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# Contenido

## Volumen 77: Suplemento 2, 2024

### **COPACO 2024-Segundo Congreso Internacional de Producción Animal Colombia**

Decano	7
Director de Departamento	7
Comité Organizador	7
Comité de Apoyo	7
Equipo Logístico	8
Pares Evaluadores	9
<b>Prefacio</b>	11
<b>COPACO-2024 -Un encuentro de la academia para la producción animal</b> <i>Guillermo Vásquez Velásquez</i>	11
<b>Conferencias de Apertura</b>	13
<b>Urban and territorial sustainability: Integrating agricultural production in new ruralities</b> Sostenibilidad urbana y territorial: Integración de la producción agropecuaria en nuevas ruralidades <i>Carlos M Pérez Nanclares</i>	15
<b>Bioclimatic and animal production in Colombia: Currently and prospective situation</b> Bioclimática y producción pecuaria en Colombia: Situación actual y prospectiva <i>Jairo A Osorio Saraz</i>	16
<b>Integral vision of well-being from the perspective of solutions based on nature and territorial governance</b> Visión integral del bienestar desde la perspectiva de soluciones basadas en la naturaleza y la gobernanza territorial <i>Juan C de los Rios Cardona</i>	17
<b>Genomics as a tool for the conservation and use of zoo-genetic resources</b> La genómica como herramienta para la conservación y aprovechamiento de los recursos zoo-genéticos <i>Juan C Rincón Flórez</i>	18
<b>Conferencias Egresados</b>	19
<b>Experience in associative work and generation of value in the productive sector</b> Experiencia de trabajo asociativo y generación de valor en el sector productivo <i>Juan D Zuluaga López</i>	21
<b>Bees in beekeeping as generators of well-being on different scales</b> Las abejas en la apicultura como generadoras de bienestar en diferentes escalas <i>Andrea X Montilla Duque</i>	23
<b>Epigenetic modulators in the <i>in vitro</i> production of bovine embryos</b> Moduladores epigenéticos en la producción <i>in vitro</i> de embriones bovinos <i>Rodrigo Urrego Álvarez</i>	24
<b>Conferencias Intenacionales</b>	25
<b>Animal Welfare in Latin America from a productive approach and in comparison with North America and Europe: Current situation, projections and future from the opinion of researchers</b> Bienestar Animal en América Latina desde un enfoque productivo y en comparación con América del norte y Europa: Situación actual, proyecciones y futuro desde la opinión de investigadores <i>Juan Pablo Damián</i>	27
<b>Welfare in commercial poultry farming? past, current and future</b> ¿Bienestar en la avicultura comercial? pasado, presente y futuro <i>Mateo Itza-Ortiz</i>	28

<b>Commercial egg production systems: Evolution and current situation in Brazil</b>	
Sistemas comerciales de producción de huevos: evolución y situación actual en Brasil	29
<i>José Henrique Stringhini</i>	
<b>Innovation in livestock production worldwide. The role of the Circular Economy and of Precision Livestock Farming</b>	30
Inovação na produção animal a nível mundial. O papel da Economia Circular e da Zootecnia de Precisão	
<i>Vasco Fitas da Cruz</i>	
<b>Sistemas agroalimentarios en el hambre cero</b>	32
<i>Juan Zuluaga</i>	
<b>Sustainable protein sources for animal feed – insects and their products – the need for a United Kingdom framework</b>	34
<i>Stephen C Mansbridge, Vasil R Pirgozliev, Laura Vickers, Eric Siqueiros, David White, Karl Behrendt, Jane Eastham</i>	
<b>Conferencias Nacionales</b>	35
<b>Collective intelligence for agri-food sustainability</b>	37
Inteligencia colectiva para la sostenibilidad agroalimentaria	
<i>Martha R Valverde Luna, Juan S Pineda Arango</i>	
<b>Animal Welfare’s contributions to Face the Global Challenges at 21st Century</b>	40
Contribuciones de Bienestar Animal para Enfrentar los Desafíos Globales del Siglo XXI	
<i>Ricardo Mora Quintero</i>	
<b>Chicharrón’s Festival - Engine of Sustainable Development and Food Sovereignty in Antioquia</b>	41
<i>Festival del Chicharrón - Motor de Desarrollo Sostenible y Soberanía Alimentaria en Antioquia</i>	
<i>Pedro J Madrid- Garcés, Tomás A Madrid-Garcés</i>	
<b>Resúmenes</b>	
<b>Resúmenes Módulo 1</b>	43
Grandes Rumiantes	
<b>Resúmenes Módulo 2</b>	83
Porcinos	
<b>Resúmenes Módulo 3</b>	99
Equinos	
<b>Resúmenes Módulo 4</b>	105
Avicultura	
<b>Resúmenes Módulo 5</b>	123
Pequeños Rumiantes	
<b>Resúmenes Módulo 6</b>	135
Piscicultura	
<b>Resúmenes Módulo 7</b>	143
Especies Productivas no Tradicionales	
<b>Resúmenes Módulo 8</b>	157
Zoocría	
<b>Resúmenes Módulo 9</b>	161
Animales de Compañía	
<b>Índice de Autores</b>	165

# **RESUMENES**

## **MÓDULO 4**

### **AVICULTURA**

## SISTEMAS DE PRODUCCIÓN Y AGROINDUSTRIA

### Eggshell quality of eggs produced by brown hens raised in cage-free system

Qualidade da casca de ovos de pedreiras marrons provenientes de sistema livre de gaiolas

Ligia Sarneiro Pereira<sup>1</sup>, **José H Stringhini**<sup>1\*</sup>, Fabyola Barros de Carvalho<sup>1</sup>, and Carla D Suguimoto Leite<sup>1</sup>

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**Introduction:** Egg production is essential to human consumption due to its low cost and nutritional aspects since they are rich in proteins, carbohydrates, lipids, vitamins, minerals, and fatty acids.

**Justification:** Several parameters can influence egg quality, such as bird age, housing system (conventional cage, cage-free, and, free range), and storage (period and temperature). **Objective:** This study aimed to evaluate the influence of the storage environment, bird age, and storage period on the physical characteristics of the shell of eggs from commercial laying hens housed in a cage-free system. **Methods:** The experiment involved 243 eggs of Hy-Line Brown® hens, which were distributed in a completely randomized design with a triple 3x2x3 factorial arrangement represented by three ages (36, 53, and 69 weeks), two storage temperatures (ambient and refrigerated), and three storage periods (10, 20, and 30 days), totaling 18 treatments. Eggshell weight (g), eggshell strength (kgf), and specific gravity (g/cm<sup>3</sup>) were measured and the eggshell percentage was calculated in relation to egg weight. Data were analyzed using R-project®. **Results and Discussion:** differences were observed on the eggs from advanced-age hens (69 weeks), which presented higher eggshell weight as compared to the other ages on day 10th, regardless of the storage environment. On the same day, eggs from 36 and 53 weeks presented their lower eggshell weight. Because of their size, the eggs from advanced-aged hens (69 weeks), presented lower eggshell strength as compared to the other ages. The specific gravity presented a sharper decline in eggs in ambient temperature. Eggs from advanced age laying hens (69 weeks) presented the lowest specific gravity, regardless of the storage environment. **Conclusion:** the advancing age of the laying hens reduced the eggshell quality due to less proportional calcium deposit in eggshells, regardless of the storage environment and period. Finally, storage environment, period, and bird age influence the quality of eggs stored for 30 days.

**Keywords:** Ambient temperature, eggshell quality, laying hens, refrigeration, storage

**Palabras clave:** Temperatura ambiente, calidad de la cáscara de huevo, gallinas ponedoras, refrigeración, almacenamiento

### Productive characteristics of the “miniature” hen (*Gallus gallus domesticus*)

Características productivas de la gallina “miniatura” (*Gallus gallus domesticus*)

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**Introduction:** “Miniature” hens and roosters, also known as Kikiriki, Arlequines, Habanero, Azteca, Currito, Filipino, are birds of the *Phasianidae* family considered as companion or ornamental birds. They are known as “miniature” hens due to their size, which resembles a pullet in the growth phase with the morphological characteristics of an adult hen. It has been considered that “miniature” hens have an approximate measurement of 25% of the size of a *Gallus gallus domesticus* “normal” since they can weigh between 300 to 450 g and measure between 20 to 30 cm in height with an average lifespan of 5 to 6 years. **Objective:** To announce, some morphological and productive aspects of the miniature hen. **Methods:** Seven miniature hens of approximately 6 months of age were housed individually in individual scratching posts of 90 x 90 cm and were fed with commercial hens feed of 17% protein and 2800 kcal/kg and freshwater *ad libitum*. The study variables were oviposition frequency (d), egg weight (g), yolk color, DMS fan was used, shell thickness (mm) and albumen height (mm). The data were captured and analyzed with Microsoft Excel using a descriptive statistics of frequency table, mean, standard deviation. **Results and Discussion:** 45.45% of the hens had an oviposition frequency between 1 to 2 days, 34.09% between 2 to 3 days, 15.91% between 3 to 4 days. The maximum average egg weight found was 27.36±4.42 g (CV= 19.38); the minimum was 21.81±1.52 g and the heaviest was 36.10±1.22 g and in neither case was a double yolk observed. The yolk color was 8.50±2.71, the shell thickness was 0.32 ±0.05 and the albumen height was 3.89±1.22. **Conclusion:** The “miniature” *Gallus gallus domesticus* has productive characteristics like a “normal” hen and in addition to being an exhibition or companion hen, it can be considered acceptable as a production hen.

**Keywords:** Egg production, miniature hen, morphology

**Palabras clave:** Producción de huevo, gallina miniatura, morfología

## Índice de autores

### A

Abel Villa-Mancera 93, 152  
Abid S Cañate González 120  
Adriana C Rada 139  
Adriana Quintana Canaba 137  
Adrián F Medina Montes 146  
Albeiro López-Herrera 77, 78, 117, 118  
Aldo J Ibarra-Rondón 60  
Alejandra Álvarez Múnera 52  
Alejandra Cuatrin 71, 72, 80  
Alejandro Britos 61, 116  
Alejandro Córdova-Izquierdo 93, 152  
Alejandro L Soraci 96  
Alejandro Ramírez Madrigal 66  
Alejandro Strauch 60  
Alessandra Stella 127  
Alexander Moreno 110  
Alexandra Úsuga Suárez 93, 95  
Álvaro J Uribe Serrano 89, 112, 117  
Alvaro M Cadena Pastrana 45, 145  
Álvaro Rincón Castillo 86, 88  
Amanda L Mora Martínez 79  
Amanda Silva Parra 62  
Ana Peralta Vega 129  
Andrea X Montilla Duque 23  
Andrés Acevedo 66  
Andrés F Rodríguez Reyes 78  
Andrés Gómez Zapata 88, 91  
Andrés Mejía 48  
Ángela R Martínez 90  
Angélica M Torres Bejarano 149  
Angelica Santos Escobar 110  
Ángel M Benítez Rodríguez 65  
Ángel T Piñeiro-Vázquez 131  
Angely G Garzón Torres 110  
Antonella Picca 71, 72  
Antonio Duque Ramírez 58  
Aramy J Vásquez Hermosilla 68, 129  
Arianna Manunza 127

### B

Belloncy Gallego Rey 58  
Benjamín A Rojano 103  
Blanca C Martínez Morales 89, 112, 117  
Brandon S Bustamante Castañeda 48, 57

Brayan S Mantilla Delgado 73, 75  
Bryan Stiven Sánchez Beltrán 70  
Byron A Hernández Ortíz 88, 110

### C

Camila A Ruiz Jiménez 120  
Camila A Villalobos Gutiérrez 111  
Camila Moreira 61  
Camila S De Oliveira 69  
Carla D Sugimoto Leite 114, 122  
Carlos A David Ruales 139  
Carlos A García Bayona 137  
Carlos A Jojoa Rodríguez 164  
Carlos A Maya Ortega 88, 91, 111, 118, 149  
Carlos F Duque Ramírez 111, 112, 114, 115, 117  
Carlos F Prada Quiroga 130  
Carlos M Pérez Nanclares 15  
Carolina Jaramillo Gómez 101  
Carolina Mendoza Hortúa 96  
Caterine López Sánchez 77, 78  
Cecilia Cajarville 61  
Cecilia Jiménez Plascencia 92  
Cindy A Taborda Piedrahíta 61  
Claudia D De Paula 139  
Claudia del P Herrera Farfán 46  
Claudia P Rendón Ocampo 80  
Cristian C Rúa Giraldo 77, 78  
Cristina Álvarez Múnera 51, 52  
Cristina Úsuga- Monroy 77, 78  
Cruz E Enríquez Valencia 111, 112, 114

### D

Dalia M Rodríguez Jiménez 60  
Daniela Ahumada Cabarcas 137  
Daniela García González 151  
Daniela Velandia Benito 110  
Daniel F Ovalle Orjuela 61  
Daniel Guzmán Zapata 70  
Daniel M Echeverri De la Hoz 120  
Daniel Scandolo 71, 72, 80  
Danny Barney Borrero 152  
Darwin A García 125  
Darwin Y Hernández Herrera 50, 132, 151

David A Hernández Ricaurte 94  
David E Quintero-Bastidas 72  
David F Nieto Sierra 87  
David J González Arenas 78  
David R Sánchez Chipres 92  
David White 34  
Dayra García 107  
Deilen P Sotelo Moreno 62, 68, 69, 70, 107  
Deisy J Díaz Sánchez 73  
Diana C Mogollón Vergara 48, 64, 130  
Diana E Buendía-Lara 139  
Diana M Bolívar Vergara 50, 51, 52, 54, 81  
Diana M Valencia-Echavarría 113  
Diego A Hernández Pulido 58  
Diego A Moya Martínez 68, 129  
Diego A Velasco-Acosta 74  
Diego Camisasso 71, 72  
Diego F Carrillo González 73, 75, 146  
Diego F Dubeibe Marín 73  
Diego Hernando Angulo-Florez 82  
Diego Scandolo 71, 72, 80

### E

Edgar Aguilar-Urquizo 108, 122, 131  
Edgar A Martínez 62, 107  
Edgardo Ortega 71, 72  
Edgar R Moreno Jerez 73, 86  
Edimer D Jaramillo 50  
Edison J Ramírez Toro 87  
Edwin Castro Rincón 80, 145  
Edwin D Correa Rojas 149  
Edy S Acosta Calderón 113  
Efrén G Insuasty Santacruz 164  
Eliana M Ruiz Bayona 128  
Eliana Neira Rivera 94  
Elis O Figueroa Castillo 110  
Elizabeth Quenza 75  
Elkin O Romero-Cárdenas 76, 125  
Elkin S Mendoza Doncel 82  
Emiro R Canchila Asencio 125  
Enrique Murgueitio 63  
Eric Siqueiros 34  
Erika Meneses Estrada 145  
Erika M Marcín-Marrufo 131  
Erika P Grijalba Bernal 63

Katty G Bernal González 115  
 Kelly V Zapata Carmona 93, 95  
 Kristina Osbjer 96

**L**

Lady L Restrepo Bolivar 90  
 Laís G Cordeiro 110  
 Laura Vickers 34  
 Leonardo A Alemán 139  
 Leonardo Alzate Mejia 120  
 Leylis Y Nuñez López 137  
 Ligia J Jaimes Cruz 48, 57, 64  
 Ligia Sarneiro Pereira 114,122  
 Lina M Peñuela Sierra 111, 112, 114  
 Lina M Pérez Arenas 75  
 Liranis L Flórez Botello 46  
 Lisbeth Campos-Arenas 125  
 Loufrantz J Parra Méndez 112, 117  
 Luane B Gonçalves Andrade 110  
 Luciano Prímola de Melo 62, 68  
 Lucia Toledo 61  
 Luis A Alonzo Griffith 128  
 Luisa F García Ospina 115  
 Luis Altahona Buelvas 65, 67  
 Luis Carlos Ramírez Villa 62  
 Luis C Muñoz Domínguez 154, 164  
 Luis C Ramírez Villa 107  
 Luis C Veloza Angulo 90  
 Luis Ernesto López 70  
 Luis F Escalante Ramírez 137  
 Luis F Vargas Vivas 72  
 Luis G González Herrera 50, 51, 52, 54, 55, 56, 81  
 Luis M Cohen Teherán 53, 81  
 Luz A Gutiérrez Ramírez 139  
 Luz A Álvarez 127  
 Luz E Castillo Pabón 110  
 Luz M Botero Arango 45  
 Luz M Guevara Rincón 137  
 Luz M Salazar 149

**M**

Mabel J Ortiz de Leo 96  
 Maira A Mejía Sánchez 48  
 Manuela Liebano Arango 52, 54  
 Manuel Casas 71, 72  
 Manuel Robles Robles 152  
 Manuel Robles-Robles 93  
 Marbel Y Monroy González 78  
 Marcela Beristáin-Ruiz 108, 122  
 María C Londoño Méndez 74

María C Renjifo Ibañez 152  
 María C Roza Florez 94  
 María del P Pineda Ortiz 96  
 María E Bohórquez López 67  
 María J Hernández Ruiz 101  
 María J Muñoz Ramirez 64, 130  
 María K Gómez Morales 66  
 Mariana H Paes Barboza 141  
 Mariano E Acosta Lobo 103  
 María S Sánchez Pinzón 58  
 María Yepes Pérez 79  
 Maribel Echeverry Tangarife 58  
 Marina Fernández-García 116  
 Marisela Méndez-Rosas 93  
 Martha I Gómez Álvarez 63  
 Martha J Prieto-Guevara 139  
 Martha L Chaparro Rodríguez 63  
 Martha R. Valverde Luna 37  
 Martha Y Gutiérrez Ibañez 73, 86, 88, 94, 97  
 Martin Maciel 71, 72  
 Mateo Itza-Ortiz 28, 30, 108, 122, 131  
 Mateo Sepúlveda Rodríguez 116  
 Matheus S Da Silva Ferreira 132  
 Matías Bermann 52  
 Mauricio Rojas López 93, 95  
 Mauricio Sotelo Barrios 163  
 Mayerling Sanabria Buitrago 49  
 Mayra A Cervera Ricardo 129  
 Mayra Diaz Vargas 111, 112, 113, 114, 115, 116, 117  
 Miguel A Ayala Valdovinos 92  
 Miguel Á Magaña-Magaña 131  
 Miguel A Peña Joya 72  
 Miranda E Smith 109  
 Miselly López 89  
 Moisés A Gaibao Pérez 67  
 Mónica M Ávila Sarmiento 53  
 Mónica M Segura Restrepo 91  
 Mónica Reinartz Estrada 159

**N**

Nancy Rodríguez Colorado 85  
 Neil Vásquez Araque 79  
 Nelson E Arenas 149  
 Nelson S Peña Barreto 68  
 Nikolay Karkelanov 118  
 Nina Y Sepúlveda Monroy 117  
 Noemí Pérez-Mendoza 93, 152  
 Norberto Villa Duque 76

**O**

Olga Barreto 48  
 Olga L Torres-Neira 82  
 Orleydy Racero Espitia 139  
 Oscar A Sáenz Ruiz 67, 90  
 Oscar E Yepes Higueta 51, 54, 55

**P**

Pablo López del Cerro 71, 72  
 Pablo Peraza 127  
 Paola A Damázio Rodrigues 110  
 Paolo Cozzi 127  
 Patricia Herrera Demares 120  
 Paula A Vargas Martínez 46  
 Pedro J Fragoso-Castilla 60  
 Pedro J Madrid-Garcés 41  
 Pedro P Bacca Acosta 145  
 Piedad Y Martínez-Oquendo 113

**R**

Rafael J Otero Arroyo 73, 75  
 Raúl A Velásquez Vélez 128  
 René M Patiño Pardo 45, 65, 67, 68, 129  
 René Ramírez Garcia 67, 70, 90  
 Ricardo González Quintero 58  
 Ricardo J. Ocampo Gallego 87  
 Ricardo Mora Quintero 38  
 Ricaute Lopera Vásquez 79  
 Ricci Terraza Martínez 76, 125  
 Rodolfo Ruiz Posada 125  
 Rodrigo Urrego Álvarez 24, 70  
 Rolando Barahona-Rosales 58, 60, 61, 63  
 Román Castañeda Serrano 48, 64, 130 163  
 Román E Maza Ortega 62  
 Ronnal E Ortiz Cuadros 80  
 Roy Rodríguez Hernández 163

**S**

Sabrina del C Jiménez Velásquez 152  
 Saira Romero Sanchez 48, 64, 130  
 Samir J Calvo Cardona 56  
 Sandra C Pardo Carrasco 137, 138, 139  
 Sandra J Castañeda 97  
 Sandra P Rodríguez González 117, 132  
 Santiago Berrío Calle 67  
 Santiago Henao Villegas 101