

SOUND AGRICULTURAL PRACTICE

Opinion Number 13-2

SUBJECT: Request for an opinion pursuant to Section 308 of the Agriculture and Markets Law as to whether a certain agricultural practice conducted by James Ketchuck in the Town of Owego, Tioga County is sound.

REQUESTOR: Hon. Donald Castellucci, Jr., Supervisor
Town of Owego
2354 State Route 434
Apalachin, NY 13732

Preliminary Statement

By letter dated September 27, 2012 Donald Castellucci Jr., Supervisor for the Town of Owego, requested that the Department review the soundness of an agricultural practice, the use of a propane cannon, on property owned by James Ketchuck. The Commissioner, pursuant to Agriculture and Markets Law (AML) Section 308, shall, in consultation with the Advisory Council on Agriculture, issue opinions as to whether a particular agricultural practice is sound. According to Supervisor Castellucci, several neighbors have complained about the noise from the propane cannon. The Town of Owego does not have a local law which addresses noise.

The Department conducted a sound agricultural practice review of this practice on the Ketchuck property. The following information and findings have been considered in reaching this Opinion.

Information Considered in Support of the Opinion

1. James Ketchuck owns approximately 185 acres located on Cafferty Lane in the Town of Owego, Tioga County. The majority of Mr. Ketchuck's property is wooded; however, he does have approximately 5 acres of Christmas trees, 85 apple trees, approximately 125 blueberry bushes and two garden areas. According to Mr. Ketchuck, the garden areas are approximately 150 feet by 90 feet and 150 feet by 350 feet in size. Mr. Ketchuck indicated that he is trying to gradually increase his fruit and vegetable production so he will have enough to sell in the future when he retires. Mr. Ketchuck stated that he has been selling Christmas trees for approximately 25 years. He also stated that he began planting the blueberries approximately 6 years ago and has been planting additional plants each year. According to Mr. Ketchuck he had his first

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significant crop of blueberries 2 years ago and, although he has not had enough to sell in the past, he hopes to produce enough to sell in the future.

2. Mr. Ketchuck estimated that he lost approximately 200 pounds of blueberries (which, if sold, would have been worth approximately \$460.00 at \$2.30 per pound) prior to using the cannon. Mr. Ketchuck stated that he has three varieties of blueberries; the berries mature over a period between mid July and late September; and he has had only enough vegetables to sell to coworkers. According to the Department's agricultural district file and Elaine Jardine, Tioga County Planner, Mr. Ketchuck's property is not located in an agricultural district. According to Andrea Klett, Town of Owego Assessor, Mr. Ketchuck's property does not receive an agricultural assessment.
3. On January 10, 2013, Matt Brower, Department Agricultural Resource Specialist, visited the Ketchuck property to observe where the propane cannon was operated and to gather information on the practice. Mr. Ketchuck showed Mr. Brower the location on the property where the cannon had been placed. He explained that, while the cannon is designed to rotate 360 degrees, he had it tied with a rope so that it would only fire in one direction. He indicated he did this so that it would fire in the direction of his vegetable garden and not in the direction of any houses. He stated that it fired in the direction of the neighbor's horse pasture and the horses did not appear to be upset by the use of the cannon. Mr. Brower observed that the cannon was set to fire at an angle of approximately 90 degrees from the location of the blueberries and in the opposite direction of the Christmas trees. The cannon was located next to one of the garden areas, approximately 125 feet from the other garden area, and approximately 525 feet from the blueberries. The cannon was also set to fire in the opposite direction from the wooded area on Mr. Ketchuck's property. Mr. Brower observed that Mr. Ketchuck had placed a piece of metal roofing behind and over the top of the cannon. He indicated that he did this to protect the cannon from the rain and to muffle the sound on the side of the cannon. Mr. Brower observed that, while the cannon was located approximately 725 feet from the closest neighbor's house, moving it closer to the blueberries would place it within approximately 450 feet of another neighbor's house. Mr. Brower also observed that the cannon could be moved to another location on the property that would place it 1100-1300 feet from neighboring houses and approximately 700 feet from the gardens and the blueberries.
4. According to Mr. Ketchuck, the cannon was used from approximately the middle of July until the end of September and was set to fire between approximately 7:00 a.m. and 8:30 p.m. According to Mr. Ketchuck, the cannon was set to fire for a period of time early in the morning, late morning, afternoon, and dusk. Based on information he provided to the Department, it appears that each firing period was between one half and one hour long. The firing interval during each period ranged from 1 to 7 minutes apart. It also appears that on

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some days the cannon only fires in the early morning and evening. Mr. Ketchuck stated that the cannon was used to protect his blueberries from bird damage and to protect his Christmas trees and vegetables from deer damage. According to Mr. Ketchuck, he did notice a reduction in crop damage as a result of the use of the cannon. Mr. Ketchuck stated that he has not used any other deterrents to prevent bird damage and that the garden areas are fenced; however, the vine crops (pumpkins and squash) grow through the fencing and are available for the deer to feed on. Mr. Ketchuck indicated that he is only aware of one person complaining about the noise from the cannon.

5. According to Brian Reaser from the Tioga County Soil and Water Conservation District, Mr. Ketchuck does not participate in the Agricultural Environmental Management program.
6. The Department mailed a letter to four landowners adjacent to Mr. Ketchuck's property, notifying them of the agricultural practice review and inviting them to comment on the practice. The Department received responses from four people residing in the area and one person with expertise in noise control providing comments on the practice.
7. One neighbor stated in a letter to the Department that he lives approximately ¼ of a mile from Mr. Ketchuck's property and that his dogs would not go outside or eat because of the noise from the cannon. He also stated that Mr. Ketchuck has bird feeders and bird houses near his blueberries. According to this neighbor, the cannon was firing after dark and months after the blueberry season ended.
8. Another neighbor stated in a letter to the Department that Mr. Ketchuck's blueberries are enclosed by a fence and netting. This neighbor also stated that the cannon fired a number of times a minute from as early as 6:30 a.m. until after 8:30 p.m. and that the firing interval was random and sporadic. This neighbor indicated that the firing of the cannon increased in frequency when one of the other neighbors has guests or when they are working in their yard on the weekends. He indicated that he and the other neighbors are jarred awake by the cannon, antagonized by it when they work outside, disturbed while in the house and that his pets and grandson are frightened by it.
9. One neighbor stated in a letter to the Department that the use of the cannon upsets her pets and "woke us up in the morning and disturbed us all day, day in and day out and continued after dark, usually ending around 8:30 or 9:00 pm."
10. Another neighbor submitted a letter with attachments to the Department. This neighbor and her family live adjacent to the Ketchuck property. She stated in her letter that the use of the cannon has "resulted in mental and bodily harm to my family, pets, and live stock." The neighbor stated that Mr. Ketchuck began using the cannon around July 20, 2012. She indicated that the cannon was fired between 6:30 a.m. and 8:30 a.m. and started firing again after 4:00 p.m.,

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when neighbors returned home from work. This neighbor also stated that if her family or other neighbors have company, “then all of a sudden the booming begins and the duration increases until the company leaves.” According to this neighbor, when her and her children were outside when the cannon was firing they experienced “headaches and ringing on the ears.” She also stated that “[t]he three of us were diagnosed with Acute Stress Disorder then termed Post Traumatic Stress Disorder resulting from the Cannon blasts.” According to this neighbor, the cannon noise caused her to be thrown from her horse, causing her bodily harm, and startled her daughter causing her to sprain her finger. She also stated that her family was not able to sleep and that her health care provider “placed me on medical leave as a result of the effects of the propane blasts.” This neighbor stated that the cannon was “pointed directly at our house” and that it was tied in place to prevent it from firing in different directions. According to the neighbor, “Mr. Ketchuck has numerous bird houses on his property.” In her letter, she listed a number of factors she would like the Department to consider in formulating an opinion. These factors are summarized below.

- Studies have shown that the use of propane cannons is not effective as a long term bird deterrent;
 - The starling, blackbird, and crow population in the area was being controlled by naturally occurring predatory birds such as red-tailed hawks and American bald eagles prior to the use of the propane cannon;
 - The firing interval of the cannon (1 and 2 minute intervals) was excessive and extended beyond the blueberry growing season;
 - Mr. Ketchuck tied the cannon to a tree so that it would only fire in one direction and used metal roofing to direct the noise towards her house;
 - There are other protection measures available to control crop damage; and
 - The use of the cannon has resulted in bodily harm to people and pets.
11. The documents submitted by this neighbor include, but are not limited to, a copy of her complaint of Disorderly Conduct and Harassment filed with the Owego Town Court, Orders of Protection issued by the Owego Town Court, a copy of the User’s Manual for a Zon Mark 4 propane cannon, letters from her health care providers, estimated sound levels on her property, and various reference material related to noise pollution and the use of propane cannons.

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12. The complaint filed with the Town included a list of the firing times of the propane cannon between July 21, 2012 and September 21, 2012. According to the complaint, the cannon firing occurred generally between 6:30 a.m. and 9:00 p.m. The neighbor documented that the cannon firing time periods occurred for approximately a half an hour to an hour between two and four times a day. Based on the information included in the complaint, it appears that many times the firing intervals were one to three minutes apart. The complaint also included a list of health issues that she claimed her children have experienced as a result of the noise from the cannon. The health issues identified by the neighbor include trouble sleeping, difficulty concentrating, anxiety, agitation, headaches, and ringing of the ears.
13. This neighbor submitted a letter from Dr. David Glaser, an Audiologist from Southern Tier Health Services. Dr. Glaser stated in his letter that he met with four members of this neighbor's family for "comprehensive hearing evaluations" on August 29th and 30th of 2012. Dr. Glaser stated that he has "highly encouraged and recommended" that the family "utilize hearing protection at all times when on the property." Dr. Glaser also stated that "[a]s the cannon fire reaches a level beyond 85 decibels, there is a risk of instantaneous and permanent hearing loss for all those individuals exposed to this impulse noise." This neighbor also submitted a letter from Dr. Daniel R. Fluegel, a Chiropractor that has been treating her for injuries "to her right lumbar region and right shoulder area." The neighbor reported to Dr. Fluegel that she sustained the injuries when her horse was spooked by the blast from the propane cannon while she was riding it. According to Dr. Fluegel, the neighbor stated to him that the horse ran off and she jumped from the horse because she was concerned for her safety.
14. This neighbor also submitted a letter from Teresa Mandracchia, DVM. According to Dr. Mandracchia, the neighbor "obtained three of her horses through me as rescue animals." Dr. Mandracchia also stated that "[a]lthough many horses will eventually become accustomed to repeated, loud noises, some are of a more excitable nature and will never acclimate. Their reaction to random explosions is unpredictable and thus pose a huge danger to anyone attempting to handle or ride them."
15. This neighbor submitted a copy of a study conducted by the Trinity Western University to test the effectiveness of bird deterrent devices on starling populations in the agricultural areas of the Fraser Valley¹. According to the study, the use of a hawk kite resulted in the greatest reduction in the number of

Steensma, Karen M.M., A. Edworthy, K. Hartline, D. Wong, B. Kern and A. Gardener. Efficacy of bird deterrent devices in agricultural areas of the Fraser Valley of British Columbia: a pilot study. The Ministry of Agriculture and Lands, Province of British Columbia and The Fraser Valley Regional District. 2009. pp. 9-19.

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starlings and the population remained low for the longest period of time. The use of propane cannon resulted in a decline in the starling population for the first 15 days after it began operation; however, the number of starlings in the area increased after the first 15 days of use and “showed no significant difference from the control after the peak effectiveness.” Some of the “preliminary recommendations” of the study include: “[p]ropane cannons can be used in short-term applications” and the effectiveness of the various deterrents tested is “enhanced through randomization and combination/integration of audible and visual devices.”

16. This neighbor included in the information she provided to the Department an “Estimate of Propane Cannon Sound Levels” prepared by Robert Chanaud, PhD. According to a letter that Dr. Chanaud submitted to the Department, he consulted with this neighbor over several months on the issue of propane cannons. Dr. Chanaud claims that his area of expertise is noise control. According to Dr Chanaud’s estimates, the sound levels that result from the propane cannon would be 92 dB at the property line and 84dB at the neighbor’s house. According to the information provided by Dr. Chanaud, the World Health Organization would support a maximum sound level of 50 dB at the property line when the source is impulsive. Dr. Chanaud points out that the noise level at the house exceeds 50 dB. The graph provided by Dr. Chanaud shows that the sound level at the neighbor’s house would be reduced to between 70 and 75 dB if the cannon was facing away from the house. However, it appears that the figures provided by Dr. Chanaud are an estimate based upon a paper review rather than any actual testing.
17. Dr. Chanaud attached to his letter a section from the Noise Ordinance Manual that he states that he recently rewrote for the US Environmental Protection Agency. The section of the manual that he provided is entitled “*Noise Ordinances Tools for Enactment, Modification and Enforcement of a Community Noise Ordinance.*” The excerpt that he provided discusses the use of propane cannons and offers three options for local Noise Ordinances regulating the use of such devices. One option includes either regulating the hours of use or the prohibition of the use of propane cannons if it “creates a noise disturbance across a real property boundary, or in a noise sensitive zone.” Another option includes the regulation of the number of impulses per hour within a certain distance of “any real property boundary in a residential zone, or noise sensitive zone.” The third option is the complete prohibition of the use of propane cannons. The document acknowledges the fact that “[f]armers that raise cherries, blueberries, and grapes are subject to predation by a variety of bird species during growing season.” However, the document does not offer any alternative for crop protection. In his letter, Dr. Chanaud concludes “[t]here is little doubt that the noise impact is severe, and it is recommended that propane cannon use be stopped permanently.”

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18. The Zon Mark 4 User's Manual provides several recommendations for using the cannon. One recommendation states "[d]o not place any heavy objects on the detonating device and do not block the air circulation." The manual also states "[i]t is important to move the device regularly in order to increase its effectiveness."
19. On January 10, 2013, Mr. Brower met with Supervisor Castellucci to discuss the use of the propane cannon. Supervisor Castellucci stated that he has listened to the cannon from the road adjacent to the Ketchuck property and in the residential development south of the Ketchuck property (Crestview Heights). He indicated that, in his opinion, the noise from the cannon was annoying at the road location and bearable in the development. According to Supervisor Castellucci, the cannon fires several times at close intervals and then there is a silent period (approximately 5 minutes) until the next firing. He stated that he has received numerous complaints about the noise from the cannon. He also stated that the Town does not have a noise ordinance.
20. According to a fact sheet from the Ontario Ministry of Agriculture, Food and Rural Affairs², "[u]nchecked, birds can completely destroy an entire crop. A flock of 5000 starlings can consume up to 1 ton of food over a 10 day period." The fact sheet also points out that bird damage is increasing because "bird populations are increasing, and there have been changes to migration patterns due to climatic changes." According to the document, birds usually feed early in the morning around sunrise and late in the afternoon around sunset.
21. According to the Ontario fact sheet, birds react more to acoustical deterrents than visual deterrents. Visual deterrents should be used with acoustical systems, as they rarely provide adequate protection by themselves. The document recommends an integrated approach to controlling bird damage, including:
 - Setting the firing intervals at least 3 minutes apart;
 - Moving the propane cannon around the property;
 - Placing the cannon away from neighbors' houses;
 - Using a combination of scaring methods that affect the bird's sense of sight and sound and create a sense of fear; and
 - Position devices along the perimeter of the area to be protected, near trees and at entry areas.

² Fraser, Hugh W., K. H. Fisher and I. Frensch. Bird Control on Grape and Tender Fruit Farms. Ontario Ministry of Agriculture. 1998, pp. 1-11.

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22. The fact sheet states that, while netting can have a high cost, it is “the best way to ensure crop protection.” According to a number of sources, netting is a better option for small producers than larger operations.
23. The U.S. Environmental Protection Agency’s (EPA) Noise Control Handbook³ contains information on the health effects of noise. According to the Handbook, “the magnitude of noise-induced hearing loss depends upon the noise level to which the ear has been habitually exposed, the length of time for which it has been exposed to those levels, and the susceptibility of the individual.” The Handbook states that the EPA has established that an intermittent environmental noise level of no more than 70 dB is the “best present estimate” for protecting “96 percent of the general population from a hearing loss of greater than 5 dB at 4000 Hz.” The Handbook also indicates that studies have been done to examine the health effects as a result of exposure to environmental noise. While the “studies are viewed as exploratory rather than confirmatory, evidence has been obtained for increased rates of hypertension and cardiovascular disease, increased usage of various prescription drugs, increased rates of physician’s visits, and increased subjective and self-reported symptoms and complaints.” Other health issues related to noise that are identified in the Handbook include: headaches, fatigue, insomnia and irritability. According to the Handbook, noises “that are abrupt, intermittent, or fluctuate with time can be very annoying as well.”
24. On February 15, 2013, Mr. Brower contacted Diane DeLorimier, Co-owner of Iculural Enterprises, Inc., a distributor of the Zon Mark 4 propane cannon. According to Ms. DeLorimier, the intent of the tripod is to allow the cannon to rotate and amplify the sound. Ms. DeLorimier stated that tying the cannon in place would partially defeat the purpose of the tripod and would make it necessary to move the cannon to different locations on the property for it to be effective. Mr. Brower explained the placement of the metal roofing around the cannon on the Ketchuck property and Ms. DeLorimier indicated that the roofing would amplify and direct the noise.
25. On February 15, 2013, Mr. Brower contacted Dr. James Gray, a Veterinarian in the Department’s Division of Animal Industry, to discuss the effects of the propane cannon noise on horses. Dr. Gray indicated that horses would initially be startled by the firing of such a device, but if the firing pattern was relatively constant, horses would likely habituate to the noise. He also indicated that if the cannon is fired when someone is riding a horse there could be a risk of the horse being startled and the rider being injured. He also stated that, to avoid this situation, the owner of the propane cannon should notify the horse owner when they anticipate firing the cannon.

³ U.S. Environmental Protection Agency. Noise Effects Handbook. 1981. EPA 500-9-82-106.

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26. On February 22, 2013, Dr. Paul Curtis, Extension Wildlife Specialist at Cornell University, provided Mr. Brower with several comments relative to the use of the propane cannon to protect crops at the Ketchuck property. According to Dr. Curtis, the propane cannon would not provide adequate protection for Christmas trees because most “deer browsing and tree damage will occur at night.” He also indicated that deer “quickly habituate to the use of propane cannons...especially if the cannon location is not moved frequently.”
27. Dr. Curtis also stated that, given the location of the cannon in relation to the blueberry bushes, “[i]t would have limited effectiveness for controlling bird damage at that distance.” He also indicated that, in addition to placing the cannon closer to the blueberries, moving it “between the west and east edges of the blueberry bushes every 3 to 4 days” would improve the effectiveness. According to Dr. Curtis, the placement of the metal roofing around the cannon “would reduce effectiveness of the cannon for protecting both the blueberries and Christmas trees.”
28. In conclusion, Dr. Curtis indicated that, in addition to eliminating the impact on neighbors, the use of a hawk-kite would “likely be more effective than propane cannons for protecting this small blueberry planting from birds.”

Findings

Based upon the facts, information and circumstances described above, and in consultation with the Advisory Council on Agriculture; the New York State College of Agriculture and Life Sciences at Cornell; and the Sound Agricultural Practice Guidelines⁴ by which agricultural practices are evaluated, I find the following:

1. The Department has found no evidence or received other information indicating that Mr. Ketchuck has been cited for any violation of Federal, or local law as a result of the use of the propane cannon. However, Mr. Ketchuck was cited for Disorderly Conduct (a violation), for allegedly violating

⁴ On November 1, 1993 the NYS Advisory Council on Agriculture published its report entitled *Protecting the Right of New York Farmers to Engage in Sound Agricultural Practices*. The Council developed guidelines to assist the Commissioner of the Department of Agriculture and Markets in determining what is sound pursuant to Section 308 of the Agriculture and Markets Law. The Guidelines state that the practice 1) should be legal; 2) should not cause bodily harm or property damage off the farm; 3) should achieve the results intended in a reasonable and supportable way; and 4) should be necessary. The sound agricultural practices guidelines recommended by the Advisory Council on Agriculture are given significant weight in assessing agricultural practices.

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section 240.20(2) of the Penal Law of the State of New York and Harassment in the Second Degree, an alleged violation of section 240.26(3) of New York State Penal Law. Further, an order of protection has been ordered by the Owego Town Court directing that Mr. Ketchuck stay away from the Complainant and not fire the propane cannon until further order of the court. The Department understands that this matter is pending in the Town of Owego Justice Court. The Town of Owego does not have a noise ordinance.

2. The Department has found no evidence that the use of the devices has resulted in property damage off the site. One neighbor submitted documentation alleging injuries sustained when she jumped off her horse when the horse was startled by the cannon and began to run. She also submitted a letter from her Audiologist indicating that he had conducted a hearing evaluation of her family. While the Audiologist did not indicate that there had been any loss of hearing at the time of the evaluation, he did indicate that a loss of hearing could result from the noise from the cannon. The information submitted by this neighbor also included a list of health issues that she claims she and her family are experiencing including: Acute Stress Disorder, trouble sleeping, difficulty concentrating, anxiety, agitation, headaches, and ringing of the ears.
3. It appears that Mr. Ketchuck uses the device generally only during the daylight hours, which is consistent with the recommendations for propane cannons. However, the cannon was not moved around the property and was prevented from rotating, which significantly minimizes its effectiveness. It appears the cannon could be positioned farther from the neighboring houses. The placement of the metal roofing over and behind the cannon, to deflect the noise, only increases the impact on the neighbors and further minimizes its effectiveness for protecting the blueberries and Christmas trees. The use of the cannon is not consistent with the owner's manual and other documents that provide recommendations for such devices.
4. According to Dr. Curtis, the cannon would provide little protection against deer damage for the Christmas trees and garden areas. Mr. Ketchuck claims that, prior to the use of the cannon, he experienced losses in his vegetable and blueberry crop production. According to the information provided by Mr. Ketchuck, the production of fruits and vegetables is not currently a significant source of income for him. Mr. Ketchuck did not try other protection measures before he began using the cannon. According to various sources, a combination of visual deterrents and acoustical systems provides better control than either method used alone. Given the relatively small area of the property used to produce fruits and vegetables, other protection measures

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such as fencing, netting, and visual deterrents could provide equal or better crop protection without impacting the neighbors.

Conclusion

Based on the foregoing and in accordance with section 308 of the Agriculture and Markets Law, I am unable to conclude that the use of the propane cannon on the Ketchuck property, as described above, is sound.

5/14/2013
Date



Darrel J. Aubertine
Commissioner of Agriculture and
Markets of the State of New York