MUSHROOM NEWS

MAY
2022

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An Organic Shift

LORI HARRISON | *Mushroom News*, Editor | American Mushroom Institute | *lharrison@americanmushroom.org*

Whether impacted by the pandemic, changing consumer attitudes, or something else, organics—specifically organic foods—have been in the spotlight lately. So, in this year's Organics issue, we take a look at the segment of the industry from a few perspectives.

We begin the issue with some news from Pennsylvania Certified Organic (PCO). In part due to the rise and expansion of the segment, there are anticipated changes on the way for USDA Organic Regulations by way of the Strengthening Organic Enforcement (SOE) rule and PCO provides an explanation on page 4.

Next, as part of an ongoing, multi-year grant, Penn State is conducting research on a variety of issues related to organic mushroom production. Dave Beyer, Ph.D., offers an update on the research on page 8.

In our *Back to Basics* section, we turn again to PCO. The organization is celebrating 25 years and we have a piece on the organization's evolution on page 22.

We turn our attention to the retail side of organics. In our Retailer Spotlight, we have a piece from *Organic Produce Network* that looks at how inflation is impacting organic produce sales. We also look at how the organic price gap is shrinking compared to conventional foods.

In her *Food for Thought*, Rachel Roberts gives some perspective on how AMI is telling the mushroom compost story through education as they work with the National Organics Standards Board and the Environmental Protection Agency.

Mushroom Council has an exciting partnership with Food Network starting this month that puts the spotlight on The Blend™. Details can be found on page 30.

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RESEARCH UPDATE: OREI GRANT

As part of an ongoing, multi-year grant, Dave Beyer provides an update on research on a variety of issues related to organic mushroom production.

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BACK TO BASICS: 25 YEARS OF PCO

Stacey Budd of PCO gives insight into the evolution of PCO in its first 25 years.

DEPARTMENTS

Letters to the editor – The *Mushroom News* welcomes letters to the editor from its readers on subjects of interest to the mushroom industry. All contributions to this department must bear the writer's signature and address and should be sent to Letters to the Editor, American Mushroom Institute, 1284 Gap Newport Pike, Suite 2, Avondale, PA 19311.

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Eye on AMI

AMI INITIATIVES, PROJECTS, AND CAMPAIGNS

AMI worked with International Fresh Produce Association...

to push back on National Organics Standards Board potential decision to "prioritize" organic mushroom production. This push back keeps compost out of a miscategorization with other types of compost that would require all ingredients to be organic.

AMI President Rachel Roberts joined the Specialty Crop Farm Bill Alliance (SCFBA) Steering Committee...

and became Co-Chair of the Sustainability, Climate and Innovation Subcommittee–focusing on voluntary, incentive-based recommendations for farmers to improve practices and benefit from climate credits and programs.

AMI kicks off its first International Compost Awareness Week!

Look for social media posts to share and other materials all month long pointing to the benefits of mushroom compost.

Growing Pains: Strengthening Organic Enforcement Proposed Rule

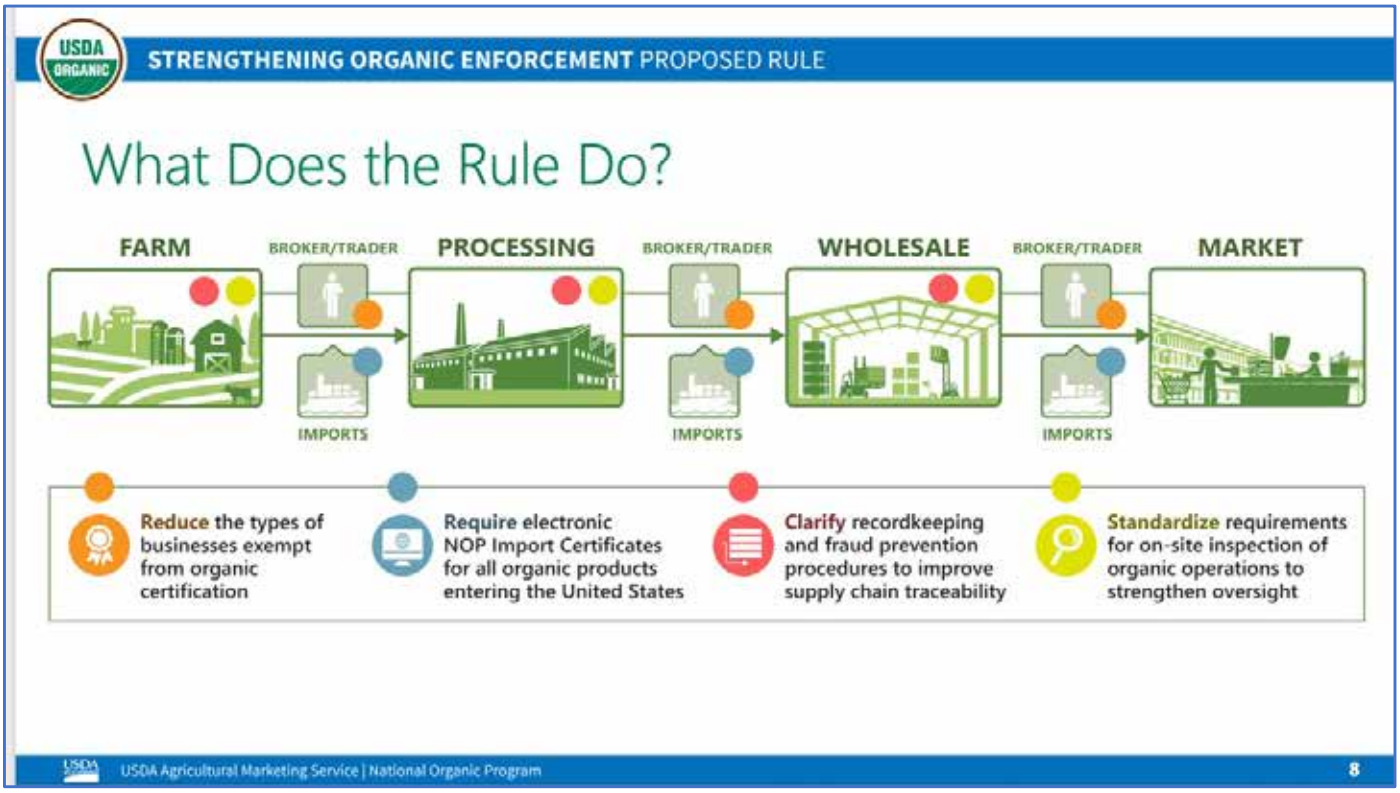
KATIE POPPITI | Certification Specialist | PCO

Organics—and especially organics in produce—continue to rise. According to the Organic Trade Association, total organic sales increased from $22.1 billion in sales in 2008 to $61.9 billion in 2020 (OTA 2021). The organic sector's increased growth has led to complex supply chains and business models that didn't exist 15-20 years ago. Where brokers, distributers, and traders were previously few in numbers, now supply chains have multiple parties and are even more complex, thus the need to expand oversite to protect organic integrity.

In part due to the rise and expansion of the industry, an update to the USDA Organic Regulations by way of the Strengthening Organic Enforcement (SOE) rule is in the works. The rule seeks to revise organic regulations to meet the needs and challenges of the current market. The proposed rule changes will affect USDA-accredited certifiers, organic inspectors, brokers, traders, import/exporters, farmers, and processors.

Topics addressed in SOE proposed rule include the following (USDA AMS 2022):

- Applicability of the regulations and exemptions from certification
- Import certificates
- Recordkeeping and product traceability
- Certifying agent personnel qualifications and training
- Standardized certificates in organic operations
- Unannounced on-site inspections of certified operations
- Oversight of certification activities
- Foreign conformity assessment systems
- Certification of grower group operations
- Labeling of non-retail containers
- Annual update requirements for certified operations
- Compliance and appeals processes
- Calculating organic content of multi-ingredient products



USDA Ag Marketing Service (2021).

As noted above, SOE addresses issues across the Standards. This article will expand on a few of those areas that may directly impact currently certified mushroom producers and processors.

Definitions

There are four key definition revisions for handle, handler, handling operation, and retail operation.

Handle: To sell, process, or package agricultural products including but not limited to trading, facilitating sale or trade, brokering, repacking, labeling, combining, containerizing, storing, receiving, or loading.

Handler: Any person engaged in business of handling agricultural products.

Handling Operation: Any operation or portion of operation that handles agricultural products, except for operations that are exempt from certification.

Retail Operation (substantial revise): An operation that sells agricultural products directly to the final consumers in-person and/or virtual transactions.

The revision reduces the types of businesses previously exempt from certification and expands to include required certification for brokers, traders, and importers of organic goods regardless of physical possession or ownership of product. Overall outcomes include closure of major previous exemptions, increased supply chain oversight, and clarity in requirements where previously there have been inconsistencies. In addition, the revision addresses current sales and distribution channels, including virtual retailers, and enhances the accountability on domestic and imported products.

Import/Export:

The proposed rule adds new definitions under §205.200 and a new section, §205.273, Imports to the U.S.

Organic Exporter: The owner or final exporter of the organic products who facilitates the trade of, consigns, or arranges for the transport/shipping of organic products from a foreign country.

Organic Importer of Record: The operations responsible for accepting imported organic products within the U.S.

- Each shipment of organic products into the U.S. through U.S. ports of entry must be certified and declared as organic to U.S. customs by valid NOP Import Certificate or equivalent data source.
  - What is equivalent data source?
    - USDA is working to develop standardized electronic format connected to Organic Integrity Database (OID)
    - A source supported in conjunction with U.S. Customs & Border Protection's Automated Commercial Environment System (ACE) to link NOP IDs
- Exporters may be final manufacturer or handler but also third parties that facilitate or arrange sale to the U.S.
- Persons exporting must request the NOP Import Certificate or equivalent data source for each physical shipment prior to export.
- Importer of record must ensure shipment accompanied by NOP Certificate and cross check information in addition to ensuring compliance (i.e. confirming no fumigation or contamination during import/export transportation).

Labeling of Non-Retail Containers

The proposed rule includes revisions to §205.307 (a, b). The current regulations state that non-retail containers must display a lot code, as applicable. Under the proposed rule,

Labeling on Non-Retail Containers

Terms or Marks	Current Standard Requirement	SOE Proposed Rule
§205.307(a)(1) The term, "100 percent organic," "organic," or "made with organic (specified ingredients of food group(s))," as applicable, to identify the product	Title Revision	MUST Display
§205.307(a)(2)The statement, "Certified organic by (name of certifying agent)," or similar phrase, to identify the name of the certifying agent that certified the producer of the product, or, if processed, the certifying agent that certified the land handler that processed the product;	N/A	MUST Display
§205.307(a)(3)The production lot number of the product, shipping identification, or other information needed to ensure traceability	MUST (if applicable)	MUST Display
§205.307(b)(1) Special handling instructions needed to maintain the organic integrity of the product	N/A	MAY Display
§205.307(b)(2) The USDA seal. Use of the USDA seal must comply with §205.311	MAY Display	MAY Display
§205.307(b)(3) The name and contact information of the certified producer of the product, or if processed, the last certified handler that processed the product	MAY Display	MAY Display
§205.307(b)(4) The seal, logo, or other identifying mark of the certifying agent that certified the producer of the product, or if processed, the last handler that processed the product	MAY Display	MAY Display
§205.307(b)(5) The business address, website, and/or contact information of the certifying agent	MAY Display	MAY Display

requirements for labeling non-retail containers expand to include identifying the organic product based on ingredient makeup ("100% organic", "organic", "made with organic"). In addition, the "certified organic by" statement or "COB" identifying the name of the certifying agent that certified the producer of the product would be required. A table demonstrating current non-retail labels requirements compared to those under proposed rule changes can be found on page 6..

Currently, the proposed time for existing label use-up is one year. This will of course, depend on when the rule changes actually take effect and the final timeline for implementation before individual certifiers can begin to work with their clients. In addition, there is some concern surrounding the specific language of "last certified handler that processed the product." This could impact businesses using co-packers. Certified operations would need to maintain labels specific to each co-packer, and potentially increase variations of labels that may need to be approved and available to their co-packers.

Lastly, the SOE proposed rule clarifies recordkeeping and fraud prevention procedures to improve supply chain traceability. Certified organic operations will need to maintain records that document a product's source and chain of custody across the supply chain. In addition, records will need to clearly identify products as organic on all records and labels.

As a reminder, this rule is proposed and not yet finalized. The Final Rule is in the clearance process which includes review by Office of General Counsel and other agencies within USDA and Office of Management and Budget.

To view the complete Strengthening Organic Enforcement Proposed Rule, visit *https://www.ams.usda.gov/rules-regulations/organic/nosb*. Additional supporting documents specific to SOE are also available on the site, including an economic impact analysis, factsheets, and infographics.

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USDA-NIFA Organic Research and Extension Initiative Project, 2021 Update

DAVE BEYER, PH.D. | Penn State, et al

Editor's Note: *As part of an ongoing, multi-year grant, Penn State is conducting research on a variety of issues related to organic mushroom production. The information below summarizes the project to date.*

Organic mushroom production is particularly susceptible to attack by fungal and bacterial diseases and fly infestations due to the lack of OMRI-approved products registered for use in mushroom production. Our project has provided organic mushroom growers with educational materials for their employees to better understand pest and disease control. This research program has developed additional tools (mobile app) and strategies for organic growers to control their pest and disease challenges and increased their profitability, and has resulted in improved yield, quality, and fresh mushroom shelf life on organic farms. We have shown the potential to reduce fly populations by 50-99% which increased yield on one farm by over 25%. We also have documented the higher cost of organic approved compost components and increased administration costs required for organically produced mushrooms that seriously affect the economic viability of organic mushroom production.

Organic Pest and Disease Extension Activities

(Maria Gorgo-Gourovitch, David Beyer)

We have developed the following educational materials: a poster, three videos, and five factsheets. All these educational materials are and or will be available in Spanish. We have conducted IPM-related bilingual training for organic mushroom production at the 2021 Mushroom Short Course. We conducted several pieces of training during pesticide meetings in the Spring and Fall of 2020 and 2021. On-farm IPM and disease control training for bilingual employees has been postponed due to the pandemic.

Recruitment of students to the mushroom industry

(Carolee Bull and Kevin Hockett)

Because of disruptions due to the global pandemic, we augmented this objective to include a project and an introductory plant pathology class. The project was

designed during the 2020 reporting cycle and will be carried out in the fall of 2021 this should lead to a short manuscript that can be used by high school instructors for isolating in characterizing mushroom pathogens from grocery store mushrooms.

Fungal Disease Studies

(David Beyer)

We continue to screen bio-fungicides for the control of fungal pathogens. We have tested over two dozen materials in culture and with cropping trials. This past year we have found little to no control with six compounds tested on Dry Bubble. We continue to investigate the epidemiology and etiology of a new pathogen *Syzygites*. We looked at inoculation methods and the resulting frequency of infection. The results suggest that we had no infection using agar plugs on healthy caps before or after the first break or by using spores directly on healthy mushrooms or the casing. Infection occurred when inoculating knock-over mushrooms with agar plugs before the first break and additional pathogen spores are spread to healthy mushrooms. After the first break mushrooms became infected, the pathogen easily began to spread across the casing suggesting the importance of cleaning dead or dying mushroom tissue off the casing after harvesting to help disease control.

Dry Bubble

Bacterial Blotch Management

(Carolee Bull and Kevin Hockett)

We have sampled, in-depth, blotch disease lesions originating from mushrooms sampled from Chester County, PA, using both conventional and a high throughput isolation system that has allowed us to recover ~800 new isolates, which are a mix of fluorescent and non-fluorescent organisms. Using this same high throughput

approach, we have also isolated an additional 870 bacterial isolates from diseased mushrooms from three organic farms in Santa Cruz and Santa Clara counties in CA. We are currently working through these isolates to identify those that are pathogenic. Identification using sequencing will follow for pathogenic strains.

After hypothesizing that bacteriocin production by pathogens may help to determine which pathogens dominate in any given farm, production room, mushroom, or lesion, we developed strains to test some of these hypotheses. We have generated strains of six different pathogens, from two species, that are resistant to two different antibiotics. We compared the antibiotic-resistant strains to the wild-type strains for growth in synthetic media and for pathogenicity on mushrooms. We have isolated an additional eight bacteriophages that are able to infect various blotch-causing pathogens. We now are defining the host range for each phage to make sure that the collection covers the entire diversity of pathogens isolated.

From whole genome sequences, we have used the sequence analysis program antiSMASH to identify biosynthetic clusters that produce secondary metabolites including bacteriocins that may help us to differentiate pathogens of mushrooms from each other and from other organisms or service targets for control. We have initiated comparative genomic studies of the different pathogens with related *Pseudomonas* species using Anvi'o. This will help to identify the appropriate PCR targets.

Mushroom Phorid Flies and Sciarid Fungus Gnats

(Tom Baker, Nina Jenkins, and Michael Wolfin)

A range of low-risk, OMRI-listed pesticides and biological control products, currently registered for use in other crop systems were screened for efficacy against larval and adult stages of *Megaselia halterata* (mushroom phorid fly) and *Lycoriella ingenua* (fungus gnat).

Pesticide screening activities conducted over the past 3 years identified EcoVia WD as a promising adulticide. EcoVia WD is FIFRA 25 (b) exempt and approved for use in organic agriculture. The product is a fine, wettable dust formulation, suitable for use in non-crop areas, including attics and crawl spaces.

Our team has been collaborating with mushroom growers to develop an application strategy that exploits the observed behavior of flies and their attraction to light. We evaluated the efficacy of EcoVia WD using PollenTec® electrostatic screen as a pesticide delivery system in windows and over exit vents in mushroom growing rooms. Laboratory trials on this delivery system returned excellent results.

Our team worked to implement a novel and environmentally sustainable integrated pest management program (IPM). The IPM strategy exploited the behavioral ecology of adult *M. halterata* by creating attract and kill stations in the growing rooms. Extensive on-farm behavioral observations were performed to result in these useful fly attractants being identified. Mushroom phorid fly adults were observed to leave the growing rooms to mate outside and in the growing rooms were attracted to the light from the vent windows in the rooms. These vent windows were typically covered by a translucent filter that limited the amount of light being let into the growing rooms. These behavioral observations of the phorid fly adults also indicated that the flies that were outside the growing rooms were attracted back into the growing rooms that contained actively growing mushroom mycelia. Flies likely use odors to locate the rooms with actively growing mushroom mycelia for oviposition. The electrostatic screening described above was used to replace the old window filters, resulting in significantly more light into the rooms through the electrostatic screening to create a significantly stronger and more attractive visual cue for the flies to fly toward the windows. An attract-and-kill station was developed by applying EcoVia WD to the electrostatic screen covering the windows This strategic targeting of pesticide employs the electrostatic screening as a delivery system for EcoVia WD. Methods were developed in an iterative process alongside farm owners, managers, and workers to ensure they were feasible and practical. One of the first farms to use this strategy reported that the number of phorid flies were reduced by 99.99%. Most notably, mushroom yields were increased by 25.66% during the course of the study and are expected to increase further with fly populations reduced to nearly zero. The farm managers were able to extend the cropping cycle from two mushroom harvests per room to three or even four harvests per room and observed significant increases in mushroom quality.

Since January 2021, we have been recruiting additional growers in Chester County, PA, for the implementation of the novel strategy. Growing protocols and farm architectures vary widely from farm to farm, and the management strategies are highly dependent on these variables. We have worked closely with these growers to adapt and customize the implementation of the control methods for individual farms.

Chemical, electrophysiological, and behavioral assays were conducted and analyzed to identify the putative sex pheromone components of *M. halterata* and *L. ingenua*. Further research involving final chemical analyses

and behavioral assays is being conducted to finish the precise chemical characterization of these two sex pheromones. Additionally, non-pheromonal chemical and visual attractants have been implicated in creating novel attract-and-kill technologies. Further studies are necessary to identify the volatile components of actively growing mushroom mycelia to determine the behaviorally active compounds and use these compounds to develop monitoring traps and possibly amplify the numbers of incoming flies that are killed on window-screen attract-and-kill stations.

Mushroom Compost

Composting Trials

(John Pecchia)

To test for residue levels and the effects of pesticide usage on mushroom substrate raw materials, organic wheat straw was used in comparison with conventionally grown wheat straw that was sprayed with several pesticides. The pesticides were applied during the summer growing season of the wheat according to recommended label rates and consisted of: Caramba® (active ingredient—metconazole), Harmony® Extra (active ingredient—thifensulfuron methyl), and Roundup (active ingredient—glyphosate). Two substrates were prepared following standard mushroom substrate preparation (composting) procedures at Penn State's Mushroom Research Center (MRC), one utilizing the organic wheat straw and one utilizing a conventionally prepared wheat straw. Conventionally and organically grown wheat straw samples were both sent to an external lab, Eurofins Laboratories, for chemical residue analyses. Mushrooms were then grown on each substrate at the MRC following Penn State's standard growing procedures. Mushrooms were harvested for two breaks and crop yield was assessed for each treatment. Mushrooms grown on each substrate were collected and pooled separately from the first break and the second break and then sent to the

external lab for residue analyses. The results of this study suggest that no detectable levels of either of the herbicides (Harmony® Extra or Roundup) applied during the growing season were detected in the conventional or organic wheat straw or in any of the mushrooms sampled from the cropping experiment. However, metconazole (Caramba—fungicide) levels were detected in the conventionally produced straw, though no metconazole was detected in the mushrooms harvested on the conventional straw-based substrate. No statistical difference in mushroom yield was observed between mushrooms grown on organically produced wheat straw and conventionally produced wheat straw though the mushrooms grown on the conventionally grown wheat straw produced slightly higher yields.

Web and mobile application development for organic mushroom crop tracking

(Stephen Haynes)

Over the last year we have continued user testing of the two Cropsmarts applications, the web-based application for managing farm and crop configurations, and the mobile applications for crop inputs, measures, and outputs during crop operations. Though the 2020-2021 project year continued to present challenges related to the ongoing pandemic, we were able to make considerable progress on furthering the functionality and usability of the two applications. In addition, in 2020-2021 we began designing, building, and testing of a proof-of-concept sensor suite for automating the capture of key crop environment variables.

Some of the testing and development highlights from the year include:

- Over 10 zoom-based usability and usefulness tests with project stakeholders at commercial farms and other organizations in the mushroom industry.
- An extended usability/usefulness trial with one commercial grower.
- A number of software designs and implementation sub-projects in response to findings from user testing.
- Continued focus on user testing and development of the Cropsmarts mobile application to support the capture of data from crop operations with minimal time and effort.
- Several new implementations of crop data analytics and visualizations including:
  - A spatial view of key measures within a growing room.
  - A crop summary reporting aggregate data for all crop inputs, measures, and crop outputs.
  - A crop compares feature to assess differences in key crop data.
  - A crop data export feature to enable an analysis of crop data using third-party analytics and visualization software.
- Other new features include:
  - Crop phase-based alerts for measures that exceed thresholds set by the grower.
  - A feature for user-customizable 'tagging' of crop inputs, measures, and outputs to support more flexible crop reporting.
  - Improved workflow for customized configuration of farm topology.
  - User help and documentation to enable self-sufficient use of the Cropsmarts applications.
  - Many other lower-level feature enhancements and bug fixes.

The web application is available to test at: *https://www.cropsmarts.com/*. Simply create an account and explore the application's capabilities. One important note: *the application is still in testing, and you SHOULD ONLY create data for testing purposes. The database and all data may be deleted and refreshed at any time.*

Going forward we will continue working on usability and usefulness testing and responding to results from these with new user interface designs and application features. A particular focus will be on field testing both at Penn State's Mushroom Research Center and at commercial mushroom farms. We will continue identifying, designing, developing, and testing new data analytics and visualizations to make effective use of the data captured by the two Cropsmarts applications. We will also continue research and development into new technologies and processes for automating data capture from crop operations.

Organic Economics and Supply Chain

(John Urbanchuk and Felisa Preciado Higgins)

The evaluation of potential economic benefits of organic agricultural production and methods to producers, processors, and rural communities concentrates on the economic and financial impacts of organic mushroom production. The economic impact and benefits derived from both conventional and organic mushroom production activities are generated by grower expenditures for goods and services. These are best expressed via the development of enterprise budgets for conventional non-organic and organic *Agaricus* mushroom production. The costs of production revealed in the enterprise budgets are then compared to grower prices and marketplace premiums for organic mushrooms to estimate differences in grower profitability. This analysis enables an examination of the impact of the use of organic inputs on mushroom output, costs of production, grower profitability, and ultimately consumers.

Mushroom growers face two major questions. First, whether consumer interest in organics will continue to expand, particularly as the pandemic wanes and the economy recovers. Second, and perhaps more important, are the premiums for organic mushrooms large enough to offset additional costs associated with organic production. Only time will provide an answer to whether consumer interest in organics will continue to grow.

In general, production costs for organics are expected to be higher than conventional output. Significant challenges associated with organic mushroom production are pest and disease control and the requirement to use organically

certified substrate materials for compost management due to the inability to use conventional fungicides and insecticides. USDA organic standards restrict the use of many conventional fungicides and insecticides. Grower interviews indicate that harvested organic mushrooms have higher bacteria counts, deteriorate more quickly, and bruise more easily than non-organic mushrooms because organic mushroom growers cannot use chlorine and other bacterial control products when watering organic crops. Restrictions on conventional fungicides in organic rooms make fungal diseases a greater challenge in organic rooms. Organic mushrooms have higher fly populations than non-organic rooms; those flies can infect younger rooms and are known vectors for disease. The use of non-chemical pest and disease control measures is one of the factors behind reduced yields.

A set of industrywide surveys was designed in a joint effort between Delaware Valley University and Penn State University to capture aggregate level volumes and expenditures and assess demand uncertainty, supply risk, and the strengths and weaknesses of links along with the business to consumer (B2C) *Agaricus* mushroom supply chain. The objectives during this phase were to: (1) analyze the economic and financial impacts of organic mushroom production in comparison to conventional production, and (2) identify the organic mushroom supply chain effects observed from a demand and supply planning standpoint.

The survey instrument was conducted online via Survey Monkey and was sent to 94 mushroom growers identified by the American Mushroom Institute in mid-2020 and again in early 2021. Together these growers accounted for 28% of U.S. *Agaricus* mushroom production. Seven growers reported production of organic mushrooms and accounted for nearly 60% of total organic *Agaricus* mushroom production.

Survey responses indicate that organic *Agaricus* mushroom yields averaged 6.7 pounds per square foot, 6.8% below conventional yields, less than that suggested by interviews.

Based on survey responses, the cost of producing organic mushrooms is estimated at $0.794 per pound, 19% above that reported by conventional growers. Labor costs (salary and benefits) and compost are the two highest operating costs for conventional and organic growers. The most significant difference for organic production is the 60% higher expenditures on compost; this can be attributed to the higher cost of organic components for Phase I and Phase II compost.

The retail premium for organic mushrooms has been remarkably stable over the last four marketing years. Retailers are getting more money for organic mushrooms but are growers benefitting? Again, an examination of the margins for conventional and organic mushrooms suggests that the higher prices for organics are being reflected at the grower level; evidenced by stability in the grower margins for both conventional and organic mushrooms. These margins would decline if growers were not sharing in the premiums.

Consumer interest in organic mushrooms continues to increase. This expanding market is creating opportunities and higher profits for growers. A survey of mushroom growers indicates that cash operating costs for organic mushrooms are nearly 20% higher than those experienced by conventional mushroom production. However, consumers have spent 45% more on fresh organic mushrooms than on equivalent conventional mushrooms. A substantial share of these premiums is shared with producers and supports higher grower prices. The increase in grower returns for organic production is estimated to exceed the increase in operating costs providing a 10% increase in operating margins for organic producers. The answer to whether the additional costs associated with organic *Agaricus* mushroom production are justified in the market is a resounding yes.

The initial proposal for this work had identified supply uncertainty as the most important issue in organic *Agaricus* mushroom production. However, the interviews conducted during meetings and farm visits confirmed that labor is not only the most significant expense but also the most significant constraint preventing growers from fulfilling downstream demand, regardless of the type of customer they serve.

The supply of substrate materials used for mushroom production (i.e., straw, peat, etc.) can be limited due to a variety of factors including, but not limited to, production location, raw material availability and quality, inventory management, environmental conditions, and cost. For organic mushroom production, some substrates used by conventional production are not useable, thus further limiting substrate flexibility and worsening the above-mentioned problems. It is imperative that future research investigates alternative potential organic substrates for mushroom production.

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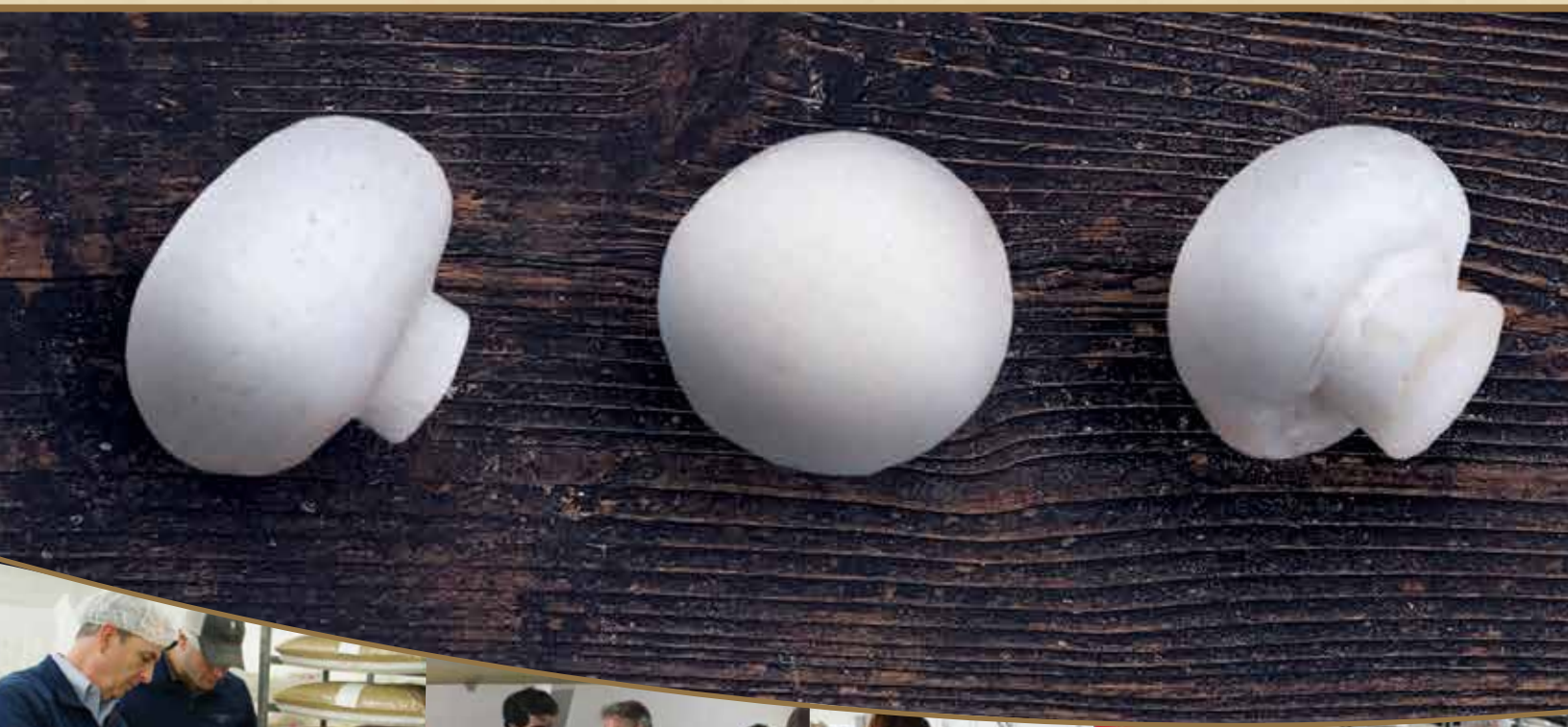

Retailer Spotlight: Inflation Affecting Organic Produce Sales

FROM THE ORGANIC PRODUCE NETWORK, APRIL 14, 2022

Inflation is having a discernible effect on organic produce sales due to a combination of the increasing price of farming inputs, transportation, and storage costs.

After all, the ongoing pandemic is still driving inflation as supply chains grapple with the repercussions of border closures, supply chain disruptions, rising interest rates, and labor shortages. This, in turn, is slowing sales and volume movement.

"Even as the global economy begins to open back up, increased demand on the food supply chain and resulting inflation means that consumers will likely see short-term grocery price increases for the next several months, and produce is no exception," said Rick Stein, vice president of fresh foods for FMI, The Food Industry Association. "With rising transportation costs and the fact that produce did not experience the same level of inflation as some other categories [meat and seafood], we do expect consumers to see inflation in produce this upcoming year."

Since organic produce is typically higher priced than conventional produce, many consumers are reverting to the purchase of conventional foods to buy more produce and save more money, so the interest and demand that's been seen in the organic category of late have started to wane.

"The pandemic has led to extreme variability in the marketplace," said Katie Tossie, organic commodity manager for Ocean Mist Farms, a leading grower and marketer of organic produce. "Early in the pandemic, there was little to no predictability as to when highs and lows would occur. However, it does feel as though buying trends are slowly getting back to pre-pandemic behaviors."

John Savidan, senior director of produce and floral for Gelson's Markets, has been following closely what's happening with the organic industry and is starting to see some of the challenges of inflation impact sales at the store level.

"There's no doubt that we, just like everyone else, are starting to feel some pressure points when it comes to inflation," he said. "The worst thing when it comes to inflation is that in the end, the customer is more than likely going to be the [one] to unfortunately suffer."

For many retailers, bearing the costs of inflation is almost impossible, so these are passed on to customers who have to change their spending habits to cope with the situation. Modifying spending habits to cope with current inflation means spending less on expensive items and more on practical products that stretch every dollar.

"COVID and COVID-related daily operating expenses have made it so that retailers cannot just do what they would have done in the past—and that was to absorb some of the

extra inflationary costs," Savidan said. "Our customers are very educated and understand that inflation isn't [biased], and when it happens, it's through all areas of retail. No matter what, our customers can feel confident in knowing that our organic items will be of the utmost highest in quality and in stock when other [retailers'] may not be."

Jeff Cady, director of produce and floral at Tops Markets, feels there will be additional inflation during the first part of 2022 affecting both conventional and organic produce, but he expects things to eventually stabilize.

"I do see it leveling off after Q1, specifically due to the industry looping last year's challenges in terms of labor, transportation, and all the other inputs into the finished goods," he said. "I can see clearly that transportation costs are starting to match last year, so we hopefully are close to the ceiling."

Money Matters

In the Food Industry Association's recent Power of Produce analysis, consumers listed price as the most significant attribute influencing their produce purchase decision, which is on par with quality.

"A variety of factors are contributing to elevated food prices in 2022, although the cost of most staples has fallen from their pandemic highs," Stein said. "The January Consumer Price Index found that five of the six major grocery store food indexes increased."

According to USDA Economic Research Service, in 2022, food-at-home prices are predicted to increase between 1.5 and 2.5 percent, while food-away-from-home prices, such as those at restaurants, are predicted to increase between 3.5 and 4.5 percent. For grocery overall, average household weekly spending has held steady at $144, which is down from the $161 witnessed at the height of the pandemic.

These are important numbers to consider when looking at how much organic produce is going to make its way into consumers' hands in 2022.

The need for more promotions from retailers, data-driven strategies, and increased prices will lead to a great reduction in spending on organic produce in the long run. This trend is likely to continue into 2023 with the war in Ukraine further driving up the cost of produce.

Carlos Castelán, managing director of The Navio Group, a retail and grocery consulting firm, notes that while inflation and rising prices for consumers are affecting consumers regardless of whether the grocery products are conventional or organic, it's the latter that is most likely to feel the impact as time goes on.

"The challenge for any grocer is to remain in stock and price competitive with customers given the continued supply chain snarls and inflationary pressures," he said. "Over the last year, produce has not risen in price as much as other food categories such as meat, which have higher input costs like grain feed. However, inflation will continue to play a role in the price of produce given the high costs of labor as well as increasing fuel prices, which affect all products."

This will remain a challenge for most grocers and beyond many typical measures such as working with suppliers to reduce costs or creating more responsive supply chains.

"We have seen focuses on reducing spoilage via discounting products that may be overstocked helping the overall bottom line, along with passing along a benefit to customers," Castelán said. "Organic customers understand that prices are higher, but if things continue to be challenging financially for them, this could be one of the first items from their shopping list that has to go."

Mushroom Council Calls for Completed Ballots
2023-2025 TERM

Nominations have been submitted from the industry and placed on their respective region ballot. Ballots will be distributed to eligible voters in each region with an open position on June 1, 2022.

Completed ballots should be emailed or postmarked no later than June 30, 2022. If you do not receive a ballot and believe you are eligible to vote, contact *Cheryl@mushroomcouncil.org*

BACK TO BASICS // 25 YEARS OF PCO

Grassroots to Organic Growth: The Evolution of PCO—25 Years of Certification Service

STACEY BUDD | Executive Assistant/Outreach Coordinator | PCO

Editor's Note: *This article was originally published in PCO's Organic Matters newsletter, Winter 2022.*

At its roots, agriculture cultivates a seed and allows nature to nurture and produce—pure organic. It wasn't until the 1940s that organic practices became more defined as a response to the development and application of synthetic fertilizers for industrial agriculture. For pioneers like J.I. Rodale, commonly regarded as the father of the modern organic farming movement, practices that focused on building healthier soil for healthier food leading to healthier people would have a long-lasting impact on agriculture the way nature intended. On a small farm outside of Emmaus, Pennsylvania, J.I. Rodale began growing his family's food using organic methods and documenting the process, laying the foundation for what would be the Rodale Institute and their publication of Organic Gardening and Farming. Momentum for organic production was built right in Pennsylvania.

Organic Before 'Organic'

Inspired by a better way to do things, other farmers in Pennsylvania were implementing organic practices and building a network of support. In 1985, a group of organic farmers in the Lancaster County area formed a Pennsylvania chapter of the Organic Crop Improvement Association (OCIA). As a chapter of OCIA, they were allowed to perform certification services for its members. During this time there was increased consumer demand for organic products but no centralized standards or regulations that defined organic production, giving each state or certifying

agency liberty to craft their own standards based on regional production practices and constraints. Not long after, Congress passed the Organic Food Production Act (OFPA) in 1990 to develop national standards as guidelines for food to be labeled "organic". In those early days of the OCIA Pennsylvania chapter, farmers and inspectors collaborated to form committees that focused on defining their standards and protocol for certification. It was all hands on deck as the excitement and energy about organic production grew among local Pennsylvania farmers. Proud of the groundwork and grassroot efforts being done in the state, the idea of creating a new organization that had Pennsylvania in the name was put on the table—and in February 1997, Pennsylvania Certified Organic (PCO) was incorporated as a non-profit 501(c)3 to serve the growers, processors, and consumers seeking a healthier approach to agriculture and food while maintaining the integrity of organic products in the marketplace. From humble beginnings with 27 certified operations, PCO expanded to over 200 crop, livestock, and dairy certified operators within the first couple of years. During this time, PCO not only grew in operations but also as a thought leader in contributing a voice to the development of the national standards being drafted by the USDA.

> *Looking at (farming) as stewardship: you've been given something so you need to improve it to give to the next generation. For the earth, for your kids, for the future.*
> — **TIM HIHN,** MOTHER EARTH ORGANICS

Expanding Programs and Services

By the time the USDA National Organic Program standards and regulations were finalized in 2002, PCO was responding to the organic marketplace. As the cachet of organic continued to grow, so did the demand for certification services beyond the Pennsylvania border. By 2004, PCO had expanded its reach to offer certification services to operations in adjoining states, including Ohio, New York, New Jersey, Maryland, Delaware, and West Virginia. Not only did PCO expand geographical reach, but we also developed add-on label certifications to help define client products in the marketplace.

By 2014, PCO had over 800 certified operations. While we had a growing number of staff, we still relied on the contributions of volunteers (often certified members) to serve on committees and assist in program development.

> *Our customers and employees depend on us to help provide a better way of life for their families and communities.*
> — **PHILLIPS MUSHROOM FARMS**

Success Comes from Leadership

There is a proverb by John Heywood, an English writer from the 16th century, that states "many hands make light work." Whether from certified operators or executive directors and staff, PCO's success and growth has evolved from the many hands who helped shape our organic journey. It all started with the vision that PCO can be the voice of organic in the state of Pennsylvania. Our visionary founding farms—including Mother Earth Organic and Phillips Mushroom Farms—invested their valuable time and knowledge into bringing our organization to fruition. They lent their hands to help develop standards and grow our outreach efforts to build a connected community of passionate growers, processors and supporters of organic agriculture.

There are also a host of dedicated souls who have served board terms for PCO. Whether in an advisory board role

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1. Effects of Postharvest Pulsed UV Light Treatment of White Button Mushrooms (Agaricus bisporus) on Vitamin D-2 Content and Quality Attributes, December 2011, Journal of Agricultural and Food Chemistry

2. Pulsed Light has been determined to be safe for the production, processing and handling of food by the FDA and the Department of Health and Human Services (Code 21CFR179.41).

or a managing board member, PCO has been gifted with many talented board members with diverse expertise that contributed valuable dialogue to our decision-making process. The growing demand for certification services brought forth an expansion in staff to meet client needs. What was once a handful of staff members, our team has grown to 32 individuals committed to organic integrity and quality customer service.

The Next 25 Years

So what will happen in the next 25 years? And how will PCO respond to changes in the industry? With the USDA NOP prioritizing their Strengthening Organic Enforcement (SOE) final rule, we will see more work done to close the gap in the organic supply chain. PCO leadership and staff are committed to being informed and educated to support our clients' needs as organic rules and regulations evolve. Over these past 25 years our focus has remained the same—to build PCO as a strong, viable, and growing organization that is responsive to our clients'/operators' needs. We hope you will continue to be a part of our journey these next 25 years as we uphold organic integrity and enrich our communities through organic food and farming.

— PCO FAST FACTS —

PCO was Incorporated on February 4, 1997, and that first year we certified 57 operations.

PCO received 501(c)3 status in August 1998.

With one part-time employee and one computer in 1997, we have grown to 31 employees today.

PCO achieved accreditation to the USDA National Organic Program in April 2002.

The first operation we certified under the NOP was Lady Moon Farms Inc., which we still certify today.

From 2002 to 2022, under the NOP, we grew our certified operations from 265 to 1687.

In 2004 we certified our first operation outside of Pennsylvania. Currently we certify operations in 23 states.

Phillips Mushroom Farms and Mother Earth Organic Mushrooms, LLC were two of our founding farms, and in addition to still certifying them today, we certify 23 total organic mushroom producing operations!

Money Matters: Organic Price Gap Shrinking

Organic pricing has long been understood to be higher than conventional pricing. As the saying goes, the increased price is 'baked into the cake.' But a multi-year pandemic and some record high inflation is closing the gap in what consumers pay for organic vs conventional products.

Magnify Money did an analysis of prices for 29 different products over a couple of recent years and found that the conventional (non-organic) foods went up 13.9% while the organic versions rose by 1.6%. Of note, mushrooms were not listed.

For instance, broccoli (the organic kind) became 24.3% more expensive. But conventional (non-organic) broccoli went up by 141.3%. Another example: boneless skinless chicken breasts. The conventional (non-organic) kind went up 43.8%. The organic variety was 2.2% less expensive.

Private-label organic items were 14.7% more expensive than regular food in January, down from 22.7% in April, according to an analysis of 1,500 organic products conducted by DataWeave. "The positive of these lower cost, private label options...is that they can create new access points for lower-income shoppers," Kovalcik says.

Fruits and Vegetables	Organic Change (%)	Conventional Change (%)
Baby Spinach (10 oz)	-27.3%	12.9%
Bananas	-6.0%	9.8%
Black Seedless Grapes	-4.0%	-15.5%
Blueberries (1 pint)	10.4%	29.6%
Broccoli	24.3%	141.3%
Broccoli Crowns	0.0%	-9.0%
Fuji Apples	-16.4%	-14.0%
Gala Apples	13.7%	-6.4%
Granny Smith Apples	49.9%	42.3%
Honeycrisp Apples	-23.6%	1.4%
Red Onions	7.9%	10.5%
Red Seedless Grapes	-5.6%	0.0%
Romaine Hearts (3ct Pack)	3.5%	24.5%
Russet Potatoes	53.6%	14.1%
Sweet Onions	-25.5%	11.8%
Carrots (1-Pound Bag)	1.4%	1.2%
White Seedless Grapes	-5.2%	2.8%
Yellow Onions	16.8%	14.1%
Yellow Potatoes	-14.9%	-16.3%

Source: *Magnify Money for Lending Tree*

WHY IT MATTERS!

Organic foods specifically, have been harder to afford than regular items, putting them largely out of reach for many lower-income shoppers. But according to Axios, big-box grocers like Walmart and Kroger are making organic options more accessible with private label goods. "Any growth in private-label product, organic or conventional, has the potential to depress prices," Organic Trade Association spokesperson Reana Kovalcik tells Axios.

Inflation is hitting conventional foods harder, with DataWeave finding price increases of 2% to 4% for organic food and 11% for regular items over the last year. According Axios, DataWeave President Krish Thyagarajan posited that retailers may have been afraid to increase organic food prices too much for fear of pricing them out of the market. "Brands are trying to figure out ways to keep the price in check," Thyagarajan tells Axios.

Kovalcik also noted that, "The supply chain for organic products is more resilient against sudden disturbances, like market spikes or extreme weather and that makes our industry and our products less prone to major shocks."

While the prices of some organic products have jumped in recent months, the price gap between brand-name organic items and regular food increased month-over-month in December and January, according to DataWeave.

The bottom line is that organic food is no longer exclusive to the shelves of stores like Whole Foods and Trader Joe's—and that means it's no longer commanding the same price premium as it once did.

Food for Thought: Educating the Organic Mushroom Compost Story

RACHEL ROBERTS | President | American Mushroom Institute

We've all heard it: the pandemic got people gardening, growing their own food, and paying attention to their health—and that's the perfect recipe for developing the organics consumer. So, it's no surprise we are citing record high demand for organics throughout this issue. But all this love affair with the Earth, food, and growing organic comes with costlier production and often lower yield, compared with conventional growing. With shortages in labor and multiple inputs or constant disruption, it's even more costly.

There's a growing misconception from consumers who believe mushroom farms can control what is considered organic in their inputs. AMI fields calls often from members discussing demands from consumers about "what's in the compost." We answer this question by sharing all the recycled ag byproducts, how they break down not only the ingredients but any GMOs, toxins, and, depending on the compost, even PFAS (forever chemicals) that are dominating environmental headlines. However, the National Organics Standards Board (NOSB) seems to be getting nudged in the compost direction more and more.

AMI continues to fight regulatory overreach concerning organics, including a recent NOSB solicitation for input about whether to "prioritize" organic mushroom production. This past March, AMI partnered with International Fresh Produce Association to send a letter on proposed rulemaking, strongly stating that Mushroom Standards based on the NOSB recommendation should not be prioritized. Given that mushrooms are considered a specialty crop commodity that has been successfully applying organic crop standards for decades, rulemaking for organic mushroom production standards should not be considered an NOP priority, causing unnecessary, duplicative and potentially confusing compliance

standards. As longtime organic mushroom expert Tina Ellor, of Phillips Mushrooms, puts it: "It ain't broke, so don't try to "fix" it!"

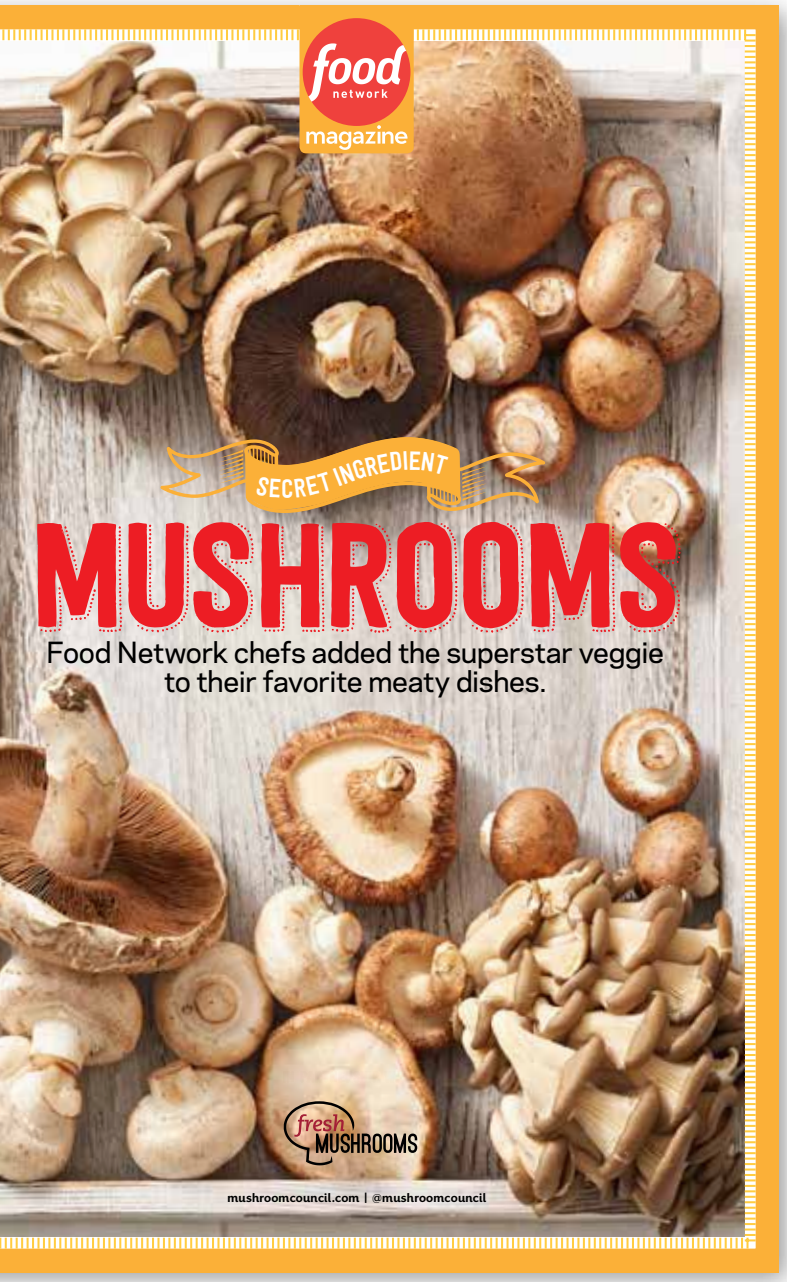
Regarding compost, if the NOSB recommended standards were adopted as written, this would severely limit the availability of organic mushrooms in the marketplace. Compost "produced in accordance with compost guidelines presented in 205.203 (c)(2)" would be rendered incapable of producing mushrooms. AMI explained to NOSB: "When mushroom compost is made, a succession of micro-organisms is grown under a rigorous and controlled time, temperature, aeration, and turning schedule to create the ideal nutrients for mushrooms. This includes properly creating the structure of the compost, the carbon to nitrogen ratio, and the turning of nitrogen into protein in the form of microbial bodies needed to consistently grow mushrooms." It's very challenging to explain to regulators that mushroom compost isn't just "made" from having produced mushrooms, but is made *to* produce mushrooms, and is therefore its own bedding material, distinct from other composts, while just as—if not more—beneficial once it has produced its mushrooms.

Additionally, AMI made its case currently not enough organic agricultural byproducts exist to supply even a fraction of the need for the volume of mushrooms produced in the U.S. The crop of mushrooms should not be singled out for this requirement when conventional agricultural byproducts can be used as mulch, for example. Mushrooms are not livestock, they should not be required to 'eat' only organic feed, as is required for organic livestock production. Growing mushrooms is closer to growing plants than feeding animals.

Mushroom compost sustainability benefits are well-known: the appeal of mushrooms is that they turn agricultural waste/byproducts into high quality protein, and their own byproduct sequesters carbon, regenerates soils, mitigates toxins, spills, PFAS, and revegetates acid mine drainage areas to highway construction sites. Mushrooms are also used as a canary in a coal mine for chemical contamination, as most chemicals will not grow normally in contaminated substrates.

AMI continues to broaden its fight for compost as a beneficial staple ingredient and byproduct on its own. As NOSB and more-so EPA continue to understand compost, they are asking more questions, and AMI is pushing for proactive campaigns to spread the good word.

Look for AMI's participation in May's Compost Month campaign: "Mushroom Compost: Regenerations!".



A Blended Partnership: Mushroom Council and Food Network

Building off a successful partnership from last year, Mushroom Council and Food Network are partnering again beginning this spring that puts the spotlight on the The Blend™.

Working with Mushroom Council the popular media outlet is educating home cooks and professionals about the benefits of The Blend™ and inviting Food Network audiences to give it a try in their kitchens for a chance to win their share of $20,000 in prizes.

Kicking off this month and continuing through September, the multi-media program with Food Network is one of the largest partnerships the Mushroom Council has ever embarked upon. Last year's collaboration earned more than 90 million impressions and received more than 1,300 Blended Burger recipe entries in its annual contest. For context, a similar partnership with Bon Appetit magazine reached in 2020 about 22 million impressions and about 500 recipe entries.

The Food Network collaboration is a strategic evolution for the Mushroom Council and the Blended Burger Project, which began more than 10 years ago, first reaching influential professional chefs with the Culinary Institute of America and the James Beard Foundation, and eventually targeting "foodie" consumers in partnership with Bon Appetit, before ultimately moving to a larger, mainstream audience with the Food Network.

The Blended Burger Project in 2022 with the Food Network will reach mass consumer and professional audiences with tactics similar to the inaugural 2021 partnership.

The Blended Burger Recipe Contest for consumers and foodservice, encouraging people nationwide to enter their own Blended Burger recipe at *FoodNetwork.com/blendedburgercontest*. The contest features two tracks: one for home cooks and one for professional chefs, recipe developers, or caterers. Each category will award $10,000 to the top recipe entry, and the winning recipes will be featured in the November issue of Food Network Magazine.

Blended Burger Contest Ad in May/June issue of Food Network magazine. Food Network Magazine will feature an eye-catching full-page contest announcement that shows how to make The Blend™ and invites readers to make their own creation and enter the contest.

The Blend™ Recipe Booklet and Online Recipe Resource at FoodNetwork.com. Food Network chefs custom-created a series of mushroom and meat blend recipes that demonstrate applications for The Blend™ in burgers and beyond. This collection of on-trend recipes includes new twists on classics like mushroom cheeseburger mac and cheese and mushroom-beef taco salad as well as globally inspired mushroom-lamb kofta and mushroom-beef picadillo. The recipes are collected into a special recipe pull-out booklet that is inserted into the magazine as well as on FoodNetwork.com to inspire readers both in print and online.

"How to Blend" video from celebrity chef Kardea Brown, star of the Food Network program "Delicious Miss Brown." Kardea Brown partnered with Mushroom Council as celebrity spokesperson for The Blend™ and Blended Burgers for the Food Network partnership last year, and enthusiastically joins in the effort again in 2022. This year, Brown shares her new Blended Burger recipe—"Karda Brown's Mushroom-Beef Smash Burgers"—which will be featured on the home page of Food Network's website as well as on its Facebook and Instagram channels and on Brown's own Instagram.

Digital Ads appearing on Food Network's websites and social media pages.

How Industry Can Take Part

Members of the mushroom industry can help spread the word to both home cooks and professionals to take part in the Blended Burger Project.

1.) Follow the Mushroom Council on social media (*@mushroomcouncil*) and share our posts promoting the campaign
2.) Email your contacts a link to the campaign page encouraging they take part: *FoodNetwork.com/blendedburgercontest*
3.) Email *Cheryl@mushroomcouncil.com* and request a link to social media graphics and other materials you can share throughout the summer.

These dinners are all made with a blend of ground meat and finely chopped mushrooms (any kind of mushrooms is fine). It's an easy way to get extra veggies on your plate!

"When I was growing up, my dad would make tacos once a week, and taco salad is still one of my favorite dinners. Using mushrooms in the mix is a great way to lighten it up."
—Jessica D'Ambrosio, recipe tester

MUSHROOM-BEEF TACO SALAD

ACTIVE: 45 min | TOTAL: 45 min | SERVES: 4

- 1 cup cherry tomatoes, diced
- ¼ red onion, finely diced
- 2 tablespoons fresh lime juice
- ¼ cup fresh cilantro, finely chopped, plus more for topping
- 3 tablespoons extra-virgin olive oil
- Kosher salt
- 1 yellow onion, chopped
- 3 cloves garlic, finely chopped
- 8 ounces ground beef
- 8 ounces maitake mushrooms, trimmed and finely chopped
- 1 tablespoon chili powder
- 1½ teaspoons ground cumin
- ½ teaspoon paprika
- ½ teaspoon garlic powder
- ½ teaspoon onion powder
- ½ teaspoon dried oregano
- Freshly ground pepper
- ⅓ cup tomato sauce
- 1 head romaine lettuce, chopped
- Black beans, crumbled queso blanco, sliced radishes, sliced avocado, and/or sour cream, for topping

1. Make the pico de gallo: Combine the tomatoes, red onion, lime juice, cilantro, 1 tablespoon olive oil and ¼ teaspoon salt in a small bowl; mix well.
2. Heat the remaining 2 tablespoons olive oil in a large nonstick skillet over medium-high heat. Add the yellow onion and cook, stirring occasionally, until softened, about 5 minutes. Add the garlic and cook until softened, about 1 more minute. Add the ground beef and mushrooms and cook, breaking up the meat as it cooks, until the beef is no longer pink, 3 to 5 minutes. Add the chili powder, cumin, paprika, garlic powder, onion powder, oregano, ¾ teaspoon salt and a few grinds of pepper. Cook, stirring, until combined and the spices are slightly toasted, about 2 minutes. Add the tomato sauce and stir to combine. Continue to cook until the sauce is fully absorbed and the mixture is almost dry, about 5 minutes. Remove from the heat.
3. Toss the lettuce with 2 tablespoons of the liquid from the pico de gallo in a large bowl. Divide among small bowls; top with the beef-mushroom mixture and more pico de gallo. Add beans, cheese, radishes, avocado, cilantro and/or sour cream.

IN PARTNERSHIP WITH Fresh MUSHROOMS

PHOTOS: MIKE GARTEN; FOOD STYLING: CHRISTINE ALBANO; PROP STYLING: CHRISTINA LANE

MUSHROOM-LAMB KOFTA

ACTIVE: 35 min | TOTAL: 40 min | SERVES: 4

- 2 tablespoons extra-virgin olive oil, plus more for the grill
- 6 ounces oyster mushrooms, trimmed and very finely chopped
- Kosher salt and freshly ground pepper
- 1 pound ground lamb (or use beef)
- ¼ cup finely chopped fresh parsley
- ½ small onion, grated and squeezed dry
- 1 clove garlic, finely grated
- 1 teaspoon ground cumin
- ½ teaspoon ground sumac
- ½ teaspoon dried oregano
- Hummus, baba ghanoush, warmed pita, tabbouleh and/or plain yogurt, for serving

1. Heat a medium nonstick skillet over medium-high heat. Add the olive oil and heat until shimmering. Add the mushrooms, season with salt and pepper and cook, stirring occasionally, until tender and any liquid released from the mushrooms has cooked off, 4 to 5 minutes. Transfer to a plate and refrigerate until cooled.
2. Soak twelve 6-inch wooden skewers in water (or use metal skewers). Preheat a grill to medium high. Combine the lamb, parsley, onion, garlic, cumin, sumac, oregano, 1½ teaspoons salt and a few grinds of pepper in a medium bowl. Add the cooled mushrooms and mix well with your hands. Divide the mixture into 12 roughly shaped ovals. Press each oval onto a skewer and form into a ½-inch-thick rectangular log (about 4 inches long and 1 inch wide) around the skewer. Transfer to a plate or small baking sheet.
3. Brush the grill lightly with olive oil. Grill the skewers, turning once, until the meat is marked and just cooked through, about 2 minutes per side. Serve with hummus, baba ghanoush, pita, tabbouleh and/or yogurt.

"These kebabs are traditionally made with ground lamb or beef, and they're loaded with meaty, juicy flavor. In this version, rich oyster mushrooms add even more flavor and juiciness."
—Steve Jackson, test kitchen director

FOOD NETWORK MAGAZINE • MAY/JUNE 2022

Facts and Figures / IMPORT REPORT

73% of consumers occasionally opt for plant protein instead of meat and poultry. The most popular protein alternatives are:
44% beans/peas/lentils
41% leafy greens
36% mushrooms
(Power of Produce, 2022)

In March, inflation reached a 40-year-high and consumers are extremely aware. **92%** of consumers believe food prices are somewhat or a lot higher than last year, of whom **95%** are concerned about it.
(IRI, March 2022)

The price per unit across all foods and beverages increased an average of **10.3%** in March. Fresh produce prices are also up from last year, at **+10.1%**, which is right in line with total food and beverages.
(IRI, March 2022)

MUSHROOM IMPORT REPORT | FEBRUARY 2022

Compiled from the Department of Commerce Trade Data Services / Washington, D.C.

IMPORT CLASSIFICATION	FEB 2022 KILOGRAMS	2022 YTD KILOGRAMS	FEB 2021 KILOGRAMS	2021 YTD KILOGRAMS
Fresh, *Agaricus*	7,230,032	14,761,660	6,026,993	12,724,184
Fresh, NESOI*	0	0	664,050	1,507,291
Total Classified by Fresh Weight	**7,230,032**	**14,761,660**	**6,691,043**	**14,231,475**
Whole < 225 g	57,631	119,147	63,017	140,593
Sliced < 225 g	355,245	804,611	550,849	1,080,047
NESOI* < 225 g	1,037,621	2,166,118	1,197,546	2,623,201
Whole > 225 g	518,540	1,077,017	352,715	627,102
Sliced > 225 g	458,759	963,420	292,149	674,272
NESOI* > 225 g	1,565,498	2,703,911	960,869	1,929,026
Total Classified by Container Weight				
< 225 g	1,450,497	3,089,876	1,811,412	3,843,841
> 225 g	2,542,797	4,744,348	1,605,733	3,230,400
Total by Container Weight:	**3,993,294**	**7,834,224**	**3,417,145**	**7,074,241**

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MUSHROOM NEWS
OFFICIAL PUBLICATION OF AMERICAN MUSHROOM INSTITUTE

Volume 9—Number 5 KENNETT SQUARE, PENNSYLVANIA May, 1961

AMI Is Host to Food Editors

The American Mushroom Institute was host to the press, TV and radio in New York City on March 22. The luncheon was held at The Hemisphere Club, atop the Rockefeller Time and Life Tower. This is Manhattan's newest and most elegant restaurant, 48 floors above the teeming city. Our setting, the Gold Room, overlooking the city, the Hudson and the Statue of Liberty was perfection itself. The day was so clear and sunny that even seasoned New Yorkers kept drifting to the windows for an ever new and glorious view. Our New York Agency, The Robert Kornfeld Associates Inc., arranged the luncheon and all details, even to selection of the weather, they say! Could be, for the next day it poured down rain from morning 'till night. The luncheon was a triumph of the culinary art from the elaborate Hors d'oeuvre table, starring mushrooms cooked as eaten, down to the elegant coffee service for each table. Giant mushrooms, produced especially for this event, by our own growers, Anthony (Skip) Pannell and his father at Toughkenamon, Pa., were the high peak of the entire menu. One mammoth mushroom, as large as a saucer, served each guest. Executive chef, Albert Stockley, of The Hemisphere, Four Seasons, The Twelve Caesars and La Fonda, created this serving for the occasion. He combined melt - in - your - mouth veal slices, truffles and an inspired sauce to compliment these beautiful mushrooms. It was superb. Our rather hard-to-please food gal, Susan Adams, reports that neither one of them had ever prepared these giants before. And it will intrigue the women who read our News to know that several tests were made and discarded—and they were both still in the huge kitchens testing and tasting at 10:30 the night before the party.

(Suzie's comment was that it isn't just the homemaker who tears her hair before a party, and, she doesn't have a staff of helpers, either.)

But, the entire group of food critics saluted Albert for his creation. He graciously sauteed fresh mushrooms (supplied by the American Mushroom Institute) all during the cocktail hour. He is an advocate of BRIEF cooking for all mushroom servings. The delicate hot caps were sauteed just five minutes in bubbling butter, then lemon was added, a dusting of salt — and how they did vanish! Delicious.

Each woman guest was given a spring time small corsage of white hyacinth and sweetheart rose bud. Later in the week each

(Continued on Page 3)

Albert Stockley, executive chef of Hemisphere Club, Four Seasons and Twelve Caesars, really gave his talents and long hours to the challenge of creating a culinary triumph for our American Mushroom Institute Luncheon. Stockley, a Swiss chef, French trained, is a strong advocate of cooking mushrooms — never more than ten minutes — and even less for these luscious butter sauteed mushrooms he's preparing for guests. He placed them round side down in bubbling butter to brown, turned and cooked in all about eight minutes. He added a bit of fresh lemon juice, a dash of salt and they were passed hot, eaten with picks. On the cocktail table our golden mushroom award held the spotlight. This was the 1960 award, presented to C. A. Thomas, who has contributed much to the Institute throughout the years.

9 New Members Accepted by AMI

Nine new members were accepted by the board of directors of the American Mushroom Institue. They are:

Schuibbeo Brothers
239 Evergreen St.
West Grove, Pa.

John W. Kelleher
Avondale, Pa.

C. Dinon
Schoolhouse Road
Kennett Square, Pa.

Raymond DePaoli
Kennett Square, Pa.

William Bye
Avondale, Pa.

C. E. Shatley
R.D. 1
West Grove, Pa.

Victor E. Leto
McFarland Rd.
Kennett Square, Pa.

Roger D. Blevins
R.D. 1
Oxford, Pa.

Ross H. Melrath
254 Maple Street
Oxford, Pa.

AMI Is Host

(Continued from Page 1)

guest was sent a basket of our best mushrooms from Kennett Square together with a gift bag containing a special shipment by air of California's new fresh asparagus, a split of champagne, several cans of mushrooms, frozen chives — and our special mushroom recipe booklet with the new release on Equivalents for canned and fresh mushrooms.

We understand that our agency chalks this event off with the pleased sigh of no errors. Nice!

Food editors invited were:

Clementine Paddleford, The New York Herald Tribune

Mr. Craig Claiborne, The New York Times**

Miss Mercedes Bates, Food Editors McCalls Magazine

Miss Dorothy Marsh, Good Housekeeping Magazine

Miss Louella Shouer, Ladies Home Journal

Miss June Towne, American Home Magazine

Blanche Stover, Parents Magazine

Mr. and Mrs. Gaynor Maddox, NEA Syndicate**

Marion McCarroll, King Features Syndicate

Joan O'Sullivan, King Features Syndicate

Cecily Brownstone, Associated Press**

Mabel Stegner, Food Consultant

Dr. Ida Bailey Allen, Iriquois Hotel, Food Consultant**

Mr. Charles Permmac, Assistant to Dr. Allen

Miss Grace White, Family Circle

Mr. and Mrs. Al McCann, WOR Radio, New York City

Miss Alice Petersen, The News

Miss Agnes Murphy, The Post

Miss Glenna McGinnis, Woman's Day

Mr. Galen Drake, WOR Radio New York City

Miss Eleanor Crook, The American Weekly**

Miss Demetria Taylor, Parade**

Miss Isabel McGovern, The Herald Tribune

Myra Waldo, Cook Book Writer

Sigana Earle, Seventeen Magazine

Marilyn Kaytor, Look Magazine**

Miss Mary Haman, Life Magazine**

Miss Erna Nibley, The Journal American**

Miss Adele Fletcher, American Weekly, Women's Feature Editor

Miss Nan Ickeringill, The New York Times

The names with ** following them were not in attendance at the luncheon. Most of them sent an assistant.

Our effective replica of a mushroom growing house was displayed near the cocktail tables at our recent luncheon given by the American Mushroom Institute, for members of the press, radio and TV. The luncheon was held March 22 at The Hemisphere Club, atop the Rockefeller Time and Life Tower. Canners products, leaflets and literature were piled around the tiny house so that guests might help themselves.

A group of newspaper and radio and TV editors enjoying the cocktail hour at American Mushroom Institute Luncheon, held at The Hemisphere Club, atop Rockefeller Time and Life Tower, March 22. Albert Stockley and his assistant are busy sauteing fresh mushrooms for the critics. However, no criticism was expressed — only extravagant approval. These mushrooms were sauteed lightly for only eight minutes and a dash of lemon with a sprinkle of salt were added, as they were passed out, to vanish as quickly as cooked. Standing near, ready for the next bite, is our good friend, Al McCann of WOR Radio NYC. Seated, facing us is Clementine Paddleford, of The Herald Tribune and next to her is our own Mrs. Walter Gmuer. To her left is Louella Shouer, food editor of The Ladies Home Journal. On Louella's left is Myra Waldo, cook book writer. Across, Isabel McGovern, Herald Tribune, is answering Charles Permmac, associate of Dr. Ida Bailey Allen.

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HELP WANTED
Giorgi Mushroom Company, a large, integrated farm in Berks County, PA, with Phase I bunkers and Phase II tunnels, is seeking applicants for grower and management positions. Ideal candidates would have both growing experience and a strong management background. We offer competitive salaries and a comprehensive benefits package. Applicants may forward a letter of interest and resume to Joe Caldwell, Giorgi Mushroom Co., P.O. Box 96, Temple, PA 19560 or e-mail them to jcaldwell@giorgimush.com.

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