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Azabu University, Animal Resources Economics Laboratory

"Cage-Free Egg Production Survey" Report <V.3>

1. The ratio of cage-free birds is about 3.17% (900,000 birds out of approximately 28.26 million birds)
    - Average per cage-free openration: approximately 12,000 birds
    - (Cage-free only operations average approximately 6,000 birds, while cage-free birds in mixed cage and cage-free operations average approximately 28,000 birds)
2. 76% of farms currently producing cage-free eggs are interested in expanding their cage-free operations.

With global interest in cage-free egg production rising but no domestic statistics available, Azabu University's Animal Resource Economics Laboratory surveyed 691 domestic egg farms in February 2025 to understand the current state of cage-free egg production in Japan.

By the end of March we had received a total of 147 responses, of which we undertook an analysis of the 138 valid responses we received. This represents 42.1% of layer farms nationwide, and gave us a 21.2% response rate. The responses included 64 cage-only farms (46%), 53 cage-free only farms (38%), and 21 mixed farms (15%). This report summarises some of our findings.

Terms to be used hereafter:

- Caged = C
- Cage-free = CF
- Farms with cage rearing only = C farms
- Farms with cage-free only = CF farms
- Farms conducting both cage rearing and cage-free rearing = Mixed farms

1 Number of Birds (Table 1)

Cage-free birds represented 3.17% of all birds counted within our survey. Our respondents reported a total of 28.26 million adult chickens, representing 21.8% of Japan's national flock according to 2024 (Reiwa 6) livestock statistics.

Farm sizes varied significantly by type: C farms averaged 287,000 birds, while CF farms were much smaller at 5,700 birds on average. Mixed farms were the largest, averaging 470,000 birds total. Notably, the cage-free flocks at mixed farms averaged 28,000 birds—nearly five times larger than those at CF-only farms.

2 Housing Methods (Table 2)

Bird distribution on C farms: Battery cages 93.4%, enrichable cages 3.3%, enriched cages 0.5%. Open-sided poultry houses 8.6%, semi-windowless houses 10.8%, windowless houses 75.3%.

Caged bird distribution on mixed farms: Battery cages 94.9%, enrichable cages 5.0%, enriched cages 0.2%. Open-sided poultry houses 9.7%, semi-windowless houses 7.7%, windowless houses 63.6%.

Bird distribution on CF farms: Single-tier floor systems 93.8%, aviaries 0.0%, aviaries (combination type) 0.0%, free-range 4.4%, organic 0.9%. Open-sided poultry houses 87.4%, semi-windowless houses 0.7%, windowless houses 0.0%.

Cage-free bird distribution on mixed farms: Single-tier floor systems 42.6%, aviaries 50.2%, aviaries (combination type) 0.0%, free-range 5.6%, organic 1.7%. Open-sided poultry houses 33.3%, semi-windowless houses 8.5%, windowless houses 56.0%.

3 Housing Space (Table 3)

The housing space for cage systems was 448.9 cm² in C farms and 476.8 cm² for cages in mixed farms, both exceeding the Japan Poultry Association's "recommended" 430 cm². However, compared to the Japan Livestock Technology Association data (2015), the proportion of farms with an area of 430 cm² or more has increased by about 10 percentage points to 60%.

The housing space for cage-free systems in single-tier floor systems was 4066.7 cm² (CF farms) and 2172.4 cm² (cage-free in mixed farms), both significantly exceeding the EU standard (1,111 cm²). However, compared to the Japan Livestock Technology Association data (2015), the proportion of farms with an area of 1,000 cm² or more is 100%, which is more than double. Additionally, cage-free production facilities were generally equipped with nest boxes, litter, perches, and other features.

4 Challenges of Cage-Free Production (Technical and Management) (Table 4)

For technical challenges, approximately 40% or more of respondents selected 'high incidence of pecking and bullying,' 'high number of floor eggs,' and 'high number of dirty eggs.' Around 30% selected 'difficulty maintaining litter,' 'difficulty with manure management,' and 'risk of diseases like coccidiosis.' However, mixed farms were more likely than CF farms to select both 'lack of officially established cage-free production standards in Japan' and 'high mortality rates'.

The top management challenges were "selling price," "developing sales channels," "increased labor time due to cage-free production," and "difficulty in maintaining litter." Mixed farms reported higher rates than CF farms for "decreased laying rates," "reduced feed efficiency,"

"equipment depreciation costs," "low percentage of eggs that can be sold as cage-free," and "low marketability rates". There appeared to be differences in motivation of engaging in cage-free production between CF farms and mixed farms.

5 Reasons for Starting Cage-Free Production (Table 5)

While "value-added sales" was commonly cited by both groups, CF farms and mixed farms showed significant differences in their other reasons for starting cage-free production. CF farms frequently cited "improving chicken health," "chicken welfare," "improving egg nutrition and taste," and "enhancing chicken immunity," while mixed farms more often cited "social and business partner needs," "improving egg and business image," and "global trends."

This suggests a distinction between CF farms motivated by chicken welfare and health versus mixed farms motivated by social demands and global trends.

6 Willingness to Expand Cage-Free Production (Table 6)

When asked about expanding cage-free production in the future, only 17% of C farms responded positively ("I think so" + "I somewhat think so"), which is extremely low.

However, CF farms (79%) and mixed farms (61%) showed much stronger interest, with 74% of all farms currently producing cage-free eggs expressing willingness to expand their cage-free operations. Notably, among the 19 farms with larger cage-free operations (over 10,000 birds), 84% expressed interest in expansion.

7 Discussion

We conducted a questionnaire survey to clarify the current state of cage-free egg production. While the methodology and response rate limit, so the cage-free ratio may appear higher than reality. We believe the following key insights emerged:

1. Farms currently producing cage-free eggs seem to show strong willingness to expand their operations.
2. Cage-free housing space and necessary equipment likely meet or exceed EU standards across most farms.
3. Technical and management challenges are clear, highlighting the need for technical research and support organizations to help CF farms with marketing channels and pricing.
4. Two types of cage-free operations exist: those motivated by chicken health and welfare, and those responding to social demands. The CF market will likely develop with social demands farms contributing significant production volume, while welfare-motivated farms act as a check against industrialization.
5. The challenge remains of how society will develop the consumer base and consumer awareness needed to support this transition.

Additional analyses not covered here (scientific verification issues regarding CF, CF facility installation status, and characteristics by CF farm size and type) can be found in the full report.

Table 1: Number of Adult Chickens by Farm Type and Housing Method (Provisional, June 2025)

Responses		Total	C Farms	CF Farms	Mixed Farms
		138	64	53	21
No. of adult laying hens	Total	28,261,650	18,086,940	302,850	9,871,860
	Average	206,289	287,094	5,714	470,089
No. of caged hens	Total	27,365,240	18,086,940	—	9,278,300
	Average	325,777	287,094		441,824
No. of cage-free hens	Total	896,410	—	302,850	593,560
	Average	12,114		5,714	28,265

Table 2: Cage and Cage-Free Housing Methods - Bird Distribution by Housing Structure (%)

	Housing Type	Battery Cage	Enrichable Cage	Enriched Cage	Housing Structure	Open-sided poultry houses	Semi-Windowless	Windowless
C Farms	100	93.4	3.3	0.5	100	8.6	10.8	75.3
Mixed Farms Cage	100	94.9	5	0.2	100	9.7	7.7	63.6

*May not sum to 100 due to non-responses

	Housing Type	Single-tier Floor	Aviary	Free-range	Organic	Housing Structure	Open-sided poultry houses	Semi-Windowless	Windowless
CF Farms	100	93.8	0	4.4	0.9	100	87.4	0.7	0
Mixed Farms cage-free	100	42.6	50.2	5.6	1.7	100	33.3	8.5	56

*May not sum to 100 due to non-responses

Table 3-1: Housing Space per Bird (Cage) (cm²) (Provisional, June 2025)

		Battery Cage	Enrichable Cage	Enriched Cage
C Farms	Responses	43	4	3
	Average	448.9	570.4	2063.5

Mixed Farms Cage	Responses	18	3	0
	Average	476.8	460.0	

Table 3-2: Housing Space per Bird (Cage-Free) (cm²) (Provisional, June 2025)

			Single-tier Floor	Aviary	Free-range	Organic
Indoor	CF Farms	Responses	40	0	4	3
		Average	4,066.7		3,196.3	3,671.7
	Mixed Farms Cage-free	Responses	16	3	2	1
		Average	2,172.4	1,111.0	2,236.1	2,222.2
Outdoor	CF Farms	Responses			4	3
		Average			8,980.0	21,766.7
	Mixed Farms Cage-free	Responses			3	1
		Average			2,424.1	2,222.2

*No responses for Aviary (Combination Type)

Table 4-1: What are the technical challenges in cage-free production? (Top 4)

	CF Farms	Mixed Farms
Responses	53	21
High incidence of pecking and bullying	51%	43%
High number of floor eggs	42%	76%
High number of dirty eggs	38%	48%
Difficulty in maintaining litter	34%	33%
Difficulty in manure management	26%	29%
Risk of diseases such as coccidiosis	25%	29%
Difficulty in managing dust and cleaning houses	21%	19%
Risk of pests such as red mites	17%	10%
Lack of officially established cage-free production standards in Japan	15%	33%
Hard to find suppliers who raise chicks for cage-free systems	8%	10%
High mortality rates	6%	33%
Having to separate cage-free eggs for shipping	4%	10%
Other (please specify)	13%	19%

*Items exceeding 30% are highlighted

Table 4-2: What are the management challenges in cage-free production? (Top 5)

	CF Farms	Mixed Farms
Responses	53	21
Selling price	74%	48%
Developing sales channels	60%	38%
Increased labor time due to cage-free production	47%	48%
Decreased laying rate	28%	48%
Decreased feed efficiency due to reduced feed conversion	26%	43%
Low value-added pricing for cage-free eggs	23%	24%
High depreciation costs for cage-free equipment investment	17%	33%
Difficulty obtaining the same price as caged eggs despite higher value	15%	19%
Deterioration of the cage-free labor environment	11%	10%
Difficulty handling table eggs and small/undersized eggs	9%	14%
Low percentage of eggs that can be sold as cage-free	6%	29%
Low marketability rate	6%	24%
Other	19%	14%

*Items exceeding 30% highlighted in yellow; items with ~20+ percentage point difference between groups highlighted in green

Table 5: Why did you start cage-free? (Choose 4)

	CF Farms	Mixed Farms
Responses	53	21
For chicken health improvement	60%	10%
For value-added sales	58%	86%
For chicken welfare	58%	24%
For improved egg nutrition and taste	49%	19%
For enhanced chicken immunity	36%	10%
Social and business partner needs	26%	67%
To improve egg and business image	19%	62%
For labor efficiency	9%	5%
Observing global trends	9%	33%
For effective use of chicken manure	6%	19%
Other (specify)	32%	33%

Table 6: Views on expanding cage-free operations in the future

	C Farms	CF Farms	Mixed Farms
Responses	64	53	21
I think so	6%	60%	33%
I somewhat think so	11%	19%	29%
I don't really think so	36%	6%	19%
I don't think so	44%	13%	14%

Note 1: Creating the list of egg farms: Based on egg production companies introduced in newspapers/magazines (4 specialized publications), farms with various livestock certifications, cooperation from cage-free support organizations, etc., with internet address searches conducted (implemented September-November 2024).

Note 2: Cage-free definition: All systems other than cages (battery, enrichable, enriched) are classified as cage-free (including free-range, organic, etc.), targeting adult chickens.

Note 3: Research objectives and future plans: This research was conducted as part of JSPS KAKENHI Grant Number C23K054534. Full survey results will be presented at the Japan Agricultural Marketing Society meeting (Hokkaido University) in July. The preliminary report, presentation materials, and full report are available on our laboratory website "Azabu University Laboratory Search Site: Lab×Navi" (https://lab-navi.azabu-u.ac.jp/va-10/index.html). Future plans include a cage-free egg distribution survey, cage-free management case studies, and a cage-free egg production survey (2026 improved version). We would appreciate your cooperation.

Note 4: Provisional due to figures still being verified. Any future corrections will be announced on the laboratory website above.

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