matzos to make sure the insides weren't soft. This can only be done at the bakery immediately after they cool down a bit, since later even par-baked matzah will harden. Rav Moshe Heinemann too, who spent many years accompanying Rav Feinstein at the matzah bakery, carefully checks each matzah when supervising matzah production, rejecting any soft 'vasser' matzos found in the batch. Bakeries and their primary *hashgochos* counter that our matzos are thin enough to obviate the apprehension about adequate baking. See *O.Ch.* 461:3 and *M.B.*

yield losses during milling (and sifting); abnormal amounts of dough that, due to its brittle nature, crumbles during rolling or collapses before reaching the oven and must be discarded; longer times needed for forming and baking; a much smaller consumer base; all contribute to a premium price for a super-niche product.

Outcome for Oats

Fundamentally, *poskim* have come to a consensus on the permissibility of oat matzos, both as being kosher for Pesach and for fulfilling the mitzvah. Major kashrus organizations now permit their widely recognized symbols to adorn boxes. Frequently absent are the once ubiquitous disclaimers limiting consumption to those who are medically prohibited from eating gluten.

Is there any reason for non-celiacs to “pass over” these matzos? The answer is *yes*. The minhag across all recorded history to use wheat cannot be easily dismissed, especially if the minhag is based on a concern for chometz. Although experienced bakers insist that no signs of chometz are exhibited when making oat matzah, it’s possible the lack of gluten makes chometz formation less *observable* since it doesn’t rise much; yet, being a subset of barley, halacha dictates that oats are more susceptible to undergoing the mechanisms of chometz formation.³²

Rarely do we find such a phenomenon of producing a mitzvah so differently from the way it was practiced for generations. The vigorous halachic debates and eventual approval by foremost *poskim* attests to the vitality and adaptability of the halachic process in our times. Klal Yisroel owes a debt of gratitude to Rabbi Kestenbaum for conceiving the idea to make matzah from oats and then persevering until he accomplished his mission, and to the dedicated bakeries who impart a disproportionate number of resources to overcome onerous obstacles –so that the mitzvah will be available to all.

Appendix I: The Identity of *Shiboles Shu’al*

Around the same time oat matzos were gaining popularity, a controversy was brewing surrounding the correct identities of the Five Grains listed in the Mishnah. One scholar³³ questioned the identification of *shiboles shu’al* as oats (and for that matter, *shifon* as rye, and *tamcha*, in *Pesachim* 39a, as horseradish) on grounds that oats are purportedly missing from the agricultural record in Eretz Yisroel during the Mishnaic era. The anomaly of oats not containing gluten proteins was also a cause to suspect its belonging to the list. He instead gave weight to another translation of *shiboles shu’al* recorded in the Aruch³⁴ which he interpreted as a type of two-rowed barley. Initially, some leading *Poskim* treated the placement of oats among the Five Grains as a *safek*, case of doubt.

Sooner than later, the dispute was quelled and resolved in favor of our long-held *mesorah* which is resolute that *shiboles shu’al* refers to oats.³⁵ Rashi and Rabbeinu Gershom (*Pesachim* 35a,

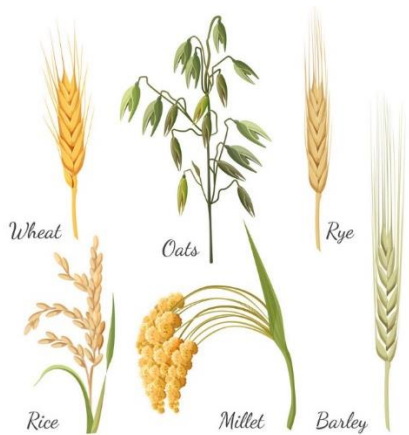
³² See Appendix II: “Unlinking Chometz from Gluten.”

³³ Prof. Yehuda Felix, in a number of publications, including *Hatzomeiach v’Hachai BaMishnah* (Flora and Fauna in the Mishnah) and *Maros HaMishnah*.

³⁴ R. Nossou of Rome, d. circa 4870/1110; also, in Meiri, beginning of *Maseches Challah*.

³⁵ See articles by Rav Yosef Efrati, published in *Mesorah Journal*, vol. 13; Rav Shmuel Meir Katz, *Chaver Beis Din* of Kof-K Kosher Supervision, in Kof-K’s journal *Food For Thought*, Pesach 5773; *Halichos Shlomo*, Pesach, chap. 9, note 326; *Nefesh HaRav* p.53, *MiPeninei HaRav* p. 69; *Torah, Chazal and Science*, by Rav Moshe Meiselman,

Menachos 70a) translate it as *avoine*, which means oats in French and other Romance languages. Maharil calls it האבר, similar to *hafer*, the German word for oats. (He also identifies *kusmen* is טינקיל, spelt, and *shifon* is קארן or ראגין, words for rye.)



Appendix II: Unlinking Chometz from Gluten

The inclusion of oats in the Five Grains has an additional ramification for the future if botanists develop the technology to grow modified wheat kernels without offending gluten proteins.³⁶ Dough made with this flour will not rise since there is no gluten to trap CO₂ during fermentation. But it will still be considered chometz and eligible for matzah.

Proof to this assertion is oats. Chazal (*Pesachim* 35a) observe how the Five Grains are unique from every other species in the world in that only their kernels or flour will become chometz upon contacting water and left to sit. All other grains (e.g. rice, corn) devolve into a state of *sirchon* (decomposition) but do not achieve a state of chometz.³⁷ *Talmud Yerushalmi* (*Pesachim* 2:4) relates that the Tannaim proved this empirically through experimentation. The fact that oats become chometz, even though oat dough hardly rises due its lack of gluten, demonstrates that rising is merely a visual indicator that chometz is present, but is not an essential part of the chometz process itself. Evidently, chometz forms earlier, sometime when amylase enzymes in the germ segment of the kernel act upon starches in the endosperm and transform them into sugars, which then ferment and release carbon dioxide and ethanol.³⁸ Similarly, dough made from deglutenized wheat would

p.156. Rav Shternbuch in *Teshuvos v'Hanhagos* I:302, published in 5752 (1992) countenances the possibility that the status of oats among the Five Grains is a *safek*. However, 17 years later, in V:130, he discounts the notion entirely. It seems the record of *poskim* who were initially *choshesh* for Prof. Felix's assertion, *lechumrah*, before later dismissing it, has been redacted from halachic literature.

³⁶ This technology has not yet been commercially developed. Previously, Italian researchers worked on reducing the gluten content in wheat through lacto-fermentation. More recently, researchers are pursuing a path using genetic modification techniques. Gluten-free flour presently available in the market is just regular wheat starch derived from wheat flour whose gluten and other insoluble components have been removed. This starch is mixed with other gluten-free ingredients to give it bulk. For the bracha on foods made with this ingredient, see Rabbi Dovid Heber's article, "For Good Measure" in *Kashrus Kurrents*, Spring 5784/2024.

³⁷ In *Torah, Chazal and Science*, Rav Moshe Meiselman notes the confidence *Chazal* had to state definitively that only the Five Grains become chometz. They were unequivocal that another grain fitting this description could never be discovered in the future.

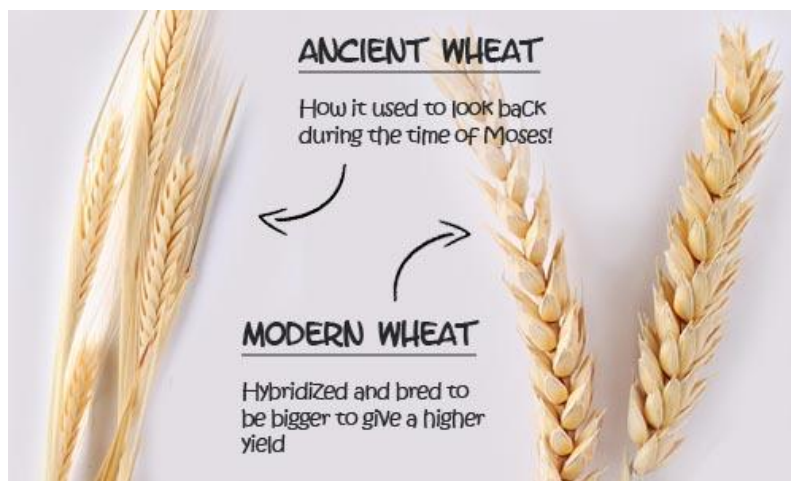
³⁸ See the oft-quoted article by Dr. B.P. Munk in *Techumin* I, p.97, delineating the mechanism of chometz vs. *sirchon*. Final bread products can have up to 1.9% alcohol content, contributing to its aroma and flavors.

go through the same process and become chometz, despite stunted rising as the CO₂ dissipates into the air.

Evidence to this approach is also found in the halachos discussed in *Shulchan Aruch* 467 about kernels that came into contact with water. A cracked wheat hull is treated as an indication that the chometz process has transpired and prohibits the kernel, even though whatever fermentation took place immediately fizzled out and left no apparent effect.

This understanding also rebuffs a suggestion that the time frame articulated by Chazal and *poskim* for the formation of chametz ('18 minutes') should be shorter today. The argument goes that our commonly available wheat has been significantly modified through hybridization over the past century, altering its characteristics from the wheat varieties used for millennia by our ancestors.³⁹ Modern wheat purportedly contains higher levels of gluten and thereby has more pronounced rising.⁴⁰ Therefore, we should be concerned that nowadays chometz forms more quickly. Unlinking chometz from gluten, as evidenced by oats, dispels any such notion.

Contrary to this line of reasoning, *poskim* have purportedly determined that de-glutenized wheat loses its identity as being among the Five Grains and, although there is no concern for chometz, it should not be used for the mitzvah of matzah.⁴¹ (Likewise, any halachah that requires *chameishes minei dagan* will be affected.) They hold that for a grain that naturally contains gluten the presence of gluten is essential to its core identity as a member of the Five Grains.



³⁹ Natural wheat is now available only in specialty markets as “heritage” or “heirloom” varieties. Patches of heirloom wheat are distinguishable in farming regions as modern wheat grows to twice the height of its progenitors.

⁴⁰ See www.ncbi.nlm.nih.gov/pmc/articles/PMC9322029/ for debate on this point. Some attribute the heightened prevalence of gluten sensitivity noticed in recent decades to the increased gluten profile in grains and industrial bread processing techniques.

⁴¹ Reported in the names of Rav Vosner and Rav Elyashiv. See sources in *Piskei Teshuvos*, siman 453 note 8; *Dirshu Mishnah Berurah*, siman 453 note 5; *Ashrei Ho’Ish*, *Hilchos Pesach*.

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Out of Egypt: Sourdough Bread

Without adding yeast – a ubiquitous single-cell fungus – to the flour and water mixture, dough will not rise until it captures naturally occurring yeast particles in the air. This could take many long hours, depends on environmental conditions, and yields minimal leavening.

The Mishnah, *Menachos* 5:1, assumes that a leavening agent was added to the *Lachmei Todah* and *Shtei HaLechem*, the two offerings that were chometz in the *Beis HaMikdash*. Incredibly, the first society known to enhance bread production using sourdough – a concentrated form of yeast – to catalyze the leavening process, is ancient Egypt.

When the Torah prohibits consumption or ownership of *se'or*, sourdough, on Pesach, it is referring to an Egyptian breakthrough in food technology. Accordingly, they would have fed their Israelite slaves unleavened bread, *lechem oni* / לֶחֶם עֲנִי, reserving their tasty innovation for citizens.

Regular baking yeast available today is produced from sources other than grains. It does not have the status of *se'or* and may be owned on Pesach. Brewer's yeast, however, is derived from chometz beer and must be disposed before Pesach.