

## *The Scientific Revolution and Modern Bedikat Tola'im Trends*

By: STEVEN ADAMS

*As I was preparing this essay on Chol HaMoed Sukkot 2015, I learned of the murder of Eitam and Na'ama Henkin, HY"D. R' Eitam Henkin authored Lechem Yehiyeh LeAchla<sup>1</sup> defending a lenient approach to the laws of bedikat tola'im using technical halachic argumentation. This essay similarly argues for leniency in bedikat tola'im, but from the historical perspective. I dedicate my essay to their blessed memory.*

### Introduction

Many people today assume that leafy vegetables must be thoroughly washed and inspected before eating to ascertain that tiny insects such as aphids, spider mites and thrips are not present. Rabbi Moshe Vaye, in his encyclopedic *Bedikat HaMazon KaHalacha*,<sup>2</sup> has educated the public to the fact that minuscule insects are common in nearly all greens and finds legal support for their prohibition from respected *poskim* from centuries ago to modern times. On the other hand, Rabbi Eitam Henkin's *Lechem Yehiyeh L'achla* provides reasoning for a more lenient attitude. Using technical halachic argumentation, Henkin makes an excellent case for a more relaxed approach to *bedikat tola'im*. Perhaps the route to reaching the halachic truth is to step back and take a broad historical assessment of this topic. I argue that the rabbis of the Mishna, Talmud, and medieval era ignored these tiny insects and ate the greens without careful rinsing or inspection. This lenient halacha continued until the 17<sup>th</sup> century when some rabbis wrote of the existence of very small bugs in salad greens. I posit that this new trend in halacha was due not to a new phenomenon in nature but to new discoveries in science:

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<sup>1</sup> Eitam Shimon Henkin. *Lechem Yehiyeh Le-Achla*. Hevron: Machon le-Rabanei Yishuvim, 2010.

<sup>2</sup> Vaye, Moshe. *Bedikat HaMazon KaHalacha*, Machon Le'Hanchalat HaHalacha, 2005, 3 vol. Hebrew.

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The Scientific Revolution of the 16<sup>th</sup> – 18<sup>th</sup> centuries, which produced the compound microscope and improved magnifiers, the discovery of life at the micro-level, the study of entomology and biological pest control, made rabbis more alert for smaller creatures crawling on their food.

I will demonstrate that though many rabbis of the recent centuries clearly forbade even tiny lettuce bugs, many and perhaps most observant Jews ignored these warnings and continued to eat garden greens with no concern for the presence of small insects. This lenient practice was all but dropped only in the last several decades.

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Single lens magnifiers and “burning glasses” existed since ancient times. However, multiple lens optics which produce much greater magnification were a relatively recent innovation of the late 16<sup>th</sup> century. Originally used in telescopes and microscopes, the new technology was soon incorporated into handheld magnifying glasses and the textile merchant’s and jeweler’s loupe. This advance in optics led to many breakthroughs in the biological sciences. Most notable are the accomplishments of English scientist Robert Hooke (1635–1703), and Dutch textile merchant Anton van Leeuwenhoek (1632–1723). Hooke’s *Micrographia* (1665) documented his observations through lenses of parts of insects and plants. This book caused a tremendous sensation throughout Europe.<sup>3</sup>

Using the microscope as well as improved single-lens magnifiers to discover bacteria and other microorganisms (1674), Leeuwenhoek became known as the “father of microbiology.” The microscope became a popular diversion among the upper classes throughout Europe. It was common to see it featured in the parlors of esteemed households during the 18<sup>th</sup> century.<sup>4</sup> Entomology, the study of insects, emerged as a branch of scientific endeavor in the 17<sup>th</sup> century.

It is also significant that aphids, the common infestation culprits, were given much attention by scientists in the 17<sup>th</sup> and 18<sup>th</sup> centuries. Italian biologist Francesco Redi (1668) and van Leeuwenhoek (1700) described the phenomenon of parasitoidism in aphids. Leeuwenhoek drew

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<sup>3</sup> <<http://www.famousscientists.org/robert-hooke/>>. The diary of Samuel Pepys, an English Member of Parliament (1633–1703) illustrates how *Micrographia* captured the public’s interest: “Before I went to bed I sat up till two o’clock in my chamber reading of Mr. Hooke’s Microscopical Observations, the most ingenious book that ever I read in my life.” <<http://www.pepys.info/1665/1665jan.html>>

<sup>4</sup> <<http://www.flysfo.com/museum/exhibitions/world-examined-microscopes-age-enlightenment-twentieth-century#sthash.ttk1VDL.dpuf>>

a parasitoid wasp using an aphid host.<sup>5</sup> Italian naturalist Giacinto Cestoni (Livorno, 1637–1718) also reported (1706) this occurrence in aphids. He called aphids “cabbage sheep,” and their parasitoids “wolf mosquitoes.”<sup>6</sup>

Van Leeuwenhoek and Cestoni observed the absence of mating in many aphid species and suggested that aphids may be hermaphroditic. Likewise, French scientist René Antoine de Réaumur (1683–1757) studied aphids and noted (c. 1735) that he had never seen any coupling between aphids. Charles Bonnet, a Genevan naturalist, earned himself fame by proving (1740) with experimentation that parthenogenesis, reproduction without the uniting of a male and female, indeed is a mode of reproduction in aphids.<sup>7</sup> Réaumur wrote of the viviparous nature of aphids—they bring forth live young that have already developed inside the body of the parent, and that ants feed on the ‘honey-dew’ produced by aphids.<sup>8</sup>

In the field of biological pest control, Réaumur suggested (1734) curtailing aphid growth by introducing lacewing eggs into greenhouses. Similarly, acclaimed Swedish zoologist Carl Linnaeus (c. 1760), and English physician Dr. Erasmus Darwin (1800), recommended using predacious insects such as lady beetles (known as ‘ladybugs’ in North America), lacewings, and predatory wasps to keep produce free of aphids.<sup>9</sup> In the early 1800s, the English entomologists William Kirby and William Spence described growers who used lady beetles as predators of aphids.<sup>10</sup>

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<sup>5</sup> Egerton, Frank N. “A History of the Ecological Sciences, Part 19: Leewenhoek's Microscopic Natural History,” *Bulletin of the Ecological Society of America: Commentary*. vol. 87, number 1, January 2006. See Figure 10 for Leeuwenhoek’s drawing of parasitism in aphids.

<sup>6</sup> <<http://www.faculty.ucr.edu/~legneref/biotact/bc-2.htm>>

<sup>7</sup> Dawson, Virginia P. *Nature’s Enigma: The Problem of the Polyp in the Letters of Bonnet, Trembley and Reaumur*. American Philosophical Society vol. 174, 1987, pp. 5-6.

<sup>8</sup> Egerton, Frank N. “A History of the Ecological Sciences, Part 21: Réaumur and His History of Insects,” *Bulletin of the Ecological Society of America: Contributions*. July 2006, pp. 215–218.

<sup>9</sup> Coppel, H. C., Mertins, J. W. *Biological Insect Pest Suppression*. Springer, 2011, p. 17.

<sup>10</sup> DeBach, P. and Rosen, D. *Biological Control by Natural Enemies*. Cambridge University Press, 2nd edition, 1991, pp. 126-127.

**Table 1 - Timeline of Developments in Science**

<b>1590</b>	Two Dutch spectacle makers, Zacharias Jansen and his father Hans, start experimenting by mounting two lenses in a tube, forming the first compound microscope.
<b>1602</b>	Italian naturalist Ulisse Aldrovandi publishes his illustrated <i>De animalibus insectis</i> (1602). <sup>11</sup>
<b>1609</b>	Galileo Galilei develops a compound microscope with a convex and a concave lens. Galileo writes that he used his instruments to study the flea and mosquito. <sup>12</sup>
<b>1625</b>	Italian naturalists Federico Cesi and Francesco Stelluti publish <i>Apiarium</i> , a description of the microscopic anatomy of bees. It is the first published record of microscopic observations. <sup>13</sup>
<b>1634</b>	Thomas Mouffet's <i>Insectorum sive Minimorum Animalium Theatrum (Theatre of Insects)</i> , an illustrated guide to the classification and lives of insects, is published. <sup>14</sup>
<b>1644</b>	Giambattista Odierna, an Italian scientist, develops an early microscope and studies the eyes of flies and other insects with it. In 1644, he publishes <i>L'occhio della mosca</i> , or <i>The Fly's Eye</i> .
<b>1665</b>	Robert Hooke's book <i>Micrographia</i> officially documents a wide range of observations through the microscope, including descriptions of species of mites and vinegar nematodes. It is a public sensation and has a huge impact, largely because of its impressive illustrations. <sup>15</sup>
<b>1668</b>	Italian naturalist and biologist Francesco Redi publishes his <i>Esperienze Intorno alla Generazione degl'Insetti (Experiments on</i>

<sup>11</sup> <<https://archive.org/details/deanimalibusinse00aldr>> See the drawings of tiny thrip-like insects on page 763.

<sup>12</sup> Grens, Kerry. "Apiarium, 1625 - Galileo's improvements to the microscope led to the first published observations using such an instrument," *The Scientist*. March 2015.

<sup>13</sup> See previous note.

<sup>14</sup> <<http://www.biodiversitylibrary.org/item/123182#page/95/mode/1up>> pp. 60-65.

<sup>15</sup> <<http://www.microscopesamerica.com/History%20of%20Microscope.html>>

	<i>the Generation of Insects</i> ), including descriptions of 180 parasites and a refutation of the theory of spontaneous generation.
<b>1669</b>	Jan Swammerdam, a Dutch biologist and microscopist, publishes his <i>Historia Insectorum Generalis (The Natural History of Insects)</i> , a groundbreaking contribution to the nascent study of entomology. <sup>16</sup>
<b>1674</b>	Anton van Leeuwenhoek, a Dutch textile merchant, uses his knowledge of grinding lenses to achieve greater magnification which he utilizes to make a microscope, enabling detailed observations to be made of bacteria and other micro-organisms. His work encourages countless others to join the burgeoning community of microscopists at the end of the seventeenth century. <sup>17</sup>
<b>1734–1760</b>	René Réaumur and Carl Linnaeus recommend using predatory insects to keep produce free of aphids.
<b>1753</b>	English naturalist Henry Baker publishes <i>Employment for the Microscope</i> (1753) where he describes the presence of dinoflagellates in sea water.
<b>1815–1826</b>	William Kirby and William Spence publish their <i>Introduction to Entomology</i> .

### Rabbinic Awareness and Consideration of Modern Advances in Science

Jews were aware of the new advances in science. Much of the Scientific Revolution was centered in Italy. During this period an overwhelming number of prominent Italian rabbis (including R' Yitchak Lampronti) graduated from the University of Padua Medical School and encouraged

<sup>16</sup> “Jan Swammerdam.” Encyclopædia Britannica. Encyclopædia Britannica Online. Encyclopædia Britannica Inc., 2016. Web. 03 Feb. 2016 <<http://www.britannica.com/biography/Jan-Swammerdam>>.

<sup>17</sup> <<http://www.flysfo.com/museum/exhibitions/world-examined-microscopes-age-enlightenment-twentieth-century#sthash.ttk1VDL.dpuf>>.

the study of the sciences. They were familiar with the latest advances in the biology.<sup>18</sup>

R' Yitchak Lampronti (1679–1756), the illustrious rabbi physician of Ferrara, Italy, considered the halachic consequences of modern scientific discoveries on the ancient belief in spontaneous generation. In 1668, Francesco Redi had experimentally disproven the belief that maggots appear spontaneously from decaying meat. In reality they actually are born from microscopic eggs. Lampronti exchanged thoughts on this question with his mentor, R' Yehudah Briel (1643–1722), a leading Torah scholar from Mantua:

... אי לאו דמסתפינא אמינא דבזמננו שחכמי התולדות הביטו וראו וידעו וכתבו דכל בעל חי יהיה מה שיהיה הוה מן הביצים וכל זה הכיחו בראיות ברורות א"כ שומר נפשו ירחק מהם ולא יהרוג לא פרעוש ולא כינה ואל יכניס עצמו בספק חיוב חטאת. ובדבר הזה אמינא דאם ישמעו חכמי ישראל ראיות אזה"ע יחזרו וידו לדבריהם... אלא ששאלתי את פי מ"ע מורי הרב ר' יהודה ברייל נר"י... (פחד יצחק ערך צידה)

The views of Italian poskim on *bedikat tolaim* will be cited.

R' Yisroel Lifschitz (1782–1860), author of the popular Mishna commentary *Tiferet Yisroel*, records a rabbinic dispute from the 18<sup>th</sup> century over the implication of the microscope on identifying kosher fish:

והנה אבותינו ספרו לנו שזה כנ"א או ס' שנה שרצה גדול הדור אחד תנצבה"ח להתיר דג אחד שנקרא בל"א (קוואפפ"ע), מחמת שראה (במיקראסקאפ), והוא זכוכית המגדיל, שיש לו קשקשין. ואיוש עליה כולא עלמא, ונפק שופרא דידהו לאיסורא ונשתקע ההיתר. (תפארת ישראל למסכת עבודה זרה פרק שני בועז אות ג)

Additionally, many leading rabbis, including R' Moshe Hagiz (Amsterdam, 1671–1750) and R' Yakov Emden (Germany, 1697–1776), read

<sup>18</sup> See Ruderman, David B. *Jewish Thought and Scientific Discovery in Early Modern Europe*. Wayne State University Press, 2001, pp. 100–118. Much of the book is relevant but particularly Chapter Three—“Padua and the Formation of a Jewish Medical Community in Italy.” Though not as common as in Italy, many Jews in Germany and Poland studied the sciences and even became physicians in the 17<sup>th</sup> and 18<sup>th</sup> centuries. See Sorkin, David. *The Religious Enlightenment: Protestants, Jews, and Catholics from London to Vienna*. Princeton University Press, May 2011, pp. 168–173. See also Collins, Kenneth. “Jewish Medical Students and Graduates at the Universities of Padua and Leiden: 1617–1740,” *Rambam Maimonides Medical Journal*. January 2013, 4(1). Available here: <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3678911/>>.

secular newspapers regularly, and considered familiarity with the happenings of the world essential.<sup>19</sup>

These references make clear that the rabbinic mind was well aware of the most recent scientific advancements in optics, microbiology, and biological pest control—and contemplated their many impacts on halacha.<sup>20</sup>

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<sup>19</sup> Carlebach, Elisheva, *The Pursuit of Heresy: Rabbi Moses Hagiz and the Sabbatian Controversies*. Columbia University Press, 1994, p. 265; J. J. Schachter. *Rabbi Jacob Emden: Life and Major Works*. PhD. Dissertation, Harvard University, 1988, p. 614; *She'eilat Ya'avetz* 1:162. In fact, R Yakov Emden wrote (*Megilat Sefer* chapter nine) that he read newspapers so that he could learn about nature and science (amongst other things). Yitzchak Wetzlar, writing in 1748/49 in Northern Germany, describes his *Libes Briv*: “think of it as a newspaper. Nowadays the finest and most important people, scholars and Rabbis read them or have them read to them.” *The Libes Briv of Isaac Wetzlar*, edited and translated by Morris Faierstein, Scholars Press, 1996, pg. 43.

<sup>20</sup> David B. Ruderman in *Jewish Thought and Scientific Discovery in Early Modern Europe* pp. 200–211 discusses an interesting relevant sermon of R' Azariah Figo (Venice, 1579–1647). Figo discusses the new telescope and eyeglasses because it is interesting to his Italian Jewish audience: “Let us begin our examination of Figo’s sermons with one delivered in Venice on a Rosh ha-Shanah that happened to fall on the Sabbath. After quoting a midrashic passage about God’s raising his voice on the New Year, he opens with the following remark:

The human being was given intelligence by [God]...who bestowed him with great strength...until He filled his heart on numerous occasions with the capacity to make artificial inventions analogous to the actions of nature. Because of the weakness of matter or the deficiency in its preparation...man tries to correct and replace it by some discovery or invention drawn from his intelligence to the point where he will not appreciate what is lacking in nature. We have indeed noticed weak-eyed persons who, out of a deficiency of the matter of their eyes, were unable to see at a distance or [even] close up and were thus very nearsighted. Yet human intelligence was capable of creating eyeglasses placed on the bridge of the nose which aid in magnifying the strength of vision for each person, depending on what he lacks, either a little or a lot. This was similarly the case for the eyeglass with the hollow reed [i.e. the telescope] of Rabban Gamaliel [where it is stated] in chapter 4 of Eruvin: “Whereby as soon as I looked, it was as if we were in the midst of the [Sabbath] boundary.

One wonders what a congregation of worshipers might have thought of so bizarre an opening for a sermon on the first day of the high holy days. But Figo apparently must have known and appreciated the mental universe of his audience, so he chose to begin with something familiar to them. He would introduce his lesson on Jewish religious values by espousing an ideal both he and his congregants apparently shared: that of the human mandate to replicate, to intervene, and to improve upon nature. The products of nature often appear deficient or unfinished; they invite human craftsmen and inventors to correct and improve

Because rabbis of the past four centuries had knowledge of a smaller world of life observable only upon careful scrutiny, they devoted more attention to *bedikat tolaim* and imposed stricter guidelines to find even the smallest insect.

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The Talmud mentions many herbs that are known today to be commonly infested with minuscule insects. As these insect pests are important members of the ecosystem, it is reasonable to assume they existed in the era of Chazal as well.

Here is a brief description of the important role these insects play in the environment: Aphids feed on plant sap and excrete the surplus sugars in their liquid waste called 'honey-dew.' This 'honey-dew' sugar is an essential food source for ants, flies, and wasps; it is also an important carbon source of nitrogen-fixing bacteria. Readily available 'honey-dew' thereby increases soil nitrogen, which is necessary for plant and crop growth.<sup>21</sup> Furthermore, aphids are the primary food of lady beetle (Coccinellidae).<sup>22</sup> The aphid midge, minute pirate bugs (Anthocoridae) Crab spiders, entomopathogenic fungi and lacewings (Chrysopidae) also feed on aphids.<sup>23</sup> In fact, green lacewing larvae are voracious eaters of the eggs and immature stages of many insect pests, including species of aphids, spider mites, and thrips.<sup>24</sup> No doubt, these tiny insects benefit the bionetwork in many other ways as well. Assuming the natural world functioned in the times of the Talmud more or less in the same manner as it does today, aphids, thrips, and spider mites must have existed then to play their vital role in ecology. Though I am no expert on paleoentomology, a brief search

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God's handiwork. *The examples of eyeglasses and the telescope (which Figo explicitly claims as an originally Jewish invention that long preceded the invention of Galileo) unambiguously place the rabbi's remarks in their seventeenth-century context of scientific invention and discovery, especially in the fields of optics and astronomy. By beginning in such an unconventional manner, Figo undoubtedly assumed that he would gain the attention of his audience more readily than by plunging into a more typical rabbinic discourse.*" (italics added for emphasis)

<sup>21</sup> Holtmeier, Friedrich-Karl. *Animals' Influence on the Landscape and Ecological Importance: Natives, Newcomers, Homecomers*. Springer, 2015, pg. 33.

<sup>22</sup> <<http://www.ladybug-life-cycle.com/what-ladybugs-eat.html>>

<sup>23</sup> <<https://en.wikipedia.org/wiki/Aphid>>, < <http://www.arbico-organics.com/category/pest-solver-guide-aphids> >

<sup>24</sup> <<http://www.arbico-organics.com/category/Green-Lacewings-chrysoperla-beneficial-insects>>.

shows that many ancient thrip<sup>25</sup> and aphid<sup>26</sup> fossils have been uncovered all around the globe. The fossils of these insects' predators such as the lady beetle<sup>27</sup> and lacewing<sup>28</sup> have been found as well. As "there is nothing new under the sun," these same insect species were surely residing in the folds of leafy greens millennia ago as they are today. Yet nowhere does the Talmud warn the reader that these greens need extra precautionary rinsing and inspection. This silence demonstrates that the rabbis of the Talmud did not consider these creatures forbidden.

### **Chullin 67**

The fundamental *sugya* that develops the laws delineating which insects are forbidden is in *Chullin* 67b:

כל השרץ השורץ על הארץ לרבות יבחושין... על הארץ להוציא את הזיזין  
 שבעדשים ואת היתושים שבכליסים ותולעת שבתמרים ושבגרוגרות... כל השרץ  
 השורץ על הארץ לרבות תולעת שבעיקרי זיתים ושבועיקרי גפנים  
 ...דתניא (ויקרא יא) ואת נבלתם תשקצו לרבות את הדרנים שבבהמה... (חולין  
 סז ע"ב)  
 דרני. תולעים הנמצאים בין עור לבשר כשמפשיטין הבהמה ובלע"ז גרביליי"ש  
 (רש"י)  
 ת"ר (ויקרא יא) הולך על גחון זה נחש כל לרבות השילשול ואת הדומה לשילשול  
 על ארבע זה עקרב כל הולך לרבות את החיפושית ואת הדומה לחיפושית מרבה  
 רגלים זה נדל עד כל לרבות את הדומה ואת הדומה לדומה (חולין סז ע"ב)  
 שילשול. תולעת ארוכה כנחש הן והן הנצמאין באשפה. חפושית. אישקרבו"ט.  
 נדל. מאה רגלים קורין לו. (רש"י)

<sup>25</sup> D. Grimaldi, A. Shmakov, N. Fraser. "Mesozoic Thrips and Early Evolution of the Order Thysanoptera (Insecta)," *Journal of Paleontology*. Sept. 2004. Thrip fossils preserved in amber can be seen here: <<http://www.amber-ambre-inclusions.info/it-thysanoptera.htm>>.

<sup>26</sup> Kindlmann, P., Dixon, A. F. G., Michaud, J.P. *Aphid Biodiversity under Environmental Change: Patterns and Processes*. Springer, 2010, pg. 35. Aphid fossils preserved in amber can be seen here: <<http://www.amber-ambre-inclusions.info/it-hemiptera.htm>>.

<sup>27</sup> A.G. Kirejtshuk & A. Nel. "The oldest representatives of the family Coccinellidae (Coleoptera:Polyphaga) from the Lowermost Eocene Oise amber (France)," *Zoosystematica Rossica*. 21(1), St. Petersburg, July 2012, pp. 131–144.

<sup>28</sup> A. G. Ponomarenko and D. E. Shcherbakov. "New Lacewings (Neuroptera) from the Terminal Permian and Basal Triassic of Siberia," *Paleontological Journal*. vol. 38, suppl. 2, 2004, pp. S197–S203.

זיזין is defined as species of fly; כליסים is a legume species.<sup>29</sup> What is so interesting and telling about this Talmudic passage is that *fruit and beans* with infestations are discussed—*leafy herbs are not*. That should strike the modern rabbinic mind as odd—leafy herbs are from the worst category as far as insect infestation goes. Furthermore, all the insects described are relatively large. There is no mention of our tiny aphids and spider mites or any other minuscule creature. יתושים and יבחושין are translated as small but obvious flies (gnats and fruit-flies—perhaps *Drosophila* species). דרני is translated by Rashi as גרבליי"ש or “warble fly” (*Hypoderma bovis*). The larvae (תולעים) of this fly are 1-1.5 inches long.<sup>30</sup> עקרב is the scorpion. The שילשול is “as long as a snake” (Rashi). Rashi’s אישקרבו"ט (חפושית) is a family of beetle (scarab). Rashi (*Vayikra* 11:41) defines the נדל as a צינטפי"ד - the centipede. Other *risbonim* give similar translations. To argue that the tiny barely noticeable organisms in lettuce are included by the clause "לרבות את הדומה ואת הדומה לדומה", is an unreasonable stretch. If these minute creatures were indeed forbidden they certainly deserved equal mention in this central law-laying *sugya*. Such silence can be viewed as Chazal’s seal of kashrut and approval.

The same conclusions can be drawn from many other passages in the Talmud. *Makkot* 16 counts the number of prohibitions transgressed by consuming various insects:

### **Makkos 16**

והאוכל נבילות וטריפות שקצים ורמשים וכו': אמר רב יהודה האי מאן דאכל ביניתא דבי כרבא מלקינן ליה משום (ויקרא יא) שרץ השורץ על הארץ ההוא דאכל ביניתא דבי כרבא ונגדיה רב יהודה אמר אביי אכל פוטייתא לוקה ארבעה נמלה לוקה חמש משום שרץ השורץ על הארץ צרעה לוקה שש משום (דברים יד) שרץ העוף (מכות דף טז ע"ב)

Rashi gives the French word “קיניל”א” for ביניתא דבי כרבא. *Otsar La'azrei Rashi*<sup>31</sup> translates this as “chenille,” a French word for ‘caterpillar.’

<sup>29</sup> See R' Yehonoson of Lunel’s commentary:  
זיזין. קוצונש וכמין יתושין הן אלא של עדשים זיזין שמן. באכליסין מין קטנית ציירי בלעו.  
(חולין סז)

Other *risbonim* give similar definitions.

<sup>30</sup> See picture here: <[https://upload.wikimedia.org/wikipedia/commons/thumb/1/1a/Hypoderma\\_bovis\\_larvae\\_young.jpg/330px-Hypoderma\\_bovis\\_larvae\\_young.jpg](https://upload.wikimedia.org/wikipedia/commons/thumb/1/1a/Hypoderma_bovis_larvae_young.jpg/330px-Hypoderma_bovis_larvae_young.jpg)>.

<sup>31</sup> Catane, Mochè. *Otsar La'azrei Rashi*. Jerusalem, 1984, pg. 132. The word appears in different variations in various manuscripts and editions of the Talmud. קיניל”א, קנטיל”א, צייל”א, צמל”א, ציניל”א are variations cited in *Otsar La'azrei Rashi*.

Rashi vaguely defines as שרץ המים. Why did Chazal caution only against eating ants (גמלה), wasps (צרעה) and the cabbage worm/caterpillar (ביניתא דבי כרב)? Why did they not warn against the tiny insects we find in produce? Even if one argues that insects mentioned here were eaten culturally in the period of Chazal and, therefore, required special mention, wouldn't aphids, thrips, and spider mites demand some comment as well? It is arguably very important to alert the public to the presence of these pinhead-size bugs because they hide in leaf-folds and are discreetly camouflaged. People in any society may more frequently eat aphids than ants or wasps.

### **Chullin 6a**

In today's Orthodox Jewish world it is common for the pious rabbi and "ben-Torah" to refrain from eating at food establishments or households where the kashrut is not known for its highest standards. A commonly shared concern is: Are the salad greens and produce properly washed and checked? This sentiment, however, was not shared by the rabbis of the Talmud. Chazal expressed reservations about the reliability of the less learned and religious in their separating *ma'aser* and not using *shevi'i* produce. They conveyed no such hesitations about the trustworthiness of the *am ha'aretz* for using bug-free produce:

... והתניא הנותן לשכנתו עיסה לאפות וקדירה לבשל אינו חושש לשאור ותבלין שבה לא משום שביעית ולא משום מעשר ואם אמר לה עשי לי משליכי חושש לשאור ותבלין שבה משום שביעית ומשום מעשר... (חולין דף ו ע"א)

Rashi explains that the neighbor (שכנה) here is an אשת עם הארץ. תבלין means herbal spices such as dill, mint, and coriander leaves (cilantro) to mention a few—all regularly infested with thrips and aphids.<sup>32</sup> The following aggada shows that this is the meaning of תבלין used in cooked dishes (as in the scenario of *Chullin 6a*):

א"ל קיסר רבבי יהושע בן חנניא מפני מה תבשיל של שבת ריחו נודף אמר לו תבלין אחד יש לנו ושבת שמו שאנו מטילין לתוכו וריחו נודף אמר לו תן לנו הימנו אמר לו כל המשמר את השבת מועיל לו ושאינו משמר את השבת אינו מועיל לו (שבת דף קיט ע"א)

שְׁבִי' or שיבתא means dill. Perhaps the reason Chazal trusted the *am ha'aretz* with checking produce was because they did not consider the tiny

<sup>32</sup> *The OU Guide to Checking Fruits, Vegetables and Berries*, 2<sup>nd</sup> edition. OU/NCSY, New York, 2007, p. 26.

insects (aphids etc.) *assur*, the *am baaretz* can certainly be trusted to remove clearly visible flies, worms and slugs.

### Grapes

Several years ago, Brooklyn rabbis discovered that there are frequently tiny spider mites on grapes. Concerned rabbis and kosher certifying agencies warned consumers to carefully and thoroughly rinse grapes before consumption.

Let us think. Grapes have been around for thousands of years. They are mentioned many times in the Torah and Gemara. Infestation surely occurred during biblical and Talmudic times. Here is what the Torah tells us:

כִּי תבֹא בְכֶרֶם רֵעֶךָ, וְאָכַלְתָּ עֲנָבִים בְּנִפְשְׁךָ שְׂבָעָה; וְאֶל-כְּלֵיךָ, לֹא תתֵן (דברים כג:כה).

When you (as a hired worker) come into your friend's (employer's) vineyard, then you may eat grapes to your desire until you are satiated; but you may not put any in your vessel. (*Devarim* 23:25)

The field worker of ancient times was allowed to snack on grapes—even though he generally did not have a hose or any running water available to him for performing a fruit wash as he worked amongst the vines. Furthermore, the Talmud informs us that the harvester was not allowed to take a break long enough to pray or recite the after-meal blessing in the usual fashion, as this was considered being idle during paid time (see Talmud *Berachos* 16a and *Shulchan Aruch*, O.C. 110:2, 191:1). Surely, under such constraints, workers could not stop to carefully wash and inspect grapes for spider mites. It is obvious that Chazal were not concerned about eating these barely noticeable insects.

### Grape Leaves

Grape leaves are mentioned in the Mishna in the laws of *orlah*, *revai*, *nazir*, and *asbayra*:

העלים והלולבים ומי גפנים וסמדר מותרות בערלה וברבעי ובנזיר ואסורים באשרה... (ערלה פרק א משנה ז)

—and in the laws of *shevi'ith*:

עלי קנים ועלי גפנים עד שישורו מאביהן (שביעית פרק ט משנה ו)

The Mishna was unaware of any possible *issur* concerning grape leaves other than *orlah*, *shevi'ith*, *revai*, *nazir*, and *asbaira*. The Mishna commentators of Rambam (Spain, Morocco, Eretz Yisroel, Egypt, 1138–1204), R' Shimshon of Sens (France, c. 1150 – c. 1230) and Ri Malki Tzedek (Italy,

11<sup>th</sup> century) do not add any warning about tiny forbidden creatures in these leaves. These tiny insects were surely present in vineyards of Spain, Morocco, Eretz Yisroel, Egypt, Italy and France at some point of time during the 11<sup>th</sup> through 13<sup>th</sup> centuries, yet these authorities did not consider the matter important to mention in their writings (or perhaps were unaware of their presence). Some of these Mishnaic laws are cited in R' Yosef Karo's *Shulchan Aruch* (YD 294:2). R' Karo did not communicate a frequent phenomenon of small insects in these leaves.

Only in the 18<sup>th</sup> century did rabbis take note of these insects. The rabbi of Aleppo, Raphael Solomon Laniado (d. 1793), wrote about the newly discovered tiny pests in grape leaves.

במה שנהגו מקדם שהיו אוכלים עלי הגפנים בפני גדולי ישראל ולא היה מי שרפרף בדבר. ועתה בדקו היטב וראו שיש בהם תולעים דקים מאוד עד שקשה לבדקם, ואסרו אותם הרבנים. ויש רבנים שכתבו שכיון שכבר פשט המנהג בפני גדולי ישראל ולא מיחו, אין לבטל המנהג.

אין שייך בזה דין מנהג דהא תינח אם בזמן הרבנים הקדמונים היה נודע להם שמצאו בהם תולעים ואפילו הכי היו מניחים את העם לאוכלם, אבל מאחר שבזמנם לא ידעו כלל שיש תולעים ורק עתה אכן נודע הדבר שבדקו ומצאו שיש בהם תולעים דקים מאוד שאי אפשר לבדקם, אין שייך בזה דין מנהג, שהרי לא על דרך הזה היה המנהג, דמאן לימא לן שאם הרבנים הקדמונים ראו הנגלות לנו בזמננו לא היו צווחים ככרוכיא לאסרם עליהם ועל זרעם. (שו"ת בית דינו של שלמה יו"ד סי' י"ט – הובא בשדי חמד ח"ד עמ' קכה, מערכת מ, כלל לג)

Rabbi Daniel Terni (Florence, Italy, d. 1815) in his *Ikrei Dinim* (also known as *Ikrei Hada"t*) gave an account of the commotion these insects caused:

ועיג"כ להרב משאת משה ח"ב סי' ד' וה' שהביאו תשובת מהר"י זיין שעמד וימדוד ארש הרב ח"א בספרו חנן אלהים על דברת עלי הגפן שמצאו בהם תולעים דיקן כ"כ שאין העין שולטת במ רק לבקיאין במקומן וחזקי הראות ואחר עיון רב יניעון בחודה של מחט ויחלו לילך ע"ג העלים ועודם מהלכין נטמנין בא' הפחתים בחדודי בליטת הפיצולים ונעלמים מהעין ונמנו ורבו חכמי ארם צובה ואסרום והרח"א הנז' לדברי האוסרים ואמר מר מהר"י ז' הנז' דבמקום שאסרו פשיטא דא"א להתיר להם אך בשאר המקומות שלא נתפשט המנהג לאסור יש למצוא טעם למנהגם והאריך בענין גזירות שאין רוב הציבור יכולין לעמוד וכו' וכל שכן בדבר שנהגו היתר מימי קדם... (עקרי דינים יו"ד סימן ט אות ד)

These responsa testify that until this late era grape leaves were eaten with no care for tiny insects. Clearly something had occurred since the days of early rabbinic writings to influence the attitude of later rabbis.

### ***Pesachim 39***

On Passover, every year each Jewish household prepares leafy herbs for marror eaten at the Seder. The laws of marror are discussed in Talmud *Pesachim 39*:

**משנה** פסחים דף לט ע"א: ואלו ירקות שאדם יוצא בהן ידי חובתו בפסח בחזרת בתמכא ובהרחבינא ובעולשין ובמרור ... **גמרא**: ... תני בר קפרא אלו ירקות שאדם יוצא בהן ידי חובתו בפסח בעולשין ובתמכא בהרחלין בהרחבינן ובחזרין רב יהודה אומר אף עולשי שדה ועולשי גינה... רבי מאיר אומר אף עסוס וטורא ומר ירואר...  
תנא דבי שמואל אלו ירקות שאדם יוצא בהן ידי חובתו בפסח בחזרת בעולשין ובתמכא ובהרחבינן ובהרדופנין ר' יהודה אומר אף חזרת יולין וחזרת גלין כיוצא בהן ר' אילעא אומר משום ר"א אף ערקבלים וחזרת על כל תלמידיו...  
דף לט: יוצאין בהן בין לחין בין יבשין כו': א"ר חסדא לא שנו אלא בקלה אבל בעלין לחין אין יבשין לא...

Many varieties of marror are listed and the details of its laws are discussed. Dr. Zohar Amar has documented marror traditions that include lettuce (*Lactuca serriola*), wild lettuce (*Lactuca virosa*), chicory (*Cichorium endiva*), dandelion (*Taraxacum officinale*), and sow thistle (*Sonchus oleraceus*).<sup>33</sup> Nearly all these varieties are frequently infested greens.<sup>34</sup> This discussion in the Talmud contains contributions from rabbis of the Mishnaic and Talmudic periods spanning several centuries. Post-Talmudic commentaries were produced by the medieval *gaonim* and *rishonim*. Yet in all this literature there is not a word of warning about tiny insects for which one must examine the *marror* carefully in sunlight. It is extremely improbable that for close to 1,500 years from Mishnaic times through the 17<sup>th</sup> century and from across Europe, throughout the Mediterranean Basin to Iraq, there never were infestations of aphids or thrips in any of these *marror* species. There is utter silence. Today it is difficult to imagine a rabbi lecturing about the laws of *marror* without including directives on careful bug

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<sup>33</sup> Zohar Amar. *Merorim*, Tel Aviv, 2008.

<sup>34</sup> "Lettuce, chickory, escarole, napa, romaine—heavily infested and very difficult to inspect, due to bumpy texture of leaves. "Brushing while washing" is not adequate without inspection." Gissinger, Shlomo. *Keeping Vegetables Kosher: Guide to Bedikas Tola'im*. Kof-K, Teaneck, p. 8.  
<<http://kof-k.org/docs/CheckVegetablesForBugs.pdf>>.

checking. This is remarkably absent from the entire *marror* discussion in the gemara and *rishonim*.<sup>35</sup>

### The Chasam Sofer's Innovation

R' Moshe Sofer (1762–1839) was the first to suggest that although the Talmud Bavli<sup>36</sup> encourages lettuce (חסא) as the preferred first-choice *marror* (see *Shulchan Aruch* OC 473:5), one should rather use the sure bug-free horseradish<sup>37</sup>/תמכא, the third-choice *marror* of the Mishna, lest one eat tiny insects hidden in the lettuce leaves:

ר' משה סופר - שו"ת חתם סופר או"ח סי' קלב: החזרת השנוי במשנתנו ובלשון חכמים חסא שהוא הראש והראשון השנוי במשנה ומצוה לחזור עליו הוא הירק שקורין במדינתנו (סאלאט) והכי נהגו כל רבותי זצ"ל ואנו נוהגין אחריהם, אך רגיל אני לדרוש בשבת הגדול מי שאין לו אנשים מיוחדים מסויימים בעלי יראה הבודקים ומנקים אותו מרחש תולעים קטנים הנמצאים מאד מאד בימי פסח ואינם ניכרים לחלושי ראות. על כן מי שאין לו מי שיבדקנו כראוי טוב ליקח התמכא שקורין קרי"ן ואם הוא נמנה שלישי במשנה והחסא הוא הראשון ומצוה מן המובחר מכל מקום חלילה להכשיל בלאו או בלאוין הרבה... משום קיום עשה דרבנן דמרור בזמן הזה...

"אנשים מיוחדים employed, true to his word, the Chasam Sofer in his own home to check the Passover *marror*.

מנהגי החתם סופר פרק י אות יח: למרור לקח בכל שנה ושנה לכל בני ביתו חזרת שקורין 'סאלאט' בין לברכה ובין לכריכה, ואיזה בחורים היו מופקדים לברור הסאלאט ע"י כלי ראייה שפעקיף (=זכוכית מגדלת)

<sup>35</sup> Noteworthy are the remarks of Rav Shimon Schwab: "As far as our Jewish people are concerned, our fathers and mothers have for centuries used lettuce for *Morrer* ["bitter herbs"] on the Seder Night as well as parsley for *Karpas* [greens], and in those days they were no less infested with vermin than they are today. So, we have no right to make new *issurim* [prohibitions] and to forbid the eating of any vegetables *per se* to the general public." (Schwab, Shimon. "Inspection of vegetables," *Kashrus Magazine*. June, 1986, p. 22; cited in Kraemer, David C. *Jewish Eating and Identity Through the Ages*. Routledge, 2007, p. 155)

<sup>36</sup> The Talmud Yerushalmi and many *rishonim* (perhaps Rambam as well) did not see the order of the Mishna as a directive for preference (*Zohar Amar ibid.*).

<sup>37</sup> *Tamcha* was commonly assumed to be horseradish amongst European rabbis of the last several centuries. See Arthur Schaffer. "The History of Horseradish as the Bitter Herb of Passover," *Gesher* vol. 8, New York, 1981. Available here: <<http://halachicadventures.com/wp-content/uploads/2009/11/maror-pdf.pdf>>

What insects were these “*bochurim*” checking for with their loupes? Fruit flies are clearly visible without extra light and magnification because of their size and color contrast. It is clear that R’ Sofer was concerned about tiny bugs such as aphids and thrips, which commonly inhabit lettuce leaves. These insects are indeed difficult to detect without extra scrutiny; good lighting and magnification are useful towards their finding. However, centuries of predecessor Torah sages who followed the ruling of the Bavli did not share the Chasam Sofer’s opinion of skipping *חזרת* for (European) תמכא. *Mishna Berura* (OC 473:5) cites and ratifies the opinion of the Chasam Sofer. Could the sudden avoidance of that which was previously used as *marror* be due to halachic outlook adapting to magnifying technology?

### Checking Against Sunlight

R’ Hezekiah da Silva (1659–1698) and R’ Yakov Emden (1697–1776) advise performing an inspection in sunlight to find hidden bugs:

בענין הירקות כגון סילקא, ומין ירק אחר הנקרא איספינאק שמצוי התולעת בתוך הירק עצמו, מלבד התולעת שיש עליו בקלח. ועיקר הבדיקה בזה להעמיד כל עלה ועלה נגד השמש ונראה התולעת ולפעמים אינו נראה וצריך מאד למצוא. (פרי חדש יו"ד דעה סימן פד' ס"ק לד)  
אורז נגוע במילב"ן... יש לבוררו על ידי חימום וראית עין יפה ומבדקי נמי בשמשא או על ידי זכוכית מגדיל הראות... (שאילת יעב"ץ ח"ב סי' קכד)

Chazal were familiar with such careful and accurate checking methods. Many tedious ways of inspecting a shochet’s knife are mentioned in the Talmud including examination against sunlight:

במערבא בדקי לה בשימשא בנהרדעא בדקו לה במיא רב ששת בדק לה בריש לישניה רב אחא בר יעקב בדק לה בחוט השערה (חולין יז ע"ב) בשימשא. נותנין אותה בשמש ורואין בחודה... (רש"י)

However, Chazal do not suggest such methods for *bedikat tola'im*.

### Vinegar Eels and Transparent Glass

Vinegar eels (*Turbatrix aceti*) are tiny nematodes that grow naturally in unpasteurized vinegar, beer, and apple cider. Their maximum length is approximately 2 mm. In the late 17<sup>th</sup> century, these creatures received much attention from Hooke and Leuwenhoek who observed them under their microscopes and described them in their widely-read publications. It may be no coincidence that only after these findings did the tiny vinegar eels become a popular topic in rabbinic literature.

In 1797, R' Pinchas Eliyahu Hurwitz of Vilna (1765–1821) published his *Sefer HaBrit*, a work in Hebrew describing the latest scientific advances. It became immediately popular in Jewish society. Therein (6:3), Hurwitz wrote of vinegar eels easily seen with a magnifying lens and warned the reader that vinegar must be cooked and then filtered before consumption.<sup>38</sup> In *Yesod VeShoresh HaAvodah*<sup>39</sup> (published 1782), R' Alexander Ziskind of Grodno (d. 1793) similarly described the tiny insects that “grew from cider.” He advised that beer and ciders should be drunk only from *clear glass cups* (זכוכית לבנה דקה) so that swallowing worms can be avoided. Likewise, Rabbi Eliezer Papo<sup>40</sup> (Bulgaria, 1785–1828) advocated checking vinegar for nematodes against sunlight in *Pele Yoetz* (chapter on *bedikat tola'im*, published 1824):

... וכן בחומץ על הרוב יש בו תולעים דקים לאלפים ואין נראים לעין אלא כשיתן  
החומץ במראה נגד השמש, אז יראה אותם רוחשים. ואין לו תקנה אלא לסנונו  
... תחילה.

Many other similar sources are cited in *Darkei Teshuva* Y.D. 84:45.<sup>41</sup> The responsa that discuss the very small nematodes are all later *acharonim*. Though vinegar worms are not microscopic, these authors advised using sunlight and transparent glass because they can barely be discerned without these conditions—as described in *Darkei Teshuva*:

... אין העין יכול לראותן רק בקישוי גדול כשיתנו על כלי זכוכית לבנה ונגד  
השמש דווקא דאז כל עין יפה ירגיש בהם ע"י נדנוד התולעים במשקה ששטין בו  
אנה ואנה אבל גוף התולע לעולם אין נראה...

Many kashrut agencies today advise their restaurant inspectors (*mashgichim*) to inspect leafy herbs in a manner similar to that suggested by the aforementioned *acharonim*—using transparent glass against a strong light source:

Produce is rinsed in water. The water is collected in a glass container and examined over a lightbox. In this way, any small insect can be easily spotted floating in the water and the level of infestation can be assessed.<sup>42</sup>

<sup>38</sup> Cited in R' Avraham Danzig's *Binat Adam* 38:34.

<sup>39</sup> Ziskind, Alexander. *Yesod VeShoresh HaAvodah*. Warsaw, 1782, gate 7, chapter 4, p. 122. Here: <<http://quod.lib.umich.edu/g/genpub/atn2583.0001.001/126?page=root;size=100;view=image>>

<sup>40</sup> It is noteworthy that R' Papo was heavily influenced by Hurwitz's *Sefer HaBrit* and cites it many times in *Pele Yoetz*.

<sup>41</sup> See here: <<http://www.hebrewbooks.org/pdfpager.aspx?req=14568&st=&pgnum=208>>.

<sup>42</sup> *The OU Guide*, pp. 16, 20, 27; Tendler, Sholom. “Keeping Bugs in Check: Insect Infestation Revisited,” *Kashrus Kurrents*. Baltimore, Fall 2011.

Herein lies the problem. During much of the era of Chazal, clear glass (זכוכית לבנה) was a rare and expensive item.

ואמר ר' יוחנן מי שהניח לו אביו מעות ורוצה לאבדן ילבש כלי פשתן וישתמש בכלי זכוכית... בזוגיתא חיורתא. (חולין פד)

Glass was available only in colored form due to impurities in the sand from which the glass was manufactured. Only on rare beaches was sand found naturally pure and able to be fashioned into a transparent product. According to the Talmud, the tribe of Zevulun was blessed with pure sand, and they therefore profited from their “white glass”—clear glass products (Talmud *Megillah* 7a):

וזבולון מתרעם על מדותיו הוה שנאמר (שופטים ה) זבולון עם חרף נפשו למות מה טעם משום דנפתלי על מרומי שדה אמר זבולון לפני הקב"ה רבונו של עולם לאחיי נתת להם שדות וכרמים ולי נתת הרים וגבעות לאחיי נתת להם ארצות ולי נתת ימים ונהרות אמר לו כולן צריכין לך ע"י הלזון שנאמר (דברים לג) [עמים הר יקראו] ושפוני טמוני חול תני רב יוסף שפוני זה הלזון טמוני זו טרית חול זו זכוכית לבנה

It was only in approximately 100 CE that the technique for creating clear transparent glass (by adding manganese dioxide) was discovered by glass blowers in Alexandria.<sup>43</sup> The lightbox method of checking for minute insects (with clear glass against a light source) was not feasible for the common people during much of the era of Chazal. Therefore, if this is the only practical method of preparing large quantities of ‘kosher’ herbs, it arguably cannot be required by halacha. Inspecting vinegar in transparent glass against sunlight was also not achievable for people in the age of Chazal and could not have been demanded by halacha either (and besides, these worms are kosher anyway so long as they remain inside a drop of vinegar<sup>44</sup>).<sup>45</sup>

<sup>43</sup> This explanation of *zechuchit levana* also appears in Brand, Yehoshua. *Klei Zechuchit beSafrut haTalmud*. Jerusalem: Kook, 1978, pg. 18, 99. Also see <[https://en.wikipedia.org/wiki/History\\_of\\_glass#Origins](https://en.wikipedia.org/wiki/History_of_glass#Origins)>. The oft-repeated erroneous translation of *zechuchit levana* as “crystal” (lead glass—which came in many colors in ancient times) can likely be attributed to the fragility of crystalware, matching the description in *Chullin* 84.

<sup>44</sup> *Binat Adam* (38:34) and many other *poskim* argued that these vinegar eels are kosher so long as they do not separate from the vinegar.

<sup>45</sup> I heard this argument from my teacher Rabbi Yisroel Belsky zt”l and Rabbi Yaakov D. Lach presented as a reason (amongst many others—see <[http://www.zootorah.com/RationalistJudaism/Rav\\_Belskys\\_Teshuva\\_about\\_worms\\_in\\_fish.doc](http://www.zootorah.com/RationalistJudaism/Rav_Belskys_Teshuva_about_worms_in_fish.doc)>) to permit copepods. These tiny creatures inhabit

### Antonie van Leeuwenhoek and R' Hezekiah da Silva—a coincidence?

In the year 1691, R' Hezekiah da Silva published his *Peri Chadash* (פרי חדש) on *Yoreh De'ab* in Amsterdam. Therein he writes:

פרי חדש יו"ד סימן פד' ס"ק לד: בענין הירקות כגון סילקא, ומין ירק אחר הנקרא איספינאק שמצוי התולעת בתוך הירק עצמו, מלבד התולעת שיש עליו בקלה. ועיקר הבדיקה בזה להעמיד כל עלה ועלה נגד השמש ונראה התולעת ולפעמים אינו נראה וצריך מאד למצוא. סימן פד, אות נג: כה אמר חזקיה – לא אוכל להתאפק מלהזכיר ולהודיע לעם, חומר איסור תולעים, לפי שנעשה קל בעיני הבריות, ... ודשו בו רבים וגדולים, ואפילו החכמים והיחידים אינם נזהרים כראוי, אפילו מה שנתבאר בש"ס פוסקים... וא"א ליהרר מלהכשל בהם אם לא בזריות גדול.

Which insects demand such belabored investigation as holding each individual leaf against the sun (כל עלה ועלה נגד השמש)—and even this ordeal often is insufficient (ולפעמים אינו נראה וצריך מאד למצוא)? Surely R' Silva did not have fruit flies in mind when he wrote these words—as such pests are easily noticed at a glance. Furthermore, it is impossible that the great sages and pious men of the golden age in which da Silva lived were eating obvious flies. This is unthinkable. Yet R' Silva writes: "ואפילו החכמים והיחידים אינם נזהרים כראוי". He almost certainly was thinking of such tiny indiscernible creatures as aphids and thrips.

A parallel development in the world of science was the following: In 1674, Dutchman Antonie van Leeuwenhoek described his observations of green algae in lake water as small live swimming creatures. During the next decade, he discovered many microorganisms and bacteria seen with great magnification. He was widely recognized and honored for his genius. By the end of the 17<sup>th</sup> century, van Leeuwenhoek's fame as a scientist had spread across the continent and he was visited by many notable individuals including the Russian Tsar Peter the Great as well as Queen Mary of England.<sup>46</sup> Could Leeuwenhoek's famous new scientific discoveries of micro-life have influenced the halachic writings in the *Peri Chadash*? Furthermore, in the middle of the 17<sup>th</sup> century the microscope

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waters in every part of the world, including the water sources that were available to Chazal. As copepods are visible only in a transparent glass container held against light, and such containers were not widely available during much of the era of Chazal, it logically follows that copepods were consumed by our sages since time immemorial.

<sup>46</sup> <<http://www.ucmp.berkeley.edu/history/leeuwenhoek.html>>.

was used extensively for research in Italy.<sup>47</sup> It was during this time that the young da Silva was born (1659) in Livorno, Italy and remained there until 1679.<sup>48</sup>

### Mint (*Mentha*)

R' Chaim Elazar Spira (1868–1937) cites statements of *acharonim* that mint leaves should be avoided because they are often infested (*Darkei Teshuva*, YD 84:94).

R' Yosef Chaim of Baghdad (1835–1909) writes similarly in his *Ben Ish Chai*:

יש ירקות שנמצא בהם תולעים דקים הרבה וקשה לבדוק והם מה שקורין סלק  
ומה שקורין נענע שומר נפשו ירחק מהם... וירא שמים יסלקו מביתו ולא יבוא  
על שלחנו (בן איש חי ש"ש נשא סי' י"ח)

However, the Talmud mentions מִיִּיָּא—mint—many times as an edible spice and natural remedy.<sup>49</sup> According to bug checking guides by popular kashrut agencies,<sup>50</sup> commonly eaten species of mint have aphids, thrips, and other insects on their leaves and stems. Not until recent centuries is there any warning in rabbinic literature against eating mint. Halachic works and Talmud commentary were produced over many centuries in many geographic locations and in many climates. These insects were certainly present in many of those locations, yet the rabbis were silent.

R. Yosef Chaim's mint was from the same geographic area as the Talmud and was likely the same or similar species.

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<sup>47</sup> Steven I. Hajdu. "The First Use of the Microscope in Medicine," *Annals of Clinical and Laboratory Science*. Summer 2002, vol. 32 no. 3, pp. 309-310; Kerry Grens. "Apiarium, 1625 - Galileo's improvements to the microscope led to the first published observations using such an instrument." *The Scientist*. March 2015. In Livorno, da Silva's birthplace, Italian naturalist Giacinto Cestoni (1637–1718), who studied fleas and algae and showed that scabies is provoked by the tiny mite *Sarcoptes scabiei*, lived and worked. It is noteworthy that Cestoni studied aphids as well. He observed parasitoidism and a lack of mating in aphids. See note 7 above; "Cestoni, Giacinto." *Complete Dictionary of Scientific Biography*. 2008. *Encyclopedia.com*. 3 Feb. 2016 <<http://www.encyclopedia.com>>.

<sup>48</sup> Grünhut, Lazarus. "Silva, Hezekiah," *1906 Jewish Encyclopedia.com*, <<http://www.jewishencyclopedia.com/articles/13665-silva-hezekiah>>

<sup>49</sup> Shabb. 128a, 140a, Gittin 69b, Rashi ad loc, Rambam's Mishna Commentary to Mishna Nidda 6:8, R' Perachya ben Nissim Shabbat 140a.

<sup>50</sup> *The OU Guide to Checking Fruits, Vegetables and Berries* 2<sup>nd</sup> edition. OU/NCSY, New York, 2007, pp. 26–28.

### Indiscernible Insects from *Orchot Chayim* to *Kreisi U'Plaisi*

There is an ambiguous statement in the work *Orchot Chayim* of R' Aaron ha-Kohen of Lunel (13<sup>th</sup>-14<sup>th</sup> centuries) which reads as follows:<sup>51</sup>

אשה שנמצא אחר בדיקתה שרץ ארץ אסור מבדיקתה כדין טבח שנמצא אחר  
בדיקתו חלב וה"מ דבר שהיה נראה לעינים כגון חומט או כיוצא בו אבל התולעים  
שהם מתליעין בתוך העלין שאינן נראין אלא אחר שליכתן מותר לאכל מבדיקתן.

Loosely translated:

If, after a woman's produce inspection, a *sberetz* is found, it is forbidden to rely upon her future inspections (as in the case of the butcher whose deveining missed forbidden *cheilev* in Talmud *Chullin* 93b). This is only if the *sberetz* is of an insect species which is easily visible, such as the *chomet* (slug or caterpillar) or similar creatures; however, if the insect missed by the woman's inspection is from the species which move about within the leaves (leaf folds?) and are only discernible after the vegetables are boiled then we may continue to rely upon this woman's produce inspections.

The statement is cited verbatim in *Shulchan Aruch* (YD 84:11) with no explanation. This word *chomet* appears often in earlier rabbinic literature and has been consistently identified with the slug or snail.<sup>52</sup> *Orchot Chayim* contrasts this forbidden creature which is visible (נראה לעינים) with insects (התולעים) שאינן נראין אלא אחר שליכתן. Did the *Orchot Chayim* consider the latter species permissible to eat or did he merely mean to say that they cannot invalidate the reliability of the individual's inspection? It can be argued that *Orchot Chayim* considered the initially invisible insects permitted as there is certainly no halachic requirement to cook leafy vegetables before consumption in order to find any hidden insects.

In deciphering the meaning of *Orchot Chayim* we may consider that both aphids and cabbage worms (which may appear on any cruciferous vegetables) change color and become more visible after parboiling.<sup>53</sup> The

<sup>51</sup> *Sefer Orchot Chayim*, ed. M. Schlesinger, 'Laws of Forbidden Foods,' chapter 41. Berlin: 1901, pg. 309. The author cites this ruling from an earlier authority apparently none other than Rashba (see Maharsha's *Yam shel Shlomo Chullin*, 3:100).

<sup>52</sup> Teitelbaum, Shlomo Yakov. *Sefer Lalaot HaTecheilet*. Jerusalem: Ptil Techeilet, 2000, pp. 89–98.

<sup>53</sup> For broccoli worms see *Insect-Free: A Guide to Home Vegetable Inspection*, DVD by the Orthodox Union (2009), featuring Rabbi Yosef Eisen. The *OU Guide* (p. 19)

species of cabbage worms which were familiar to medieval halachists include *Pieris rapae* and *Pieris brassicae*.<sup>54</sup> Their larval stages (תולעים) begin crawling when only several millimeters long but then grow to 30 mm and longer, becoming very noticeable caterpillars because of their size, distinctive colors,<sup>55</sup> and the damage they cause to the leaves. Mature cabbage worms are most likely grouped with the *chomet* per *Orchot Chayim*. The “invisible prior to cooking” description fits better with aphids and young cabbage worms. I suggest that the author considers these insects permitted by halacha and rules that the checker cannot be faulted due to the insects’ small size and green color, despite their ability to be detected after heating. Such an interpretation can be inferred from the writings of 16<sup>th</sup> and 17<sup>th</sup> century *poskim*.

R’ Shlomo Luria (“Maharshal,” d. 1573) suggested that *Orchot Chayim* trusted women (until mishap occurred) for the inspection of leafy vegetables only because this is a non-arduous task—“דבר שאין בו טורח”, in the words of R’ Shabbatai HaKohen (“Shach” d. 1662).<sup>56</sup> (Maharshal himself opined that women were not dependable for more arduous kashrut inspections, such as removing infested beans.) If indiscernible insects were indeed forbidden, then inspecting leafy greens would surely not be considered a simple task.

R. Mordechai Yoffe (1530 -1612), however, appears to have diverged from the manner in which his contemporaries understood *Orchot Chayim*. Yoffe appended the words, שאין זו פשיעה כל כך, because she was not very negligent,” to the *Shulchan Aruch*’s citation of *Orchot Chayim*.<sup>57</sup> Yoffe’s use of the word “very” indicates that in his view the unnoticeable insects are indeed forbidden, and only the negligence is not severe. Yoffe permitted women to inspect these greens—and considered not noticing the indiscernible insects only “a minor negligence.”

Against this background, the alarmed admonition penned in the following century by R’ Yonathan Eybeschütz (Krakow 1690, Altona 1764) is most striking. In discussing the words of *Orchot Chayim* and *Maharshal*, Eybeschütz describes leaf inspection as such a laborious task that even some men cannot be trusted with its proper execution:<sup>58</sup>

informs us that: “An additional benefit of parboiling is that aphids often turn from green to brown and the (broccoli) florets from light to a dark lush green.”

<sup>54</sup> Beavis, Ian. *Insects and Other Invertebrates in Classical Antiquity*. Exeter: University of Exeter, 1988, pp. 121-129.

<sup>55</sup> This point describes *Pieris brassicae* more than *P. rapae*.

<sup>56</sup> *Shach* YD 84:35; in Luria, *ibid.* the exact wording is, "אפשר דמיירי בבדיקה שאין בה, טורח כ"כ".

<sup>57</sup> *Levush* YD 84:11.

<sup>58</sup> *Kreisi U'Plaisi* 84: Kreisi 19.

ובאמת לאכול ירקות חי כגון סלא"ט וכדומה והרי כאן ספק תורה... דיכול לבדוק פעמים ושלוש עד שימצא להתולע... וח"ו להקל וקשה לי לומר להאמין לנשים או לאנשים מהירים במלאכתן... וכך מנהגי מיום עמדי על דעתי מבלי לאכול ירקות חי מסלאטין וכדומה על סמך בדיקות הנ"ל. וכן נכון לכל בעל תורה כי רבת המכשלה.

From the language used by R' Eybeschütz it is apparent that he was concerned for pinhead-size thrips and aphids in his leafy salad. Cabbage worms and fruit flies often found in greens do not require "לבדוק פעמים" — two or three inspections to detect. Their size and sharp color contrast make them easily spotted and removable. R' Eybeschütz's tiny unnoticeable insects were likely identical to those referred to in *Orchot Chayim*. That which was permitted and only a minor issue even in previous centuries, in Eybeschütz's 18<sup>th</sup> century worldview became a grave and serious matter. In an area of inspection where women in earlier times were trusted, now even men were barred. What caused R' Eybeschütz to be more concerned over small insects than his predecessors? Could this new halachic stringency have been influenced by the invention and publicity of the microscope and its marvels and the scientific studies of insect pests?

### Something Missing in the *Shulchan Aruch*

A careful reading of the *Shulchan Aruch* Siman 84—the laws of worms—shows that the author hardly devotes a single section to the checking of leafy vegetables (with the possible exception of 84:11—previous section). In *Orach Chayim* (203:2, 204:1, and 205:1), R' Karo discusses the blessing made before eating berries, spice herbs, beet leaves, and cabbage, all of which are often infested with tiny insects. He forgets to warn the reader that these species need extra rinsing and inspection. Was the author not aware of aphids and thrips, or did he perhaps not care about their presence? It is difficult to claim that an infestation of aphids or thrips never occurred in his surroundings, as he was a man who lived in and traveled through wide geographic areas including Spain, Portugal, Turkey, Bulgaria, Egypt, and Eretz Yisroel.<sup>59</sup> His *Beit Yosef* is a compendium of the works of all known earlier authorities. Could R' Karo not find a single discussion and warning about the tiny aphids and thrips in common salad greens? Perhaps the answer is that R' Yosef Karo (1488–1575) died before the microscope was invented and popularized (circa. 1590) and well before the field of entomology was developed.

<sup>59</sup> "Yosef Karo," newworldencyclopedia.org 2014, <[http://www.newworldencyclopedia.org/entry/Yosef\\_Karo](http://www.newworldencyclopedia.org/entry/Yosef_Karo)>.

### Halacha Inspection Standards

What added to the halachic confusion was that aphids, thrips, and spider mites are indeed visible to the naked eye. Therefore, many rabbis thought that including these insects in the forbidden category was justified by stating that they are visible and could at the same time insist that the microscope does not change halacha.<sup>60</sup>

These tiny insects are indeed visible to the naked eye—however, only in good lighting and after careful scrutiny. However, the halacha does not require extra lighting and careful scrutiny. A cursory inspection is sufficient. Because they are not easily noticeable they are considered non-existent or *battel*. (For a more detailed halachic discussion see R' Eitam Henkin's *Lechem Yehiyeh L'achla*.<sup>61</sup>)

This original standard for checking produce is well in line with inspection standards from other areas of halacha. Commenting on the words of the *Shulchan Aruch* (O.C. 648:12) in regard to identifying a minute disqualifying discoloration on an esrog, בכל שהוא (פסול) מראה וכי שינוי מראה, *Mishna Berura* notes:

ודוקא כשנראה לכל אבל אם אין נראה לעין מחמת דקותו וצריך להסתכל אין זה כל שהוא שפוסל. (מ"ב ס"ק מו)  
... משא"כ כשצריך עיון והסתכלות ומרחוק אינו נראה אף בחוטמו אינו פוסל...  
(שער הצינון אות מט)

R' Kagin makes a similar comment in the laws of cracked letters of *tefillin* scrolls (*Mishna Berura* O.C. 32:122):

אבל אם אין פרידתן ניכר להדיא עד שמסתכל בה אין צריך להראות לתינוק

Rabbi Moshe Feinstein wrote similarly in regard to our topic—small insects in greens:

<sup>60</sup> See list of sources in Vaye, Moshe. *Bedikat HaMazon KaHalacha*. Machon Le'hanchalat HaHalacha, 2005, vol. 1, pp. 97–101.

<sup>61</sup> A summary of the halachic reasoning for leniency by Rabbi Zev Weitman, *Rav HaMachshir* for Tnuva, is available on Tnuva's website: "כשרות ירקות" <<http://www.kashrut-tnuva.co.il/articles.php?actions=show&id=1111>>.

It has been argued that if one is disgusted by these tiny insects they are forbidden to him because of *baal te'shaktzu*. However, according to *Shach* YD 84:3 *baal te'shaktzu* may not apply to aphids and thrips in salad greens: "... שאני הכא כיון ... דאין כוונתו אלא לשתות המים וגם אינם בעין"

בענין החרקים הקטנים הנמצאים בכמה מיני ירקות – ... ולהיפך דעתי נוטה יותר להקל, וכמו שהזכרת... שאפשר שדבר שלא נראה למעשה (להדיא) לעינים אינו אסור... (אגרות משה חלק ח יורה דעה סימן ב)

### **Rishonim Analyzed**

R' Asher ben Yechiel (Rosh 1250–1327) declared “*milven*” bugs in flour as forbidden:

והתולעים הנמצאים במלח<sup>62</sup> ובקמח שקורין מילווין למה לא יהו אסורין מאן יימר דלא פרשי ושרצי על הארץ וחוזרין. (תשובת הרא"ש כלל כ אות ג.)

What are “*milven*”? If Rosh refers to flour mites (*Acarus siro*) then he may disagree with the thesis of this article as these mites are a mere 0.33–0.43 millimeters long and not easily noticeable. Where there is a heavy infestation of flour mites, the surface they are on appears to be covered with a fine dust. However, must מילווין mean tiny *Acarus siro*? Could Rosh have referred to grain beetles,<sup>63</sup> which are much larger and are made obvious by their color contrast?<sup>64</sup>

Interestingly, R' Yoel Sirkis (1561 to 1640) wrote exactly this in his *Bayit Chadash*:

... וכ"כ בתשובת הרא"ש כלל כ דין ג לאסור הקמח והמלח שנמצא בהם תולעים שקורין מילווין... משום דחיישינן שמא פירשו וחזרו ונראה לי דדוקא כשהמילווין גדלו קצת שרואין אותם רוחשין בכד ושורצין אנה ואנה אבל במילווין קטנים שלא נראים אלא ע"י בדיקה בחום השמש ובחום האש... לא חיישינן... (ב"ח יורה דעה בסוף סי' פד)

R' Sirkis understood that the Rosh referred only to large clearly visible insects, not the tiny *Acarus siro*. Sirkis in <sup>65</sup> שו"ת בית חדש החדשות סי כג discusses these קטנים מילווין and it is clear that he refers to the “pinhead size” *Acarus siro*:... כנקודה של מחט<sup>66</sup>

<sup>62</sup> I do not know what kind of insect can live in salt.

<sup>63</sup> See <[http://wiki.bugwood.org/File:Confused\\_flour\\_beetle.jpg](http://wiki.bugwood.org/File:Confused_flour_beetle.jpg)>.

<sup>64</sup> See the Star-K's video of grain-beetle-infested flour <<https://www.youtube.com/watch?v=FbzpB8W1vrs>> For flour weevils (or red flour beetle) see <<https://www.youtube.com/watch?v=711Zwd9Kx-w>>.

<sup>65</sup> <<http://hebrewbooks.org/pdfpager.aspx?req=1117&st=&pgnum=38>>.

<sup>66</sup> The words of *Bach* inform us about the language and terminology of the era: מילווין does not necessarily refer to *Acarus siro*—tiny flour mites; the same term could be used for larger pests as well. Though some later *acharonim* use this term for the tiny flour mite (see *Turei Zahav* YD 84:17 on raisin mites), it does not

**R' Shlomo ben Aderet (Spain, 13<sup>th</sup> century):**

גם מה שאמרת בפולין החדשים שבסמוך לגמר מצוי בהן במקום הרחש מקום  
 שחור...  
 תשובה – הרחש ההוא מיד נודע מקומו, שמקומו משחיר וכלו הוא נברא וזה קטן  
 מאד מאד. וכמה פעמים נסינו ונוטלין אותו ממקומו ומניחין על צפורן האצבע והוא  
 רוחש והולך. ולפיכך אנו מורגלין שבכל מקום שמשחיר בפולין נוטלין קצת  
 בעומק וזו היא בדיקתו והכשרו (שו"ת רשב"א חלק א תשובה ערה)

Though Rashba clearly forbade even tiny insects, two observations can be made:

- a) Rashba was writing not about insects in lettuce and leafy vegetables, but rather about maggots in beans. While the maggot itself is very tiny, its presence is easily detected because of the black area it creates.
- b) Only if “ומניחין על צפורן האצבע והוא רוחש והולך” is the insect forbidden. Rashba and his colleagues would refrain from eating the black spot only if they *observed movement with their eyes*. This is drastically different from what Moshe Vaye writes:

mean that the medieval authorities shared their view when they refer to a forbidden מילוו"ן bug. Bach himself surely disagrees with my suggested halachic conclusion, as he does not suggest that the miniscule size and indiscernibility of the mites is sufficient reason to allow them to be eaten. However, Sirkis (died 1640) was writing at the start of the microscope time period and arguably was impressed by the new microscopic world. R' Sirkis's *Bayit Chadash* series was published from 1631 to 1640. He writes in his introduction that he composed this work in his old age. His responsa were published posthumously and it is difficult to date them precisely.

R' Yom-Tov Lipmann Heller (1579–1654) disagrees with *Bach* and shows that the *rishonim* including *Rosh*, *Rokeach*, *Agudah*, and *Hagaot Shari Dura*, who discussed wormy flour, made no distinction between microscopic bugs and larger ones. R' Heller's conclusion (shared by *Taz* 84:17) is that both sizes were forbidden by the medieval authorities. I suggest that the *rishonim*, who did not tell of tiny creatures seen only with difficulty, were discussing only beetles and weevils—readily visible creatures; they did not have flour mites in mind. Only in the era of improved lenses of the 17<sup>th</sup> and 18<sup>th</sup> centuries did *poskim* bring indiscernible pinhead-size insects into the halachic arena. I suggest that R' Heller erroneously read his world “view” into earlier texts when he explained the reason *Maharam* ruled wormy flour was to be discarded:

וכן עשה מוהר"ם הלכה למעשה וצוה להשליכן לנהר. כי קמח המותלע אעפ"י שהתולעים רגילים שיהיו גדולין ונראין מ"מ תחילתן הם קטנים עד מאד עד שא"א לעמוד עליהן שאין ניכרים... אי אפשר לבררם ולהוציא משם... (תורת האשם [=רי"ט ליפמאן העללאר] על תורת חטאת כלל מו סעיף י)

*Maharam* probably had no such thing in mind. He forbade the flour because weevils are clearly visible and one can assume they were “*porish*.”

תולעת אשר ניתן לגולתה, אך אין אפשרות לזהות שהיא תולעת, (כגון שהיא נראית כנקודה או כפס שחור), ובהגדלה מזהים אותה כתולעת הרי היא בכלל התולעת האסורות. (בדיקת המזון כהלכה פרק ב אות ד)

The impact of the modern magnifying lens on contemporary halacha is clear. What Rashba would consider kosher many contemporary rabbis would not!<sup>67</sup>

### R' Avraham ben David—a Possible Exception

ובשם הרב ר' אברהם ב"ר דוד מצאתי, ובתולעים של אלמולייאש או של שאר ירקות אם נתבשלו בקדרה, לפי עניות דעתי אין לחוש ובטל הוא בששים. ואם נמצא בהן תולע זורקן והשאר מותר. ואם אותם הירקות הם מוחזקים ויודעין שמתולעין, כגון הרבה מאלו האלמולייאש והכרוב שמלאים מאלו הכינים, חייב אדם לפרוש מהן ואין לו לסמוך על בדיקתן (שבלי הלקט דין תולעים שבפירות ובירקות סימן ד)

Though not definite, it appears that this *rishon* is describing a small insect in produce. Classic Rabbinic Hebrew does not offer its user specific words for a wide variety of insect species. Words like 'זרוב' and 'תולעת' have vague broad meanings and could refer to either large or small insects. A medieval writer wishing to describe tiny insects in greens would conceivably use the word 'כינים', the Talmud's word for lice, very small insects. Even if the כינים mentioned are aphids and thrips, R' Avraham ben David's view can be seen as an exception and minority view amongst the *rishonim* and Chazal. As explained earlier, aphids and thrips are visible to the naked eye upon scrutiny, so a pre-Scientific Revolution author could have noticed them.

<sup>67</sup> R' Menachem Meiri (Provence, 13<sup>th</sup> century) also discussed infestations in vegetables:

תולעים הנמצאים בכרוב ובסליקא ובשאר הירקות איסורן פשוט וצריך לנקרן יפה יפה ... (חולין סז)

It is unlikely that Meiri referred to aphids and thrips, as he did not emphasize the small size of these תולעים. Furthermore, the verb "לנקרן" implies digging and chiseling as in תנקר and במדבר טז:יד לא נעלה העיני האנשים ההם תנקר שבת קל) גזרה מלכות and הרשעה ... כל המניה תפילין על ראשו יקרו את מוחו "digging." However, a very visible cabbage worm that bore through several layers of leaf may need to be "chiseled" after. לנקר can also mean "to clean" (see Jastrow. Marcus. *A Dictionary of the Targumim, Talmud Babli, Talmud Yerushalmi and Midrashic Literature*, New York, G.P. Putnam's Sons, 1903, entry – נקר, pg. 935), in which case little can be inferred from the usage of this verb.

### Did the People Intensify Their Lettuce Preparation Routine?

There were *acharonim* who indicated that many Jews complied with the new strict approach of the rabbis of the early modern period and inspected each and every leaf carefully. The kabbalist R' Alexander Ziskind of Grodno, Belarus (d. 1793), wrote in *Yesod VeShoresh HaAvodah*.<sup>68</sup>

גם בתולעים המצוי בבצלים ובכל הירקות וביחוד כרוב ... מצויים שם תולעים  
קטנים בין עלה לעלה דמיון פרעושים והן אמת יהגה חכי שרוב העולם נוהרים  
בזה ובודקין עד שידם מגעת כל עלה א' בכד...

However, there are many more sources that tell that the general Jewish public in both Ashkenazic and Sefardic<sup>69</sup> communities around the world did not change their old lenient habit of eating herbs and leafy vegetables with little or no prior inspection. Many responsa written about *bedikat tola'im* attest to this. Venetian rabbi Shmuel Abuhav (1610–1694) in his *Sefer HaZichronot*<sup>70</sup> (published 1650) tells that much of Italy's endives were infested with tiny insects and that “ושהיודעים בדבר מושכין ידיהם ממנה” – those who know pull their hands away.” Only those “in the know” refrained from eating these greens.

R' Hezekiah da Silva (*Peri Chadash* YD 84:34) testifies:

ודשו בו רבים וגדולים ואפילו החכמים והיחידים אינם נוהרים כראוי...

R' Chaim Benveniste (Turkey, 1603–1673) in his *Knesset HaGedolah* (YD 84:52)<sup>71</sup> wrote that in his local area the lettuce was heavily infested and demanded “thorough inspection because the insects are very narrow and small and are the color of the lettuce” (i.e. aphids). He adds “המכשלה הזאת תחת המון עם”.

Mordechai ben Shmuel (b. 1715, Poland) in his *Shaar HaMelech* (published 1762) describes what he observed:

... אלא אפילו אותן הירקות ופירות שלא היו דרכן להיות מתולעין אנו רואין  
בעיתים הללו שבלתי אפשר לאוכלם כלל דשכיח בהם תולעים .... והעולם אינם  
פורשים מהם. וכן הכרוב לא היה בנמצא בהם תולעים הרבה כמו עכשיו הכרוב

<sup>68</sup> Ziskind, *ibid.*

<sup>69</sup> There are reports that Jews of North African communities in recent history used a relaxed method in checking mint leaves (see Dadon, Kefir Barukh Mevorakh. *Nobeg Bam*. Jerusalem, 2005, p. 95; compare with Yosef, Yitzchak. *Kitzur Shulchan Aruch Yalkut Yosef*. 2006 84:24, 39). It is not clear from these sources what the lenient inspection method was.

<sup>70</sup> Abuhav, Shmuel. *Sefer HaZichronot*. Prague, 1650, chapter 3, p. 23a,  
<<http://www.hebrewbooks.org/pdfpager.aspx?req=44476&st=&pgnum=53>>.

<sup>71</sup> <<http://www.hebrewbooks.org/pdfpager.aspx?req=14605&st=&pgnum=123>>.

שקורין קומיפש"ט ורוב העולם אוכלין אותה ועיניו רואי' שבלתי אפשר לבדקם מן התולעים כאשר בעיני ראיתי כרוב אחד מקצה מזה והרבה תולעים מקצה מזה שבלתי אפשר להכיר מחמת קוטנן והמה לבנים כמו הכרוב ולא יאדימו כתולע ועושין אדמיות וכתמים בנשמת האדם. וכן יש שעלין של פיטר זיל שקורין פעטרישק"א יש בהם הרבה תולעים והעולם נותנים לתוך תבשיל... ואף שמזהירין את העולם אינן מקבלים לכל האזהרות ואומרים דורות הראשונים יוכיחו שהיו אוכלין אותן הפירות ואותן הירקות ולא התמירו בהם ניקום אנן ונתמיר חומרא דלא שמייע לך...<sup>72</sup>

R' Avraham Danzig (Vilna, 1748–1820) wrote regarding the newly raised concern over nematodes in vinegar<sup>73</sup>:

וכן מעולם לא שמענו פוצה פה ואפי' חסידים ואנשי מעשה אוכלים מאכלם בחומץ ואין חוששין כלל לבדוק החומץ אך צריך לזהר שלא לסנוג דאם סינן הוי כפירוש ואסור ומנהג ישראל תורה היא.

R' Eliezer Papo (Bulgaria, 1785–1828) in *Pele Yoetz* (chapter on *bedikat tola'im*) notes that many of the masses were not careful to check their produce.

... שיש הרבה מיני פירות וירקות שנמצאים בהם תולעים ורבים מעמי הארץ אין נוהרים ואוכלים אותם בלי בדיקה...

Rabbi Daniel Terni (Florence, Italy, d. 1815):

על דברת עלי הגפן שמצאו בהם תולעים דיקן כ"כ שאין העין שולטת במ רק לבקיאין במקומן וחזקי הראות ואחר עיון רב יניעון בחודה של מחט ויחלו לילך ע"ג העלים ועודם מהלכין נטמנין בא' הפחתים בחודדי בליטת הפיצולים ונעלמים מהעין

ונמנו ורבו חכמי ארם צובה ואסרום והרח"א הנז' לדברי האוסרים ואמר מר מהרי"ז הנז' דבמקום שאסרו פשיטא דא"א להתיר להם אך בשאר המקומות שלא נתפשט המנהג לאסור יש למצוא טעם למנהגם והאריך בענין גזירות שאין רוב

<sup>72</sup> Mordechai ben Shmuel. *Shaar HaMelech* 6:3. Grodno, 1816, pp. 125-126. Mordechai ben Shmuel proceeds to argue that in the era of previous generations produce was not infested. Only in his unfortunate generation (18<sup>th</sup> century), because of the sins of the people and the "decline of the generations," did bugs appear. However, we know from poskim who lived a century earlier, such as R' Chaim Benveniste, R' Hezekiah da Silva, and R' Shmuel Abuhav, that infestation was normal. Furthermore, as explained above, these small insects are an integral part of the ecosystem and certainly did not appear only in the 18<sup>th</sup> century. Additionally, rationalists like Maimonides rejected the notion that later generations are inferior to their predecessors. See Professor Menachem Kellner's *Maimonides on the "Decline of the Generations" and the Nature of Rabbinic Authority*. SUNY, 1996.

<sup>73</sup> *Binat Adam* 35:38.

הציבור יכולין לעמוד וכו' וכל שכן בדבר שנהגו היתר מימי קדם... (עקרי דינים יו"ד סימן ט אות ד)

R' Raphael Solomon Laniado (Aleppo, d. 1793):

במה שנהגו מקדם שהיו אוכלים עלי הגפנים בפני גדולי ישראל ולא היה מי שרפרף בדבר. ועתה בדקו היטב וראו שיש בהם תולעים דקים מאוד עד שקשה לבדקם. ואסרו אותם הרבנים. ויש רבנים שכתבו שכיון שכבר פשט המנהג בפני גדולי ישראל ולא מיחו, אין לבטל המנהג. (שו"ת בית דינו של שלמה יו"ד סי' י"ט – הובא בשדי חמד ח"ד עמ' קכה, מערכת מ, כלל לג)

R' Yechiel Epstein (Lithuania, 1829–1908):

ודע דבכל המדינות הידועים לנו בימות הקיץ הרחש מצוי בכל מיני מאכל וביחוד אלו הנמלים הנקראים מילבי"ן מצויים הרבה בכל מיני קמח ובכל מיני גרויפי"ן וכמעט שא"א להמלט מזה ובוודאי הזריזים מדקדקים בכל האפשר להמלט מזה ועדיין כולי האי ואולי וק"ו כל המון בית ישראל שאינם מדקדקים ואוכלים מכל הבא בידם כשאינם רואים להדיא המילבי"ן. וחלילה לומר שכלל ישראל ייכשלו באיסור גדול כזה ולא ניהא למרייהו דאמרת עלייה הכי וראוי לחפש זכות... (ערוך השולחן יורה דעה סימן ק ס"ק יג)

R' Moshe Feinstein (1895–1986)<sup>74</sup> in a letter dated April 1985 wrote similarly:

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<sup>74</sup> I studied at the Mesivta Tifereth Jerusalem of the Lower East Side from 2011 through 2013 and earned *semicha* there under Rabbi David Feinstein. Rabbi Feinstein related to us that in Russia, where he is from, whatever green vegetables available were checked by briefly looking at them at normal reading distance with no sun or light box behind the leaf. (Rabbi David Feinstein was born in Lyuban, Russia, and came to the US at the age of eight.) During one walk, the rabbi shared that in his view, an insect that is difficult to detect because it is the same color as the leaf it is resting upon is *battul* to the leaf. On several occasions, we brought R. David fresh dill and mint from China Town (without any prewashing or *bashgacha*) and asked him to inspect it for us. He held the herbs for a second, took a quick look, and pronounced it kosher. Some readers may wonder how Rabbi Feinstein's approach to *bedikat tola'im* harmonizes with the rabbis' stringent opinion of the copepods in New York City water (see *Yated Ne'eman*, 29 Elul 5746, p. 19). I was troubled by this contradiction and asked the rabbi for clarity. I did not, however, understand his response. Interestingly, I recently heard the following from a prominent Rosh Yeshiva at Yeshiva University (RIETS): "Rabbi Joseph Ber Soloveitchik stated that his mother only inspected greens cursorily. In the past, observant Jews were not inspecting their vegetables for tiny insects- only for the large clearly visible ones. Further inspection is unnecessary." The Rosh Yeshiva, who heard this directly from the "Rav," did not want to be cited by name because he deals only with the "theoretical—not the practical" and desires to stay out of controversy.

משום שלא ידעו מהם ... ואסור להוציא לעז על דורות הקדמונים שלא הקפידו בדברים אלה... (אגרות משה חלק ה יורה דעה סימן ב)

## Conclusion

While nearly all *acharonim* insisted that the findings of a microscope cannot change the halacha,<sup>75</sup> they were subconsciously influenced by the new scope of life. Aphids and thrips came to the public attention from the nascent fields of entomology and the novel ideas about biological pest control. The steady awareness of a smaller lifeform prompted rabbis to inspect produce more carefully—whereupon the millennia-old world of aphids and thrips was revealed and stricter measures for checking produce were announced. These halachic writings made little impact on the time-hallowed household food-preparation practices of the general Jewish public. Leafy vegetables continued to be casually inspected as they probably have been since time immemorial: a two-second glance at arm's length for fruit flies and worms with no special lighting or instruments. This mode of inspection is in line with parameters from other areas of halacha such as esrog-inspection guidelines. Only in the last several decades have many of the Jewish community begun to be stringent and perform careful inspections. Though there may be many factors that caused this new societal phenomenon,<sup>76</sup> I suggest that it may be understood as part of a trend

<sup>75</sup> See list of sources in Vaye's *Bedikat HaMazon KaHalacha*. Machon Le'hanchalat HaHalcha, 2005 vol. I, pp. 97–101.

<sup>76</sup> Other suggested explanations include:

a) DDT (dichlorodiphenyl-trichloroethane) was first used as an insecticide in the USA from 1945 until it was banned in 1972. In Israel, DDT was banned only in 1978. Because DDT and other insecticides were very potent, there were few insects to be found in produce during those years. When the strong pesticides ceased to be used, the insects reappeared. As several decades had elapsed since aphids and thrips were common in leafy vegetables, consumers did not remember that in old times no attention was given to these tiny insects' presence.

b) In his *Marrorim* (Tel Aviv, 2004), Dr. Zohar Amar argues that modern agricultural growing techniques give insects greater opportunity to reproduce. For example, greenhouses create an artificial warm insect-friendly environment year-round—thereby allowing aphids and thrips to multiply exponentially. Though many responsa cited in this article tell that infestations were common in earlier centuries, perhaps the occurrence has intensified in recent times, attracting more public attention.

c) David Kraemer shows that these stringent bug-checking tendencies began in the mid-1980s at a time when Orthodox Judaism felt affronted by new trends in the Conservative movement (Kraemer, David C. *Jewish Eating and Identity*

in many sectors to abandon time-hallowed customs in preference for newly uncovered opinions in recent halachic texts. As Professor Haym Soloveitchik described it:<sup>77</sup>

The shift of authority to texts and their enshrinement as the sole source of authenticity have had far reaching effects. Not only has this shift contributed, as we have seen, to the policy of religious stringency and altered the nature of religious performance...

A religiosity rooted in texts is a religiosity transmitted in schools, which was hardly the case in the old and deeply settled communities of the past. There the school had been second by far to the home in the inculcation of values. ❧

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*Through the Ages*. Routledge, 2007, pp. 160-172). He suggests that elements in the Orthodox community consciously or subconsciously imposed these *chumrot* to erect a social barrier between the groups and to define questions of identity and affiliation. As Kraemer candidly describes it:

... if you can't eat with someone, then it is more difficult to be in relationship with him or her. Pragmatically speaking, the new attention to the minute details of kashrut – and even, literally, to the bugs in the system – would divide between Jews who demanded such restrictions and those who did not. If non-Orthodox supervision was *by definition* suspect, then this would assure that Orthodox and non-Orthodox Jews would be forced apart in all stages of the production and consumption of food. So, if the non-Orthodox were “dangerous,” because of their ordination of women rabbis and enfranchisement of gays and lesbians and who knows what else, then this redoubled commitment to the most stringent interpretations of kashrut would guarantee that the Orthodox would stay far from the danger. It would be hard to find a more effective boundary. (p. 167)

<sup>77</sup> Soloveitchik, Haym. “Rupture and Reconstruction: The Transformation of Contemporary Orthodoxy,” *Tradition*. Vol. 28, No. 4, Summer 1994.