Research Note

Operational challenges and opportunities in pastured poultry operations in the United States

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ABSTRACT As pastured poultry production has gained increased popularity in the United States in recent years, there is a growing need for research and outreach efforts aimed at this sector of poultry production. In order to get familiarized with American pastured poultry producers, we conducted an online questionnaire aimed primarily at evaluating what operational challenges are faced by producers and what educational opportunities should be initiated by researchers. Results showed that pastured poultry farms largely vary in total number of acres farmed and total number of birds kept. The vast majority of farms (96%) rotate their flocks on pasture and include livestock species (78%) in their rotation systems. Mobile coops are the preferred housing option provided by producers (88%). The most common source of mortality listed by respondents was predation (52%), followed by "other" (32%). However, predation was not selected as the most important challenge by the majority of respondents. Sixty-four percent of participants instead mentioned providing adequate feed at reasonable cost as the major challenge in raising poultry on pasture, followed again by "other" (52%) and lack of processing facilities for small numbers of birds (40%). Finally, the topics considered by respondents as the most helpful to learn more about were how to improve egg production rate and/or feed conversion ratio (67%), followed by how to improve pasture condition and optimum vegetative cover all year round (62%). Despite its small sample size, this study's results provide some valuable insights of challenges encountered and information needed on pastured poultry farms.

Key words: pastured poultry, operational challenges

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INTRODUCTION

Micro-commercial pastured poultry production, which includes farms keeping below 3,000 laying hens or 20,000 broilers, is a growing and vibrant sector in the United States. Even though there is no regulatory definition of "pastured poultry production," this system commonly refers to a husbandry practice in which flocks of birds are housed in a mobile structure or "eggmobile" at night, with continuous access to outdoor vegetation during the d (Sossidou et al., 2011). A significant factor in this increasing popularity is public interest in pastured meat and eggs (Kijlstra, 2009; ATTRA, 2014). Despite the fact that pastured-based poultry products are filling a rapidly expanding marketing niche (Sossidou et al., 2011), the lack of a significant body of research is indicative of the sector's relative newness. For example, challenges associated with these systems include mitigating and reducing disease, parasites, and predator exposure. More research is needed to better understand overall lower production efficiencies (Permin, 1999; Singh and Cowieson, 2013), which take place under highly variable and often uniquely organized production systems. This variability is important to understand, as the overall economic viability of these systems is often in doubt (Sossidou et al., 2011). Beyond the public demand, pastured-based production systems have several key advantages that strongly motivate the need for expanded research. For example, the utilization of poultry manure for land fertilization can reduce environmental effects (Sossidou et al., 2011). In pastured systems, birds are able to engage in a larger suite of behavioral repertoires (Van de Weerd, 2009; Sossidou et al., 2015), which can lead to increased bird welfare. To our knowledge, the only surveys previously done were conducted via the American Pastured Poultry Producers Association (**APPPA**) (Badger, 2013, 2014) and primarily referred to pricing issues. In this research note, we review the range of design and operational challenges and discuss the research needs as identified in a recent survey of pastured poultry farmers.

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MATERIALS AND METHODS

To better understand the range of challenges encountered by pastured poultry producers in the United States, we conducted a short online questionnaire (SurveyMonkey™, Palo Alto, CA), advertised via the American Pastured Poultry Producers Association' Yahoo™ Group. APPPA is a nonprofit educational and networking organization dedicated to encouraging the production, processing, and marketing of pastured poultry; its list-serve had 607 members registered at the time of the survey. The questionnaire was composed of 10 questions, half of which were closed or semi-closed multiple-choice questions. Most of the questions allowed respondents to select multiple answers. For the semi-closed questions, respondents were provided space for elaboration if they selected "other" as their response. The remainder of the questions was yes/no answers or required a numerical response. The questionnaire was accessible from February 25 to March 3, 2016. The response rate was low (n = 25); nevertheless, our results should be considered exploratory. To the authors' best knowledge, this survey represents the first of its kind for this population.

RESULTS AND DISCUSSION

The pastured poultry producers responding to the survey came from 14 different states. Five were from Texas (5/25), which was followed by California (3/25). On average, respondents reported a total farmed area of 12 acres, with responses ranging from 1.5 to 770 acres. Questions related to flock composition showed that the average number of laying hens kept at the time of the survey was 219 (range: 45 to 2,000), the average number of pullets was 254 (range: 10 to 1,000), and the average number of broilers was 2,853 (range: 50 to 32,000). The very broad range in flock size confirms previous findings obtained on California pastured operations (Dailey et al., 2016) and in the APPPA-conducted survey (Badger, 2013).

Ninety-six percent of respondents confirmed rotating their flocks on pasture; 78% indicated that their rotation system included livestock species, 43% indicated including touch-crops (i.e., crops that directly contact the ground), and 26% of them included no-touch crops (e.g., fruit trees).

We also asked respondents to specify the housing system currently in use: 88% responded that they were using a mobile coop and 36% were providing flocks with a stationary house. Interestingly, 20% indicated that some "other" housing option was being deployed. These included "multiple stationary houses" and "chicken tractors for broilers." Finally, farmers reported that the average price charged by producers for one dozen eggs was $5.08, with a range from $3.25 to $7.00. This wide range has been previously witnessed (Badger, 2013) and might be partly attributed to location variability, market specificities, as well as the farm's certification status. Similar ranges in broiler meat pricing exist (Badger, 2014) and can be attributed again to several factors such as type of feed used, farm certification, and market specificities.

One of our key objectives for conducting this survey was to acquire information about the critical challenges faced by pastured poultry producers. Articulating these challenges is important for helping researchers prioritize research and outreach efforts. Respondents reported that the most common sources of mortality were predation (52%), followed by unknown (28%), feather pecking and/or cannibalism (20%), and disease (16%). Nearly one-third of the respondents also reported "other," with most hens being processed for meat. The fact that producers primarily lose birds from predatory attacks reflects previous findings obtained in backyard flocks, which are also primarily raised outside (Elkhoraibi et al., 2014) and, more recently, in California pastured flocks (Dailey et al., 2016). The last possible choice — old age — was never selected, although it was the second-most common answer in the California pastured flocks' study by Dailey. As the participants had the opportunity to express what they meant by "other," the survey revealed that it most commonly referred to processing spent laying hens for meat.

Respondents also were asked to identify their most important challenges. Fully two-thirds of those responding reported that providing adequate feed at reasonable cost was the most important challenge (64%). This was followed by "other" (52%), the lack of processing facilities for small numbers of birds (40%); navigating state and country food safety and egg product regulations (36%); managing soil and vegetation (28%); lack of a niche market for pastured raised eggs and/or meat (16%); and, finally, the lack of poultry veterinarians in the area (12%) and disease control (12%). Respondents choosing "other" mentioned challenges like "the ability to scale up," "reducing the effects of seasonal fluctuations," "educating customers on labels' real meanings," "the lack of local hatcheries," and "the high cost of insurance."

Interestingly, minimizing predation (32%) was not chosen first as the biggest challenge encountered in raising pastured chickens. Specifically, predation was ranked as the fifth-most important challenge. Anecdotal evidence previously gathered by the authors showed that manure accumulation under the eggmobile can be problematic if not properly managed and may constitute a food safety hazard. However, adequate manure management was never selected as an important challenge by any participants.

Since pastured poultry is a relatively new market entry, we also sought to understand what types of additional educational material producers would be most interested in receiving. Topics such as improving egg production rates and/or feed conversion ratio were the most frequently cited (67%). In addition,

producers were interested in improving pasture condition and maintaining optimum year-round vegetative cover (62%), collecting and managing production data more efficiently (54%), determining sustainable pricing of eggs and/or meat (50%), how to effectively mitigate rodents (37%), preventing egg-related issues like egg-eating or misplaced eggs (25%), optimizing biosecurity (21%), developing and implementing a vaccination plan (12%) and, finally, responding to an avian influenza outbreak (12%). Far less frequently cited educational needs included information related to managing climatic differences, methods for providing winter water, navigating federal, state, and local regulations, and ways to improve on-farm butchering practices.

We also found interesting patterns in which the major challenges reported by survey respondents did not closely align with stated research or educational priorities. For example, respondents reported difficulties in maintaining pasture condition, but ranked the need for information or research on vegetation management fairly low. Similarly, predation was cited as the most frequent cause for mortality, yet predation ranked fairly low in terms of challenges identified by respondents. We hypothesize that farmers place a higher priority on factors that are likely to reduce near-term operating costs, rather than on factors that tend to be more intrinsically related to longer-term sustainability.

To conclude, although our sample size is small and our results should be considered exploratory, we have identified a number of valuable insights on the kinds of challenges producers are encountering as well as educational and research needs that scientists can focus on. Micro-pasture poultry farmers are likely to increase in both number and presence in the next few years. It is important to continue to foster production environments that ensure long-term sustainability. In addition, hypothesis-driven peer reviewed research is essential in order to be useful to stakeholders in commercial pastured poultry. The continued collaboration among academia, producers, and industry-based organizations such as APPPA ensures that knowledge is extended to stakeholders based on the best available scientific knowledge, particularly with respect to husbandry, poultry health, biosecurity, food safety, welfare, and environmental management.

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