

ENVIRONMENTAL ENRICHMENT PROGRAM FOR POULTRY**1. PURPOSE**

This standard operating procedure (SOP) describes the methods for environmental enrichment of chickens (Galliformes) used for research and teaching purposes.

These methods are intended to improve the well-being of these animals by increasing species-specific behaviors and reducing undesirable behaviors.

2. RESPONSIBILITY

- 2.1. Facility Animal Care Committee (FACC)
- 2.2. Veterinarian
- 2.3. Principal Investigator (PI)
- 2.4. Research personnel
- 2.5. Animal Care Personnel
- 2.6. Animal Care Committees (FACC), veterinarian, principal investigators (PIs), animal care staff

3. CONSIDERATIONS

- 3.1. The purpose of environmental enrichment is to provide chickens with opportunities to express basic behavior needs, to promote species-typical, non-injurious, behavior and to promote physical and mental health thus enhancing animal welfare. Environmental enrichment should be biologically relevant, perching, pecking, so that it does not lose its enriching value over time.
- 3.2. Deviation or exemption from this environmental enrichment program must be scientifically justified in the AUP and approved by the FACC or prescribed for medical reasons by a veterinarian.
- 3.3. Environmental Enrichment refers to the provision of stimulating and responsive environments through structures and resources above the basic conditions that meets the animal's physical, psychological and social needs and facilitates the expression of species-typical behaviors.

The natural behavior, characteristics and needs of chickens include:

- Sociability: Chickens are highly social animals, organizing themselves into hierarchies commonly referred to as the "pecking order."
 - Nesting: Chicken exhibit a strong instinct to nest.
 - Foraging: Chickens will spend up to 50% of the day pecking and scratching in dirt forage for seeds, grain and insects.
 - Dust bathing : This is an important component of their maintenance behaviour.
 - Perching: Chickens prefer to rest on perches should be given the opportunity to perch.
 - Security: Chickens seek cover and shelter when unexpected stimuli evoke fear.
 - Brooding : Chickens seek seclusion for egg laying (Layers)
 - Tetrachromatic: Chickens prefer monochromatic colours (white & yellow)).
 - Pecking: Chicks tend to peck at small spherical objects and shiny material.
- 3.4. Undesirable behaviors and stereotypies that might indicate animal stress or maladaptation to the environment include:
 - Feather pecking

- Cannibalism
- Aggression
- Excessive flightiness and fearfulness
- Agitated pacing behavior (particularly with attempting to nest)

3.5. TYPES OF ENRICHMENT: Refer to [Table 1: Enrichment that can be added to enhance a farming system for poultry \(in addition to basic system properties\)](#) and [Table 2: Enrichment Recommendations for Chickens](#) for effective enrichment examples.

- 3.5.1. Social Enrichment: Direct or indirect contact (visual, olfactory, auditory) with other individuals of the same species.
- 3.5.2. Occupational Enrichment: Provide animals with control or challenges (e.g. devices) and enrichment that encourages exercise. Furnishings and enrichments provide opportunities for hens to perch, nest, forage, and dust bathe, all of which are considered natural behaviours that hens are strongly motivated to perform.
- 3.5.3. Physical Enrichment: Altering the animals' enclosures or adding accessories such as objects, substrate or permanent structures . Examples;
 - Perches
 - Nestboxes
 - Dust baths made of peat or sand
 - Hanging chains
- 3.5.4. Sensory Enrichment: Visual, auditory, olfactory, tactile and taste stimuli.
- 3.5.5. Nutritional Enrichment: Present varied or novel food types or novel food delivery. Examples;
 - Foraging devices (e.g. corn cob, seed ball) or feed scattered with litter to encourage foraging
 - Live insects (e.g. worms, grubs)

4. PROCEDURES

- 4.1. All animals must receive 2 or more enrichment options in addition to social housing.
- 4.2. Environmental enrichment must be selected and planned in consultation with the Veterinarian and the Principal Investigator (PI).
- 4.3. Many additional enrichments are possible. Selection requires careful consideration to;
 - 4.3.1. Suitability for the species and that satisfy basic behavioural needs of the animal(s).
 - 4.3.2. Sanitizable, resistant to disinfectants
 - 4.3.3. Hazards (risk of entanglement, injury, escape, choking, toxicity,)
 - 4.3.4. Durability
 - 4.3.5. Not ingestible (unless it is food based)
 - 4.3.6. Personnel safety (e.g., size, sharp edges,)
 - 4.3.7. Biosecurity (transmission of pathogens)
 - 4.3.8. Health of the animal (e.g. Nutritional enrichment)
 - 4.3.9. Quantity and size of enrichment: in relation to group size (to prevent competition and frustration).
 - 4.3.10. Impact on Research.

4.3.11. Accessibility

- 4.4. Decisions to implement enrichment strategies should not be based on convenience where the result is to the detriment of animal welfare.
- 4.5. Suitable forms of enrichment vary with each stage of production and with housing system being used. See the [Refer to Table 1: Enrichment that can be added to enhance a farming system for poultry \(in addition to basic system properties\)](#) and [Table 2: Enrichment Recommendations for Chickens](#).
- 4.6. Social Contact:
 - 4.6.1. Chickens must be housed in small groups. housing in large groups, especially in a small area. Housing in large groups may result in negative social interactions.
 - 4.6.2. Exceptions to require scientific, welfare or medical justification:
 - 4.6.2.1. Incompatibility (aggression)
 - 4.6.2.2. Medical reasons
 - 4.6.2.3. Specific protocol approved by the FACC.
 - 4.6.3. Positive human interaction should be provided on a regular basis, especially for chicks to encourage appropriate human socialization.
- 4.7. Housing system:
 - 4.7.1. Animals should be housed with the goal of maximizing species-specific behaviors, minimizing stress-induced behaviors, providing opportunity for social contact and locomotor and exploratory behaviors. Cages should be of a sufficient size and complexity to allow chickens to be housed in appropriately sized groups and to perform behaviors important to their welfare.
 - 4.7.2. Chickens must be housed in a manner that allows for as much tactile, auditory, visual or olfactory contact as possible.
 - 4.7.3. House chickens in non-cage systems (also known as free-run or cage-free systems or enriched cages (cages with furnishings), unless specifically described in the animal use protocol and approved by the FACC.
 - 4.7.4. The housing system should meet or exceed the minimum space allowance of the current Canadian Council on Animal Care (CCAC) Guidelines: Farm Animals as well as the standards set forth by the National Farm Animal Care Council (NFACC) and Codes of Practice for Pullet and Laying hens, and Chickens, Turkeys and Breeders.
- 4.8. Nest Boxes:
 - 4.8.1. Provide nests, equipped with nest litter to hens to address the strong motivation to isolate themselves at egg-laying and to perform nesting behaviour. Single bird nests are preferred over communal nests to avoid competition over nest space.
 - 4.8.2. Nest should be placed should be secluded location but does not need to be dark.
- 4.9. Foraging and Dust bathing:
 - 4.9.1. Foraging occupies a great deal of a chicken's time, and the opportunity to forage may increase a chicken's welfare.
 - 4.9.2. Bedding or litter must be available to provide opportunities for birds to express normal behaviours (e.g. scratching, foraging, dust bathing).
- 4.10. Perches:
 - 4.10.1. Perches and platforms









- 4.10.2. Perches and platforms provide opportunities for increased exercise and roosting off the ground at night, while also increasing vertical space.
 - 4.10.3. Perches improve bone strength, but can contribute to fractures and deformed keel bones
 - 4.10.4. The shape, material, and cleanliness of perches/ platforms can impact foot health.
 - 4.10.5. Perches must meet the requirements described in the NFACC Codes of Practice Pullets and Laying hens.
- 4.11. Sanitize enrichment objects and furnishing, prior to placement and then as needed.
 - 4.12. Renew and replace objects and materials when they are no longer being used or they are depleted (or eaten), soiled or worn out to ensure the animals maintain interest and receive the benefits of the enrichment.
 - 4.13. Provision, changes and sanitation schedules for Environmental Enrichment devices must be documented.
 - 4.14. Ongoing evaluation is a necessary component to meeting the goal of more species-specific natural behaviors. The veterinarian, Animal Care personnel and research personnel will regularly monitor all enrichment, in part, by identifying stereotypical behaviors that might indicate animal stress or maladaptation to the environment.

Table 1: Enrichment that can be added to enhance a farming system for poultry (in addition to basic system properties)

Species (type)	Consideration for Enrichment	Characteristics of Effective Enrichment/ examples
BROILERS	<p>Motivation to address:</p> <ul style="list-style-type: none"> ▪ Poultry are strongly motivated <ul style="list-style-type: none"> – To explore their environment to forage for food (pecking, scratching, foraging), – To perch high up at night (safety), – To seek cover and shelter when unexpected stimuli evoke fear (providing control), – To maintain their feathers by dustbathing (species-typical behavior) <p>Welfare Risks:</p> <ul style="list-style-type: none"> ▪ Prolonged contact with floor surfaces has detrimental effects on footpads and hocks (contact dermatitis). ▪ Prolonged inactivity (lying down) impacts on walking ability, leg health and thereby welfare. <p>If needs are not met, there is a risk of feather pecking.</p>	<p>Offer (optimal enrichment)</p> <ul style="list-style-type: none"> ▪ To enable exploration and foraging: <ul style="list-style-type: none"> – bales of substrates for pecking and exploration (e.g., straw, wood shavings, alfalfa), – novel objects for pecking, exploration, including pecking stones. ▪ Feeding grain ▪ To enable perching: <ul style="list-style-type: none"> – Raised perches and platforms (with access ramps). – Cover – natural or artificial barriers, panels, bales of substrate, high platforms. – To enable feather maintenance: trays or dedicated areas with dustbathing substrates. ▪ Avoid (inappropriate enrichment): <ul style="list-style-type: none"> – Simple plastic objects or toys e.g. hanging CD as these DO NOT meet animals’ motivational needs. – Consider the safety of hanging objects (e.g. string): risk of hanging, entanglement and ingestion.
LAYERS	<p>Motivation to address:</p> <p>See Broilers for Motivation. In addition, layers are motivated to seek seclusion for egg laying.</p> <p>Welfare Risks:</p> <p>If needs are not met, there is a risk of feather pecking.</p>	<ul style="list-style-type: none"> ▪ Offer: <ul style="list-style-type: none"> – Seclusion – nestboxes with comfortable flooring (small group or individual nests) ▪ Avoid (inappropriate enrichment): <ul style="list-style-type: none"> – Simple plastic objects or toys e.g. hanging CD as these DO NOT meet animals’ motivational needs. – Other secluded areas that are less suitable for egg laying. – Badly designed nests can lead to crowding or smothering.

Adapted from BBFAW Briefing/ Environmental Enrichment for Farm Animals

Table 2: Enrichment Recommendations for Chickens:

<p>Perches and platforms (wood, plastics, sometimes metal)</p> <ul style="list-style-type: none"> - Suspended bars - A-frame structures - Platforms with or without ramps (e.g. aluminum grid ramps – light weight, easy to clean) 		<p>Materials stimulating foraging and dustbathing behavior.</p> <ul style="list-style-type: none"> - Sand – (stimulate activity/ foraging) - Oat husks , Moss-peat (stimulate dust-bathing). - Recycled paper bedding - Meal worms – requires frequent feeding to prolong the effect of food-based enrichment) - Hanging strings (Monochromatic (whit and/or yellow) String devices) - 	 
<p>Panels, barriers</p>		<p>Tunnels with holes for visibility (hide and rest) Nest boxes. Step stools that birds can perch on or hide under,</p>	
<p>Bales of Substrate – perching and pecking</p>		<p>Novel objects – <i>frequently</i> adding/ changing novel objects increases the resistance to stressors (e.g. noise)</p> <ul style="list-style-type: none"> - Colored plastic balls (perhaps consider can be given to the use of monochromatic colors per observations of the hanging string article) - Plastic bottles - Toys - Mirrors 	 

5. REFERENCES

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