

United States Department of Agriculture
Agricultural Marketing Service | National Organic Program
Document Cover Sheet

<https://www.ams.usda.gov/rules-regulations/organic/national-list/petitioned>

Document Type:

National List Petition or Petition Update

A petition is a request to amend the USDA National Organic Program's National List of Allowed and Prohibited Substances (National List).

Any person may submit a petition to have a substance evaluated by the National Organic Standards Board (7 CFR 205.607(a)).

Guidelines for submitting a petition are available in the NOP Handbook as NOP 3011, National List Petition Guidelines.

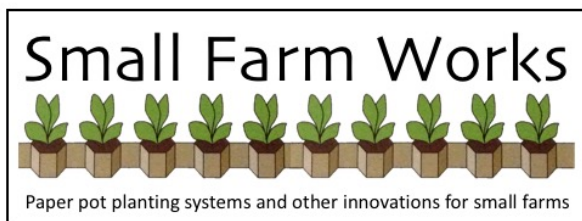
Petitions are posted for the public on the NOP website for Petitioned Substances.

Technical Report

A technical report is developed in response to a petition to amend the National List. Reports are also developed to assist in the review of substances that are already on the National List.

Technical reports are completed by third-party contractors and are available to the public on the NOP website for Petitioned Substances.

Contractor names and dates completed are available in the report.



Small Farm Works, LLC
N1749 Yerges Road
Reeseville, WI 53579
www.smallfarmworks.com
paperchainpots@gmail.com

August 6, 2018

Michelle Arsenault
USDA-AMS-NOP
1400 Independence Avenue, SW,
Room 2648, Ag Stop 0268,
Washington, DC 20250

Dear NOSB members,

Please accept the attached, revised petition for consideration. This petition is for the addition of paper planting pots to the National List. A version of this petition was submitted by the Midwest Organic Service Association (MOSA) earlier this year but was sent back with requests for further detail and clarifications. The original petition was more generic but because the NOP requests for more information were specific to the paper chain pot system sold by Small Farm Works, we are now the sponsoring petitioner.

As described in the original petition's cover letter, we find ourselves in a situation where generally accepted practices and materials are no longer in line with NOP regulations. Due to questions regarding the popular paper pot transplanting system that we represent, the NOP clarified in March that the use of paper as a plant pot is not an approved application for paper and that the current listings for paper do not allow for the addition of synthetics not on the National List to be used during manufacture of plant pots. This clarification means that the popular transplanting system *as well as* any other paper plant pots or plant pots containing paper as an ingredient will no longer be allowed after the 2018 growing season. We believe that paper should be allowed for use as a plant pot and also that the popular paper pot transplanting system be allowed. Small Farm Works, the North American representative for the Nitten paper pot transplanting system, and organic certifiers have been working together to solve this unfortunate situation.

Another factor considered when drafting this petition was the clarification on the generic listing for Newspaper or Other Recycled Paper published recently in NOP guidance 5034-1
<https://www.ams.usda.gov/sites/default/files/media/Newspaper%20TR%20Final%2001%2011%2017.pdf>

The guidance specifically states, "*Newspaper or Other Recycled Paper - Synthetic - Includes newspaper and other recycled paper such as cardboard, without glossy or colored inks. **Does not***

include paper that is not recycled (i.e., virgin paper). Permitted as mulch or as a compost feedstock. Reference: 7 CFR 205.601(b) & 205.601(c). Emphasis added.

Both the recent NOP clarification and the publication of 5034-1 have resulted in issues around approving the paper pot transplanting system. These planting pots in particular are made from paper that is not “recycled” and includes adhesive additives in the pot manufacture. Additives used are included in other allowed paper products. It seems sound, logical and practical to allow for paper to be used in crop production as a mulch or feedstock in compost to also be used as a plant pot. The “final destination” of the paper is the same: it ends up in the soil. Furthermore, paper is still paper regardless of the source, so we are petitioning for *non-recycled paper* to be allowed for plant pots. The generic material is the same: it’s paper.

The pots in the Nitten paper chain pot system are made from non-bleached kraft pulp and adhesives. The adhesives used are adhesives that are included in the manufacture of other paper products that are already allowed under “other recycled paper.” This petition is also for *other paper* and comes with the request to consider additives used in the typical manufacture of paper products as acceptable materials to use in the manufacture of paper pots. We ask the NOSB to consider adding the following to the National List section 205.601 under (o) production aids.

Plant pot or growing container - hemp paper or other paper, without glossy or colored inks.

Further, and this is of vital importance, we are requesting that the timeline that the NOP set for paper pots to not be allowed on certified organic farms be pushed back from January 2019 to at least January 2020. The NOP ruling came in March of 2018 and the petition process to add materials to the National List takes at least 18 months. Given that certified organic farmers in the U.S. have been using these paper pots with approval from many different certification agencies for as many as 12 years, there needs to be time to allow the petition process to unfold before removing them from use.

Small scale farmers have been using the paper pot system for many years and it has become a vitally important tool that reduces labor time and costs in addition to boosting productivity, efficiency and profitability. The system is unique and it will be hard on growers to revert to more costly and difficult transplanting methods. In addition, many farmers using the paper chain pot system will have inventory of unused paper pots on hand in January of 2019. Growers should be able to use that inventory in 2019.

The added time we are requesting will allow Nitten, the Japanese manufacturer of the paper chain pot system, to make the paper pots even more environmentally friendly as they are in the process of developing a new paper pot product specifically for the organic farming community. The new line of paper pot products (which are the focus of this petition) will replace one of the synthetic ingredients in the paper with a natural substitute: hemp fiber.

The paper pot system has expanded dramatically in recent years, especially on organic farms, and Nitten hopes to one-day have a paper pot manufacturing plant in the U.S. Already, we at Small Farm Works have been shifting production on most of the components of the system to domestic sources. The hand-pulled transplanters, paper pot seeding tools, and other components of the system used to be imported from Japan but are now being made by partnering businesses in Wisconsin. We are proud to be helping to create jobs in our local community as we work to help small and mid-sized farms become more profitable and enjoyable through the use of innovative and appropriate technologies such as the paper chain pot planting system.

Thank you for considering this petition and helping us advance organic agriculture and ensure that hard-working farmers can be profitable and successful while enhancing the natural resources on which agriculture depends.

Sincerely,

A handwritten signature in cursive script that reads "John Hendrickson".

John Hendrickson
Owner, Small Farm Works

Petition for hemp paper or other paper, without glossy or colored inks, as a plant pot or growing container.

This petition has been completed using [NOP 3011 National List Petition Guidelines](#)

Please consider the following petition for the addition of hemp paper or other paper, without glossy or colored inks to the National List for use as a plant pot or growing container.

Questions can be directed to John Hendrickson, Small Farm Works paperchainpots@gmail.com (North American Representative for Nitten paper chain pot transplanting systems).

4.2 Items to include:

Item A1: National List Section - Section 205.601(o) production aids. Petition to add *(ii) Plant pot or growing container made from hemp paper or other paper, without glossy or colored inks.*

Item A2: OFPA category- Production aids

Item A3: Inert Ingredients- N/A

Item B1: Substance Name - Plant pot or growing container made from hemp paper or other paper, without glossy or colored inks.

Item B2: Petitioner and Manufacturer information -

John Hendrickson, Small Farm Works
N1749 Yerges Road, Reeseville, Wisconsin, 53579
Phone: 608-620-5804
www.smallfarmworks.com

John Hendrickson, of Small Farm Works, is the North American Representative for Nitten paper chain pot systems, as well as a small scale farmer who speaks for the many growers who use paper pots.

The manufacturer of the paper chain pot system is:
Nippon Sugar Beet Manufacturing Company (Nitten)
No. 53 Dai 2 sen, Shimizu, Shimizu-cho, Kamikawa-gun
Hokkaido, 089-0103 Japan
Phone: +81-156-62-2024.

Technical support by Jackie DeMinter, MOSA Certification Policy Manager
122 W. Jefferson St. / PO Box 821
Viroqua, WI 54665
608-637-2526

Item B3: Intended or Current use -

Paper pots are used by vegetable, herb and flower farms as an alternative to plastic planting pots and trays for growing transplants. In addition, one type of paper pot, the paper chain pots made by Nitten and featured in this petition, are used as a means to make transplanting easier, quicker, and more accurate. Paper chain pots are a connected series of paper pots that allow transplants to be planted without being handled by workers using a very simple hand-pulled transplanter. The system is used in most cases for closely spaced crops such as onions, leeks, scallions, shallots, baby lettuce heads, salad greens, herbs, kohlrabi, many types of cut flowers, and others crops. The paper chain pot system facilitates the transplanting of crops not ordinarily transplanted including beets, turnips, spinach, peas, beans, corn, cilantro, and others. By germinating seeds in flats and transplanting, growers reduce the time and input costs associated with weed cultivation as well as enhancing yields and profitability.

Item B4: Intended Activities and Application Rate -

Paper pots are used by vegetable, herb and flower farms as an alternative to plastic planting pots and trays for growing transplants. Typically, paper pots (whether they be homemade paper pots from newspaper or purchased paper pots) are planted in the soil along with the transplant. The paper decomposes over time.

In the case of the Nitten paper chain pot system, there are different types of paper chains that result in different in-row plant spacing in the field and these paper pots utilize different amounts of paper. The longest paper chains are 131 feet long while the shortest are 46 feet long. The most common paper pots (99% of sales) are 1.25 inches deep.

In addition to paper, the Nitten paper chain pots involve adhesives which are discussed in detail in section **B5: Manufacturing Process**. The amount of adhesive used in the manufacture of the paper pots is .06 ounces of insoluble adhesive and from 0.25 to 0.97 ounces of water soluble adhesive (depending on the length of the paper chain).

As these numbers suggest, each paper chain represents a small amount of paper and a very small amount adhesive. Usage rates on a working farm vary considerably based on the crops grown, bed spacing, and row spacing used. Farms using the system vary in scale from less than 1 acre to 20+ acres. Paper chain pots are not suitable for all vegetable, herb, and flower crops (based on row spacing and transplant size), so farms do not use them exclusively for all crops. As a result, only a portion of a diversified vegetable farmer's fields would be planted using paper chain pots each year. (The most common crops planted with the paper chain pots include onions (and other alliums), spinach, beets, lettuce, and other salad greens. The system is NOT used for vine crops, tomatoes, peppers, or other widely spaced crops.)

If paper pots were used exclusively, usage rates might vary from 30 to 100 pounds of paper used per acre. In practice, usage rates are usually less or at the lower end of this range. The amount of adhesive based on these amounts of paper pots is 0.5 to 3.5 lbs per acre. This

represents the amount of water insoluble adhesive because the water-soluble adhesive would not enter the field as it would be washed out of the paper while the transplants were in a greenhouse or other propagation area.

As a practical matter, if a farm is multi-cropping (turning beds over to a succession of crops through a single growing season), paper pots are almost always removed after each crop. The reason for this is that, if left in beds, the strips and scraps of paper could catch and collect on the parts of a transplanter, seeder, or other farm tool) and cause them to not operate effectively. Removing paper chains after a crop is common practice when the paper chain pots are used in hoopouses or in the field if an area is going to be cropped more than once in a given year. Removal is done either by hand where practical or with rakes.

If a single crop is grown in a given area, the paper is usually left in the field to decompose. Decomposition rates are obviously highly dependent on soil type, climate, moisture, pH, tillage practices, depth at which the paper pots were planted, and the level of biological activity in a given soil or farm field. Typically, some paper chain pot residue is visible until the following spring tillage season. After that soil is tilled for the next crop, the paper is visibly absent.

NOTE: the observations made in the above paragraph are based on the paper chain pots that have been being used for the past 12 years on farms in North America. The paper chain pot manufacturer is in the process of switching from a paper made with a synthetic fiber to a hemp fiber. The hemp paper chain pots will decompose more readily and rapidly.

Item B5: Manufacturing Process -

While the below provides a summary of valuable information pertaining to the manufacture of paper and the paper chain pots, please refer to the [2017 Technical Evaluation Report](#) on file for the best description of the manufacturing processes of paper, common additives, and the general environmental evaluation of paper from the perspective of organic compliance.

Nitten paper chain pots are made from a kraft pulp paper. The manufacturing process for kraft pulp paper is described by the Technical Evaluation report (lines 389-384) as follows: “The Kraft process has become the prevalent technology for pulping (Hubbe 2005). Wood chips are cooked in an alkaline solution, usually involving sodium hydroxide and sodium sulfide or polysulfide (Hagiopol and Johnston 2012). The lignin then undergoes a series of reactions that break it down into dissolved carbohydrates. The pulping, defibration and refining of the coarse pulps are wet processes. The pulps are then fractionated into different streams for different products, such as corrugated cardboard, Kraft paper, newsprint and office paper.”

As detailed in the 2017 (and prior) Technical Evaluation Reports, paper products and paper manufacturing typically involves the use or addition of a wide variety of materials and additives. Two important types of additives for the manufacture of paper include (1) wet strengthening agents and (2) adhesives. In the case of Nitten’s paper pots (including the paper chain pots), the wet paper strengthening agents in the kraft pulp paper used by Nitten to make paper pots

are magnesium chloride and urea resin. To be clear, these additives are a part of the paper manufacturing process, done by the paper manufacturer, NOT by Nitten, the manufacturer of the paper pot products that are the focus of this petition.

Magnesium chloride is a salt that is most often made from brine via solar evaporation of seawater. It is used in a variety of industries including nutraceutical and pharmaceutical applications, cuisine (tofu and baby formula for example), as well as in gardening and horticulture as a means to provide magnesium to plants. It is used as a catalyst to cure the urea resin to improve the wet strength property of paper. Magnesium chloride derived from seawater is on the National List at 205.605(b).

The other material used to increase the wet strength property of the paper used to make the paper pots is urea resin. Urea is listed as a known, common strengthening additive in paper in the 2017 Technical Review (lines 270-276).

The petitioner's reading of the 2006 and 2017 Technical Reviews indicates that that paper, including recycled paper, is likely (to the point of a guarantee) to have any number of additional additives, adhesives, strengtheners, inks, and dyes. As such, the current allowance for paper to be used as mulch or as a feedstock in compost means that all the additional substances that are commonly found in paper are already a known, allowable set of waste-stream materials that have been deemed 'acceptable' on organic farms through to use of recycled paper. Very little 'paper' is only cellulose pulp as it seems nearly all paper is likely to have additional ingredients. Therefore, the current allowance for newspaper and other recycled paper to be used as a mulch or compost feedstock that can decompose into the soil, could have been treated with urea and magnesium chloride.

As noted in the 2017 Technical Review, "Modern paper products also use a wide variety of synthetic polymers and co-polymers that change the functionality and performance of the paper compared with simple cellulose-starch blends (Auhorn 2012; Hagiopol and Johnston 2012)." (lines 51-53) Historically, the paper chain pots made by Nitten have included a synthetic fiber, vinylon, to enhance the strength and durability of the paper in order for it to be functional as a plant pot and transplant aid. In order to make the paper chain pots even more environmentally friendly, Nitten has begun the process to manufacture a new paper chain pot for the organic farming community using a kraft pulp paper augmented with hemp fiber instead of synthetic fiber. The kraft pulp paper will be approximately 75% cellulose pulp and 25% hemp. A recycled paper product with hemp fiber is not currently available.

Nitten buys kraft pulp paper made with the two materials mentioned above (Magnesium Chloride and urea) and uses it to manufacture their paper pots. They have certified in writing that their paper chain pots and other products sold by Small Farm Works in the North American market DO NOT contain any fungicides, preservatives, or fumigants. Further, they testify that the ingredients used in the paper chain pots are not irradiated, do not contain GMO plant material, and are produced without the use of sewage sludge.

The following is an explanation of the materials used in the manufacture of the paper pot products marketed and sold by Small Farm Works into the North American market. The only ingredients added by Nitten to the Kraft pulp paper are adhesives. In the case of paper chain pots, there are two types of adhesives used to manufacture the paper chains: water soluble and water insoluble. The adhesive that dissolves in water allows the paper chain to unfurl when transplanting. This adhesive completely dissolves and washes out while the transplants are being grown prior to transplanting. The adhesives that do not dissolve keep the paper cells intact.

There are three different adhesives used in Nitten paper chain pots: vinyl-acetate resin (water soluble), ethylene-vinyl-acetate resin (water insoluble), and acrylic acid ester copolymer (water insoluble). These adhesives are from synthetic sources but are non-toxic and decompose into carbon, hydrogen, and oxygen. Ethylene vinyl acetate resin is mentioned in the 2017 Technical Review as being a very common adhesive found in paper and paper products (lines 199-200). Many adhesives are proprietary so are not listed in the Technical Review but are certain to be found in a wide variety of paper and paper products, both virgin and recycled (lines 187-196).

The petitioners do not have access to information about additives and adhesives used in other paper pots or other paper products used in agriculture but the Technical Review lists many different types of additives and adhesives that are common in the manufacture of paper products. The petitioner's conclusion after reading the Technical Review is that paper (INCLUDING recycled paper) contains a very diverse array of materials and additives. This is an important point: *the additives and adhesives used in the paper pots have been previously allowed under the other listings of paper on the National List for other, nearly-identical uses.*

Item B6: Ancillary Substances - N/A

Item B7: Previous Reviews - This listing would be similar to the "newspaper or other recycled paper" listings allowed for compost feedstock and mulch. Use of paper as a plant pot is mentioned in the 2017 Technical Evaluation Report as a common use (line 245-246). The report specifically states, *"Specific Uses of the Substance: Newspaper and other recycled paper are used as mulches to suppress weeds, retain moisture, moderate soil temperatures, and increase soil organic matter. They are also used as compost feedstocks, as plantable pots for vegetable starts, and as casings for mushroom beds."*

Many organic certifiers have approved this substance previously under the rationale that since paper for mulch and compost feedstock is allowed, that a paper pot is similar so should be accepted as well. Further, as the adhesives used are found in other paper products, it was assumed they would be acceptable for paper pots.

Item B8: Regulatory Authority - We do not believe there is any regulation of this material for the proposed use.

Item B9: CAS and Product Labels -

Ingredients used in the manufacture of the pots:

Hemp paper or other paper, without glossy or colored inks (CAS# 65996-61-4 is for Cellulose Pulp. We could not find a CAS number for paper containing hemp or for hemp fiber.)

Paper Additives (ingredients in the paper added by the paper manufacturer during the paper-making process):

Magnesium chloride (CAS# 7786-30-3) and DMDHEU (dimethylol dihydroxy ethylene urea) (CAS# 1854-26-8)

Three different adhesives are used in Nitten paper chain pots (added by Nitten to make paper pots:

ethylene-vinyl-acetate resin (CAS# 24937-78-8), vinyl-acetate resin (CAS # 9003-20-7), and acrylic acid ester copolymer CAS# 58152-79-7).

Item B10: Physical and Chemical Properties - The general physical and chemical properties of paper are listed in Table 1 of the 2017 Technical Report (line 230). Paper is essentially a form and source of carbon and is insoluble and non-ionic. Paper, and the additives used in Nitten's paper pots, are not toxic. The adhesives used are inert so should not interact with substances in the soil or other substances used by organic farmers. All components of the Nitten paper pots biodegrade so should not persist or accumulate in the soil. Environmental concerns associated with the manufacture of paper are described in the 2017 Technical report and relate primarily to logging (lines 625-628), pollution and waste from paper making plants (lines 529-549), and the glossy coatings, dyes, and inks sometimes applied to paper (lines 575-577, 615-618, 635-641). The latter is not relevant as the paper product being petitioned does not involve the use of gloss, dye, and inks.

Item B11: Safety Information - According to the 2017 Technical Report, the cellulosic fiber portion of paper is not biologically active and there is no evidence to suggest adverse environmental or human health effects from the application of paper (lines 573-575). Indeed, research has shown not only benign but positive impacts and associations with some soil organisms based on the use of paper as a mulch or compost feedstock (2017 Technical Review, lines 593-606). The biggest issue with paper appears to be with glossy paper and colored inks (2017 Technical Review, lines 614 and 618). The paper pots made by Nitten do not include gloss or any ink on the paper that is eventually planted.

We are not aware of a MSDS for the paper pots themselves. We also are unable to obtain a MSDS for the specific paper used in the manufacture of the paper pots.

Item B12: Research Information - Research relevant to the petition on the petitioned substance does not exist.

Item B13A: Petition Justification Statement -

As noted by Johanna Mirenda (formerly of OMRI), “Newspaper and other recycled paper without glossy or colored inks are currently allowed in certified organic crop production as mulch for weed control and as a compost feedstock. These types of papers, considered to be “synthetic” substances, were granted an exception to be allowed in organic production when the National Organic Program (NOP) regulations were first implemented. The National Organic Standards Board (NOSB) has affirmed the allowance for these types of paper during subsequent periodic “Sunset” Reviews” (Mirenda, 2017). Furthermore, although there are many natural alternatives available for mulching and composting, paper and paper products are effective, widely available, and they help reduce agriculture’s reliance on plastics.

The recent clarification by the NOP that paper pots are technically not allowed because previous allowances only listed paper for use as a mulch or as a feedstock in compost, necessitates a separate listing to align regulation with current practice. Many certifiers have been allowing other types of paper pots (purchased and home-made) for decades. Because many certifiers have allowed the popular Nitten paper chain pot system for many years now (as many as 12), it is further necessary to clarify that the adhesives and other additives used in other allowed paper products are also allowed for use in the manufacture of paper pots. In addition, paper pots from *any* source of paper have been commonly allowed for use in organic production. As such, paper for pots may not always have been from recycled paper in the past.

This petition requests the use of a non-recycled (virgin) paper product. The current allowance of paper on organic farms restricts use to “newsprint and other recycled paper.” While it is laudable to divert paper from the wastestream, recycled paper is not a completely benign process in terms of the source material, the materials used in the manufacturing process, energy and water use, and the waste products from recycled paper manufacturing (See 2006 Technical review, lines 206-210 and 2017 Technical Review, lines 402-415, 442-456, and 498-503). Indeed, recycled paper manufacturing actually increases the amount of materials, water, and energy used to produce paper products because it (by default) adds additional uses of energy, water and chemicals. As a practical matter, Nitten is currently unable to source a recycled paper product that includes hemp fiber that is suitable for their needs.

Nitten’s paper pots are currently being used on small farms across the United States and are having extremely significant impacts on farm efficiency and profitability because the system simultaneously reduces labor costs and increases productivity. Time spent transplanting by farmers and farm workers can be reduced dramatically. The type of labor also changes as the paper chain pot planting system allows workers to transplant standing upright rather than bent over or on their knees. Productivity and efficiency is improved because transplanting in the paper chain pots allows growers to get more uniform stands, get a jump on weeds, and turn beds over to a new crop more quickly and easily. In addition, the paper chain pot system allows growers to quickly and easily transplant crops normally seeded directly into the soil such as beets, turnips, spinach, peas, corn, and beans. By transplanting these crops, growers get better germination, better stands in the field, more precise row spacing, and productivity and

profitability is enhanced because growers can extend their season, get a jump on weeds, and invest less labor.

The synthetic adhesives in the paper chain pots are the only currently available option to make the paper chains. Although synthetic, the materials are non-toxic and do decompose in the soil over time. Overall, the paper pots enable farmers to reduce their reliance on synthetics in the following ways:

- Paper chain pots allow growers to use less plastics in the production of transplants. Vegetable, flower and herb farms currently rely heavily on flimsy “1020” plastic cell trays that frequently do not last very long and end up in landfills.
- While most “mechanical” transplanting systems rely on tractors, the paper chain pot planting system relies on a hand-pulled transplanter, reducing fossil fuel consumption.
- The paper chain pot system allows growers to transplant crops that might otherwise be direct seeded and get a jump on the weeds which reduces the number of cultivation passes required to bring a crop from seed to harvest.
- The paper chain pot system helps growers achieve superior, uniform, closely-spaced stands of vegetable crops with one possible outcome of being able to cultivate less land while achieving similar yields and income.

Many growers rely on the Nitten paper chain pot system and we believe significant disruption and hardship will be caused by not allowing it. Compared to other materials and modes of growing and transplanting crops, paper pots seem a very benign input on organic farms compared to things like plastic mulch and the many other synthetics that have been added to the National List. Nitten’s paper pot planting systems offer small scale growers an incredible benefit and advantage compared to traditional methods of transplanting. It allows them to reach planting accuracy and efficiency levels normally only achievable by very large scale growers through the use of expensive and energy consumptive tractor-mounted transplanters.

Finally, we urge the NOP to push back the 2019 date for not allowing the paper pots to be used on certified organic farms to 2020 if not further. Given that the NOP announcement was made in March of 2018 and it takes as many as 18 months to get a material added to the National List, it seems reasonable for the timeline to allow for the petition process and National Listing process to unfold and not take away this vitally important transplanting system that certified organic farmers have been using with permission from many different certifiers for as long as 12 years.

Item B14: References -

[2017 Technical Evaluation Report](#)

[NOP 5034-1 Guidance: Materials in Organic Crop Production.](#)

[Technical Evaluation Report \(2017\) \(PDF\)](#)

[Technical Evaluation Report \(2006\) \(PDF\)](#)

Citations:

Johanna Mirenda. 2017. "Newspaper and Other Recycled Paper" Guest Post on Rodale Institute *Dig Deeper* blog. July 11, 2017. Rodale Institute.

<https://rodaleinstitute.org/dig-deeper/page/6/>

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