



Sound Cannons for Bird Deterrence: Regulations and Noise Complaints

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BACKGROUND

Birds can be a major agricultural pest, causing significant damage to crops at all stages (e.g., seed, harvestable crops) and can often result in unmarketable crops (Fig. 1). In addition to this, birds and their feces pose serious food safety risks for fresh produce. The damage and risk that birds pose to farms are compounded difficulties in their management and control. While several strategies are used by local farmers to deter and manage bird activity on farms, using sound cannons as bird deterrents requires attention to regulations and consideration to avoid noise complaints.

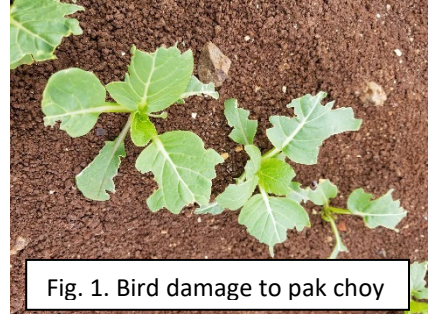


Fig. 1. Bird damage to pak choy

Sound cannons operate with pressurized gas, such as propane, that is detonated with controlling mechanisms to produce a loud sound (Fig. 2) that is meant to scare birds away from production areas. Certain models, using a 5-gallon propane tank, can be adjusted to emit sound every 30 minutes to as frequently as every 30 seconds producing an approximate total of 15,000 blasts (Sutton Ag Enterprises).

These management tools, while effective for managing bird pests, have caused some farms to receive noise complaints regarding their use of sound cannons. This article will summarize the laws and regulations governing the use of noise in an agricultural setting, as well as some recommendations.



Fig. 2. Zon Mark 4 Propane Cannon

REGULATIONS



Fig. 3. Sound level meter above 70 dBA

Noise control is managed, enforced, and promoted by the State of Hawaii Department of Health’s (HDOH) Noise Section under the Indoor and Radiological Branch. Noise complaints are also made to the HDOH Noise Section, who then follow up with the potential noise source in question. The Noise Section may serve a written notice upon an initial complaint or more serious penalties such as fees for continued violations.

The Hawaii rules and regulations for noise control are Hawaii Administrative Rules 11-46 and Hawaii Revised Statutes 342F. Under HAR 11-46 and HRS 342F, between 7 a.m. and 10 p.m., **agricultural-zoned lands have a maximum permissible sound level of 70 dBA**, while residential- or commercial-zoned areas have maximum levels of 55 or 60 dBA, respectively. In mixed zoned districts the primary land designation is used. For impulse noises, like sound cannons, the maximum permissible level is actually 10 dBA above those for respective zones (e.g., agricultural-zoned lands= 80 dBA). Noise levels cannot exceed maximum levels for more than 2 minutes



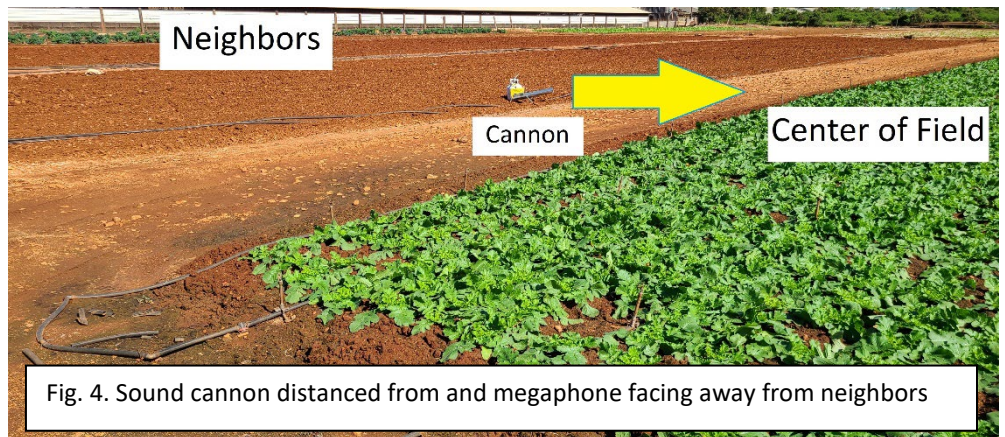
total or 10% within a 20-minute period, except with a permit. Exemptions to this include emergency vehicles, emergency generators, or alarm devices.

As sound cannons can emit 120 dBA of noise, farmers who use sound cannons may consider applying for a permit through the HDOH Noise Section. **Permits allow activities that may exceed maximum permissible levels and durations** (e.g., 70 dBA, 10% of 20 minutes), pending sufficient application information and the director's approval that weighs this information against noise control criteria as well as public and environmental health. Should permits be awarded, the annual fee is \$50 per year up to a maximum of 5 years. More information about the HDOH Noise Section or application process can be found at <https://health.hawaii.gov/irhb/noise/>.

RECOMMENDATIONS & ALTERNATIVES

To minimize noise level impacts on neighbors and instances of complaints, farmers using sound cannons can consider the following tips (Fig. 4).

- **Distance:** Increase distance from the sound cannon to property edges and neighboring areas.
- **Direction:** Face sound cannon megaphone or nozzle away from neighboring areas. Independent measurements at a farm found noise levels decreased from 120 dBA at the cannon to 70 dBA over a 200 ft distance but with the megaphone facing away.
- **Structures:** Structures, buildings, or objects that are between will help to dampen sound levels
- **Alternatives:** Rotate the use of other bird deterrent alternatives such as netting, reflective ribbons, scare kits, or even lasers to reduce utilization of sound cannon and familiarity of birds to the same deterrent type.
- Also, follow state and federal laws regarding endangered species if observe any in the area.



REFERENCES

State of Hawaii Department of Health. 2021. Noise Section. <https://health.hawaii.gov/irhb/noise/>
Sutton Ag Enterprises. Zon Mark 4 Cannon. https://www.suttonag.com/zon_mark4_cannon.html