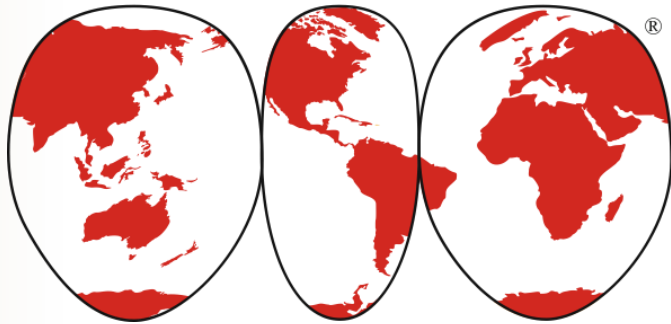


JOHN ARBUCKLE

The Cheapest Way To Produce The Best Egg



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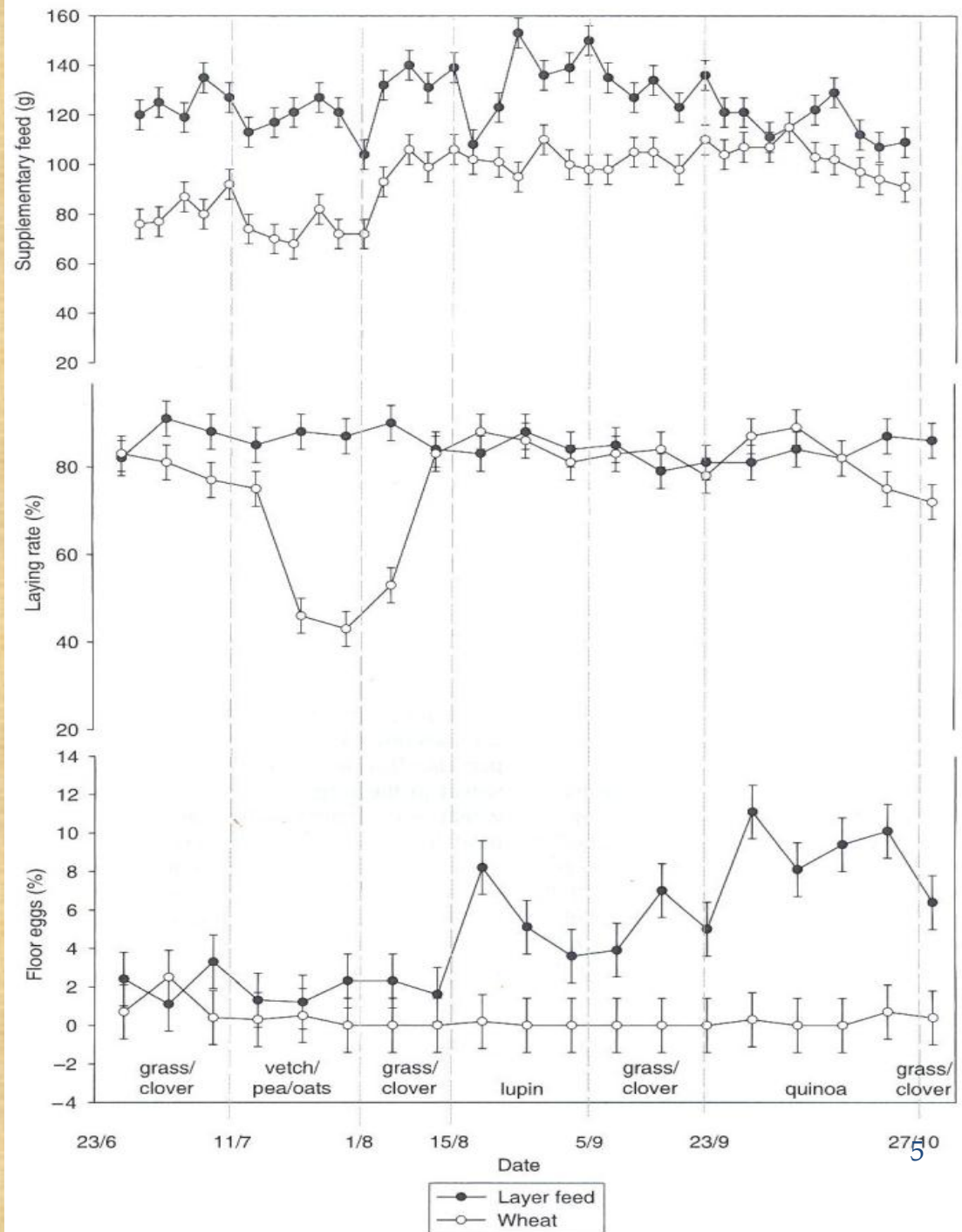
Singing Prairie Farm

La Plata, MO



Whole wheat versus mixed layer diet as supplementary feed to layers foraging a sequence of different forage crops

K. Horsted and J. E. Hermansen



Wheat Sprouting Process

- **Wheat was soaked for two days fully submerged in water**
- **On the Third day water was drained and wheat was allowed to sprout**
- **Wheat was fed to chickens on day four**



Nutrition in Sprouted Wheat

Analysis		Monogastric	Ruminants	
<u>Wheat Sprouts</u>	<u>Moisture</u>	<u>Protien</u>	<u>Protein</u>	<u>Energy</u>
		(As Fed)	(Dry Matter)	Kcal/Lb
Wheat	12.40%	11.10%	12.70%	1382
Day 1	46.50%	6.70%	12.50%	835
Day 2	60.10%	5.20%	13.20%	623
Day 3	65.00%	4.80%	13.70%	541
Day 4	72.60%	3.80%	14.00%	420
Day 5	77.90%	3.30%	14.80%	332
Day 6	83.90%	2.80%	17.20%	237

Breeds of Chickens

Heritage:

Road island Red



Hybrid:

Red Sex-Link



Rotational Grazing



Management

- **Four experimental groups of chickens**
- **Each group contained approximately 40 chickens**
- **One handmade shelter per group that was moved onto fresh pasture daily**
- **Electric poultry fences moved twice a week**



Impact Lack of Rain Has on Pasture

May



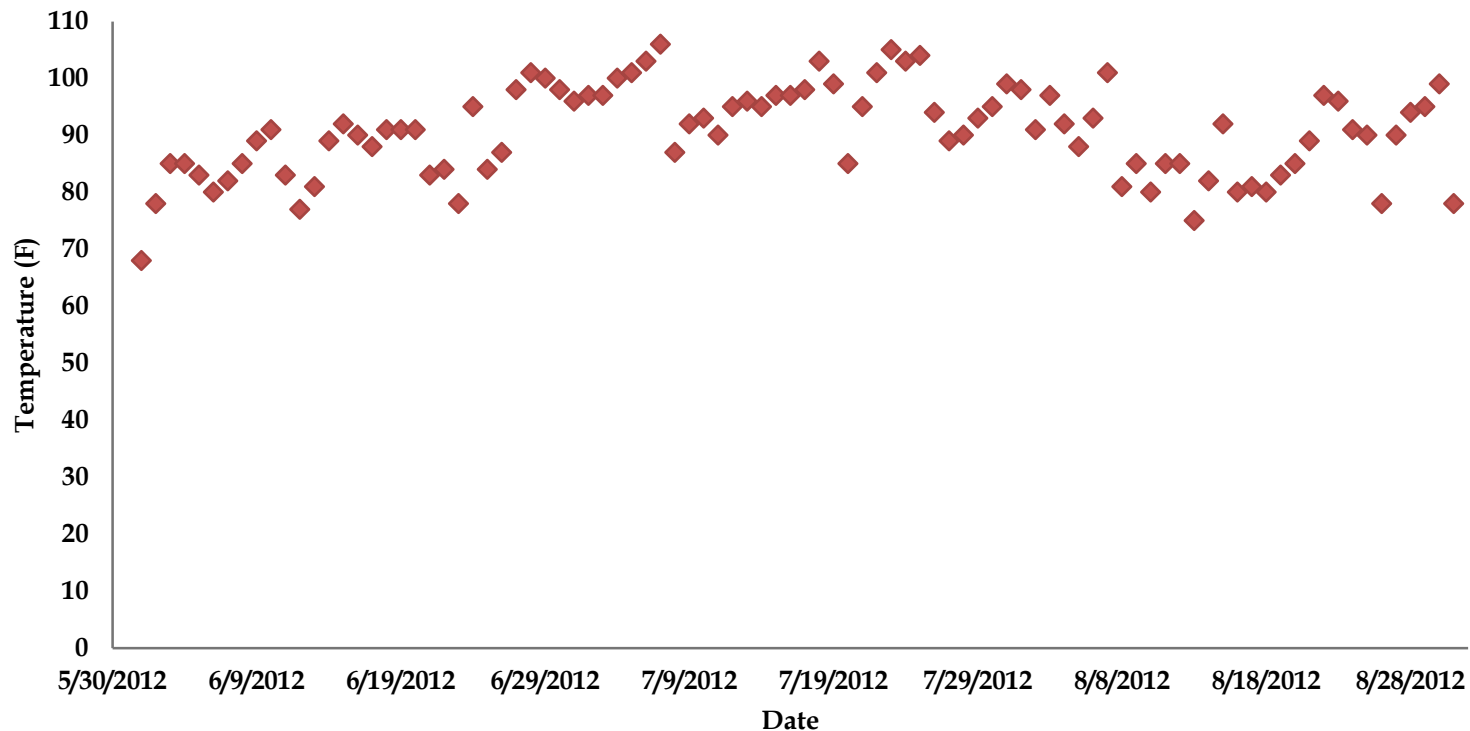
August



Temperature: Summer 2012

- High of 106 in July!
- Remained in upper 90's most of the summer

Temperature in Kirksville, MO Summer 2012

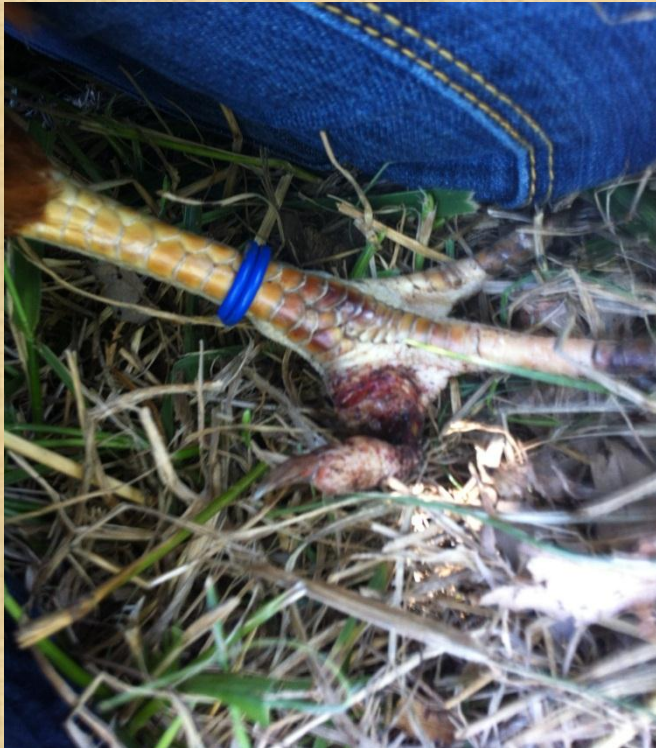


Drought Management



Behaviors in D: Lacking in Nutrients?

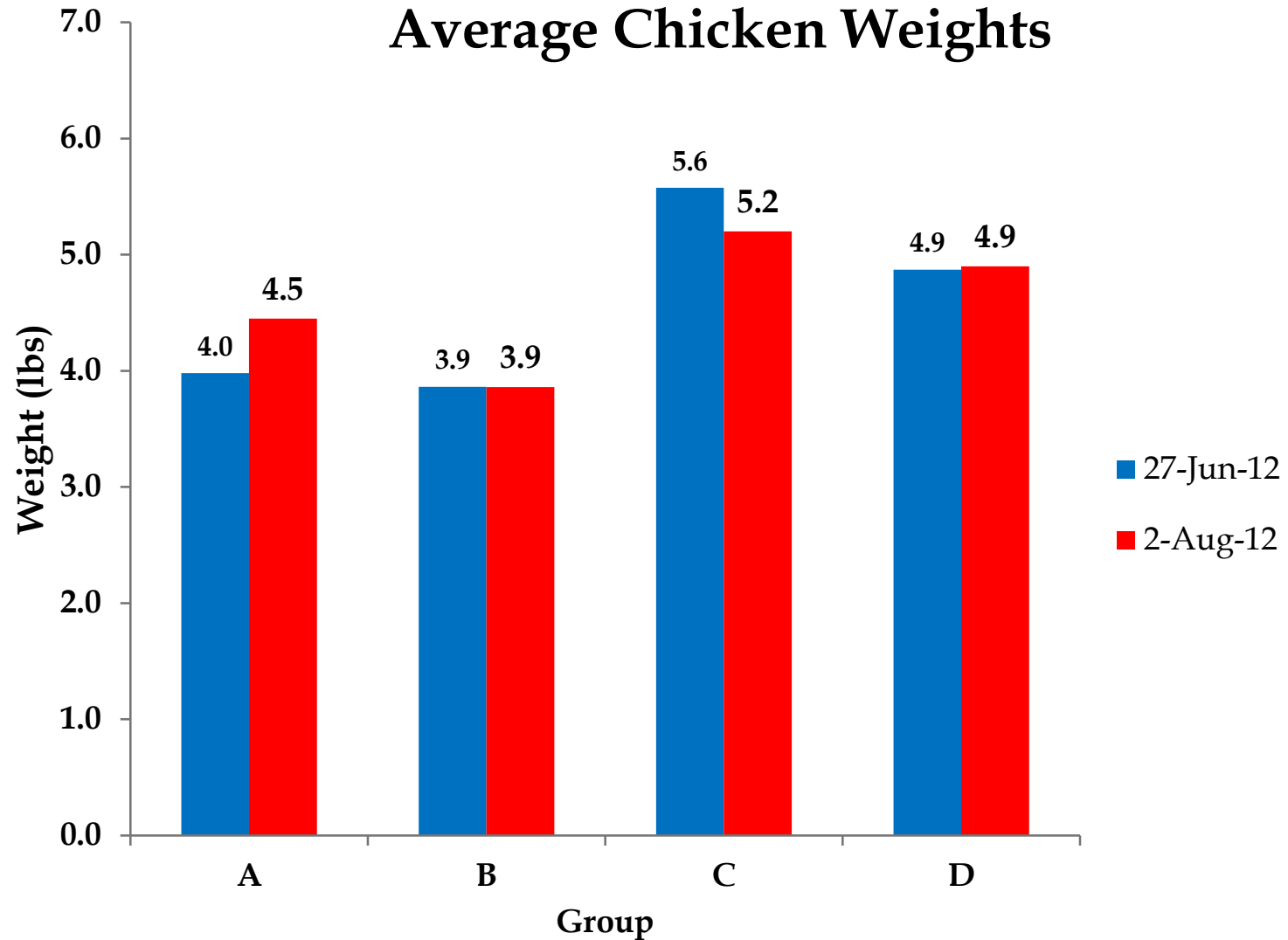
Toe-Pecking



**Feather
Picking**

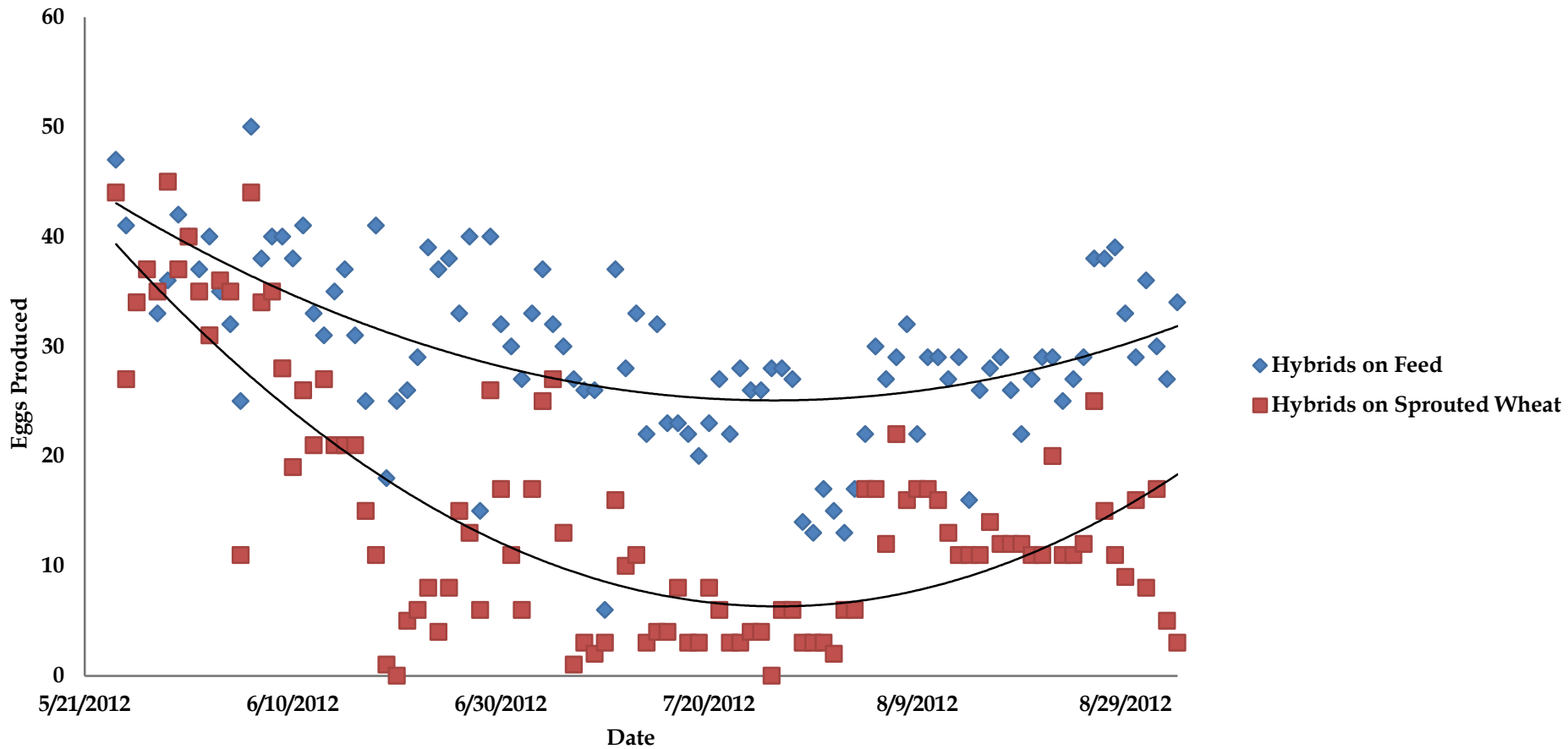


Average Chicken Weights



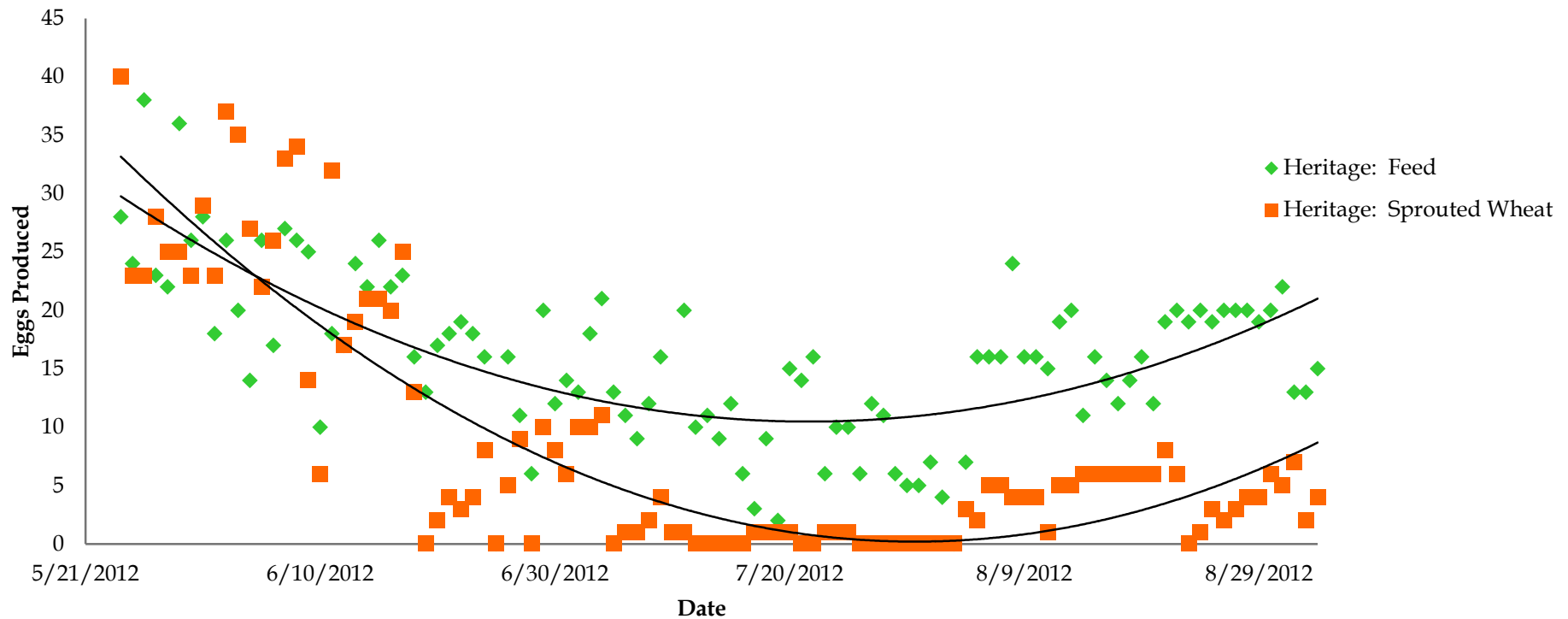
Feed vs. Sprouted Wheat

Comparing Production of Hybrid of Chickens: Feed vs Wheat



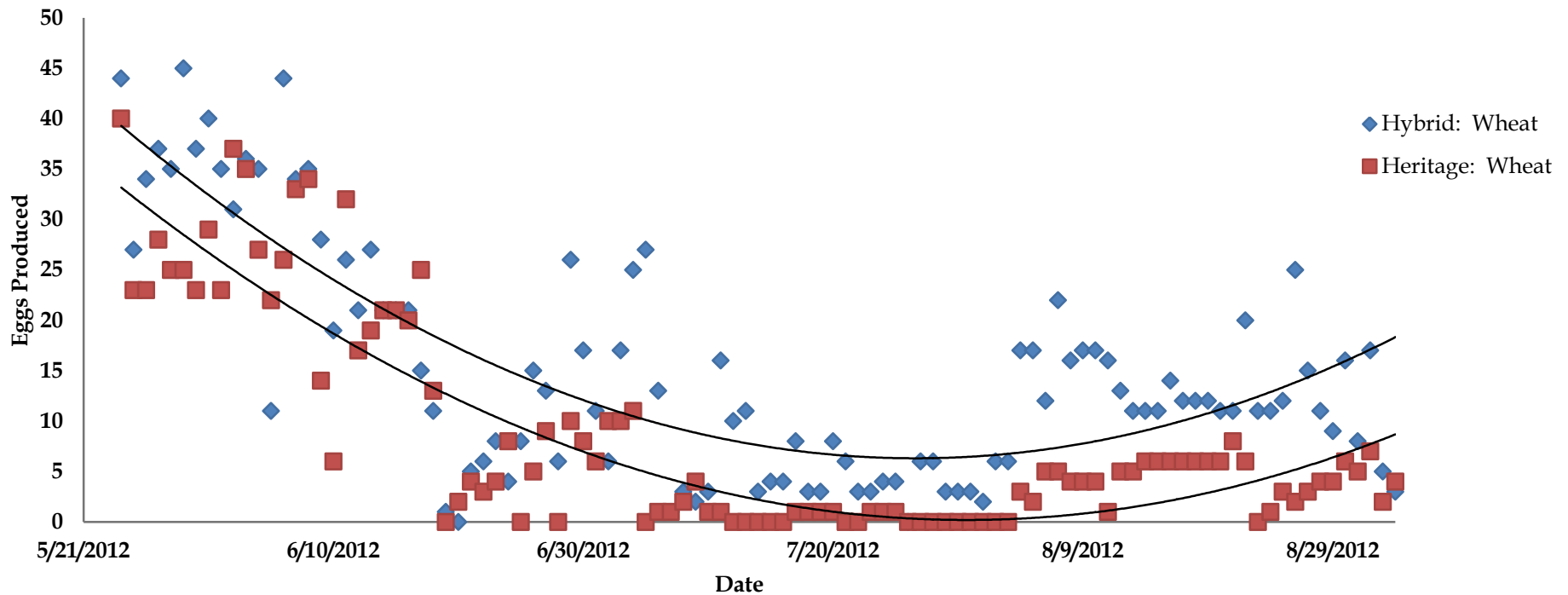
Heritage: Feed vs. Sprouted Wheat

Comparing Egg Production in Heritage Chinkens: Feed vs. Sprouted Wheat



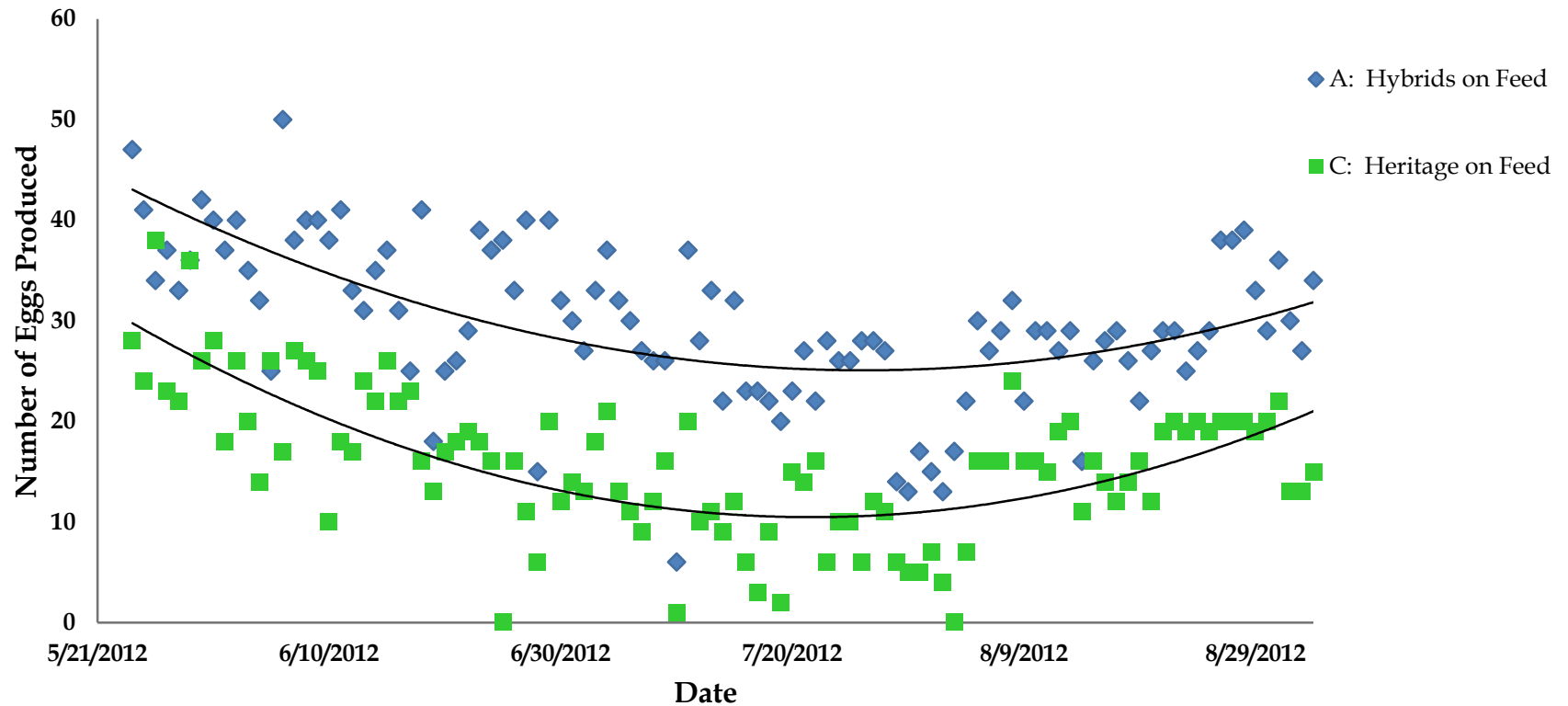
Wheat: Hybrids vs. Heritage

Comparing Consumption in Breeds of Chickens Consuming Sprouted Wheat



Feed: Hybrids vs. Heritage

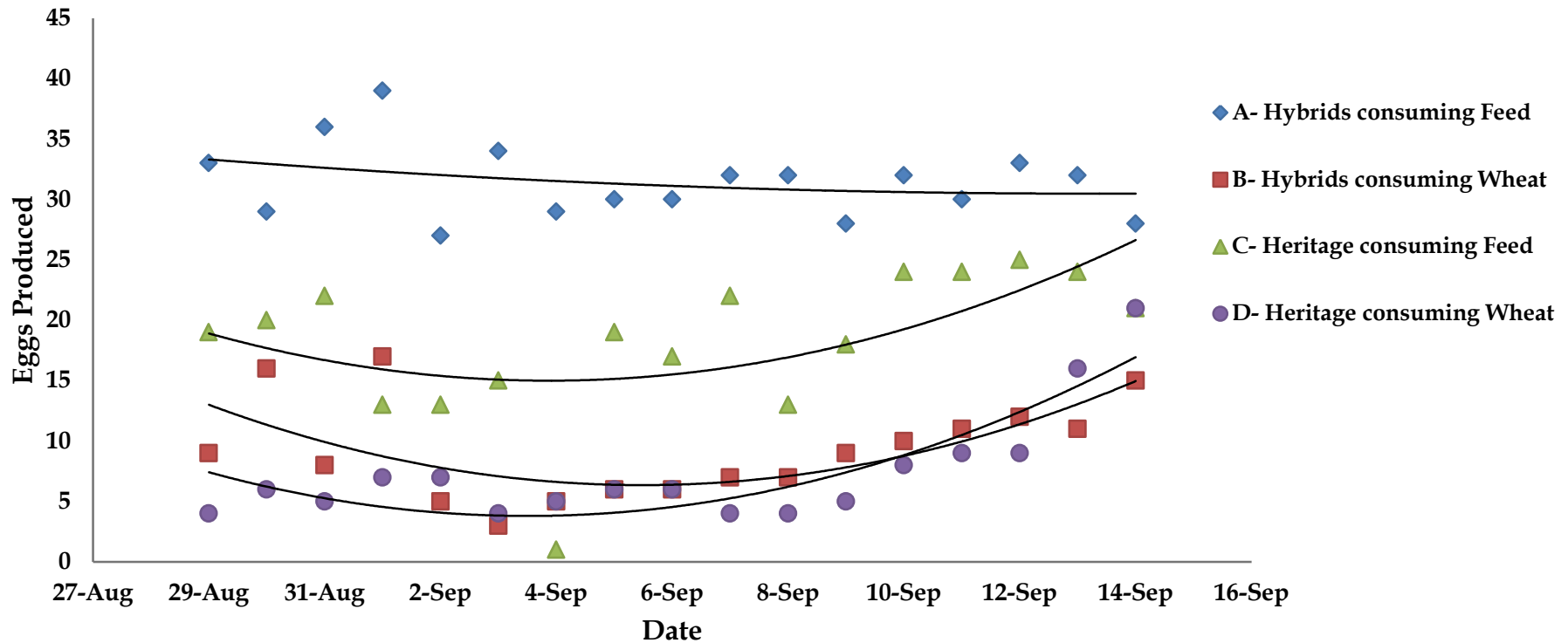
Comparing Breeds of Chickens on Feed



Production in Cooler Weather

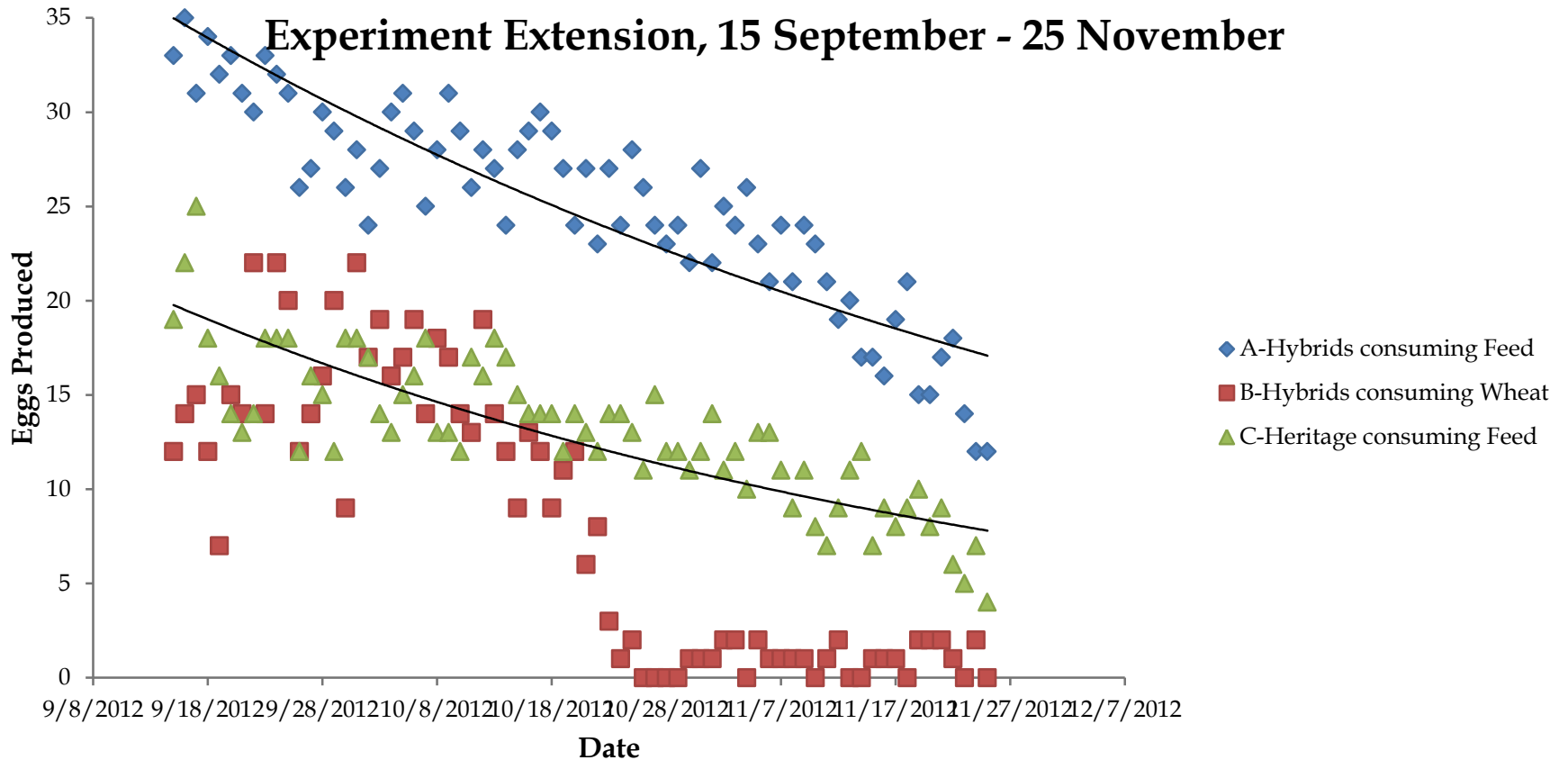
August 29- September 14

Date in Cooler Weather (September)



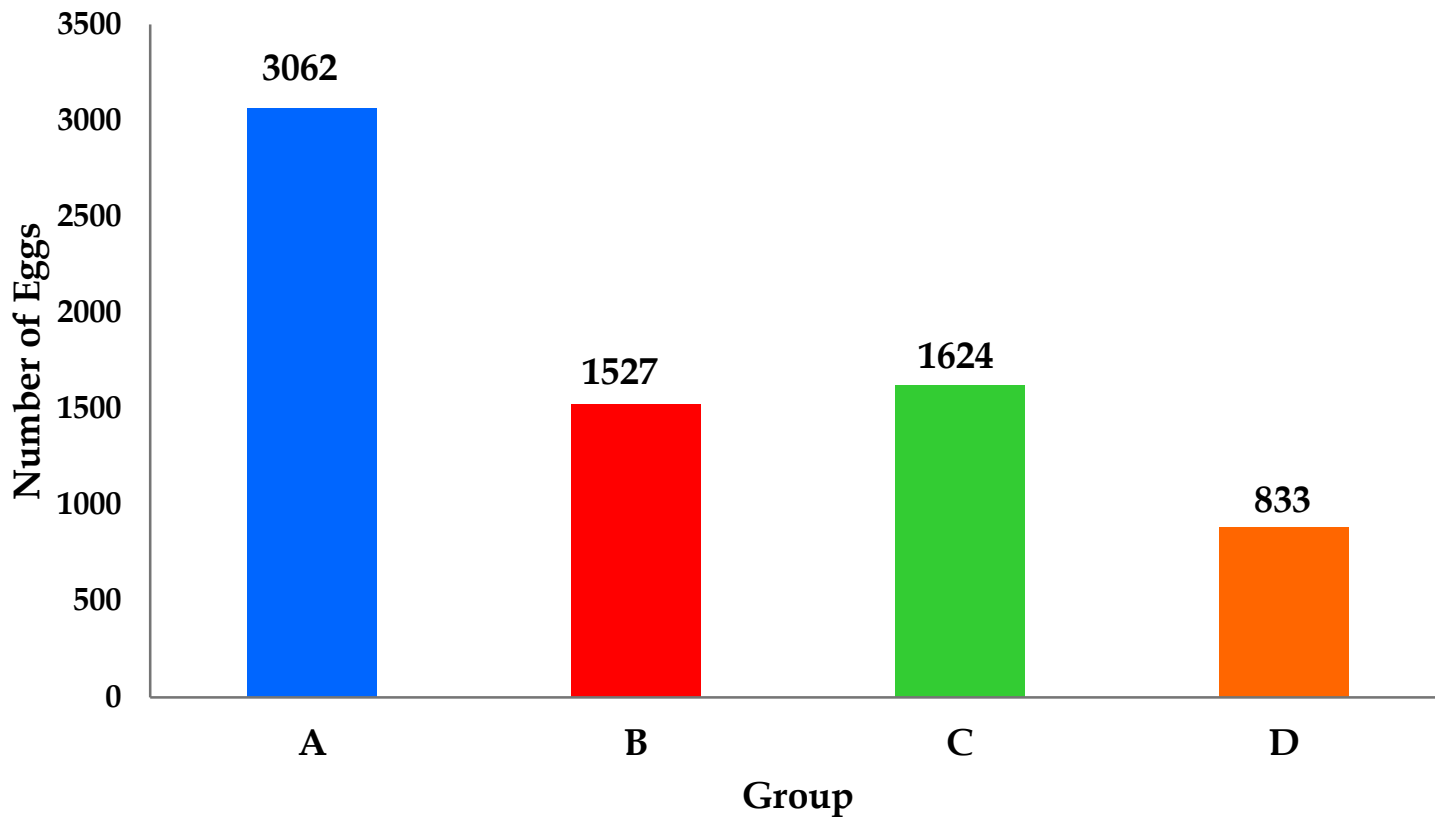
- D (Heritage consuming wheat) increased production back to as many as 21²⁰ eggs in cooler weather

Feed: Hybrids vs. Heritage

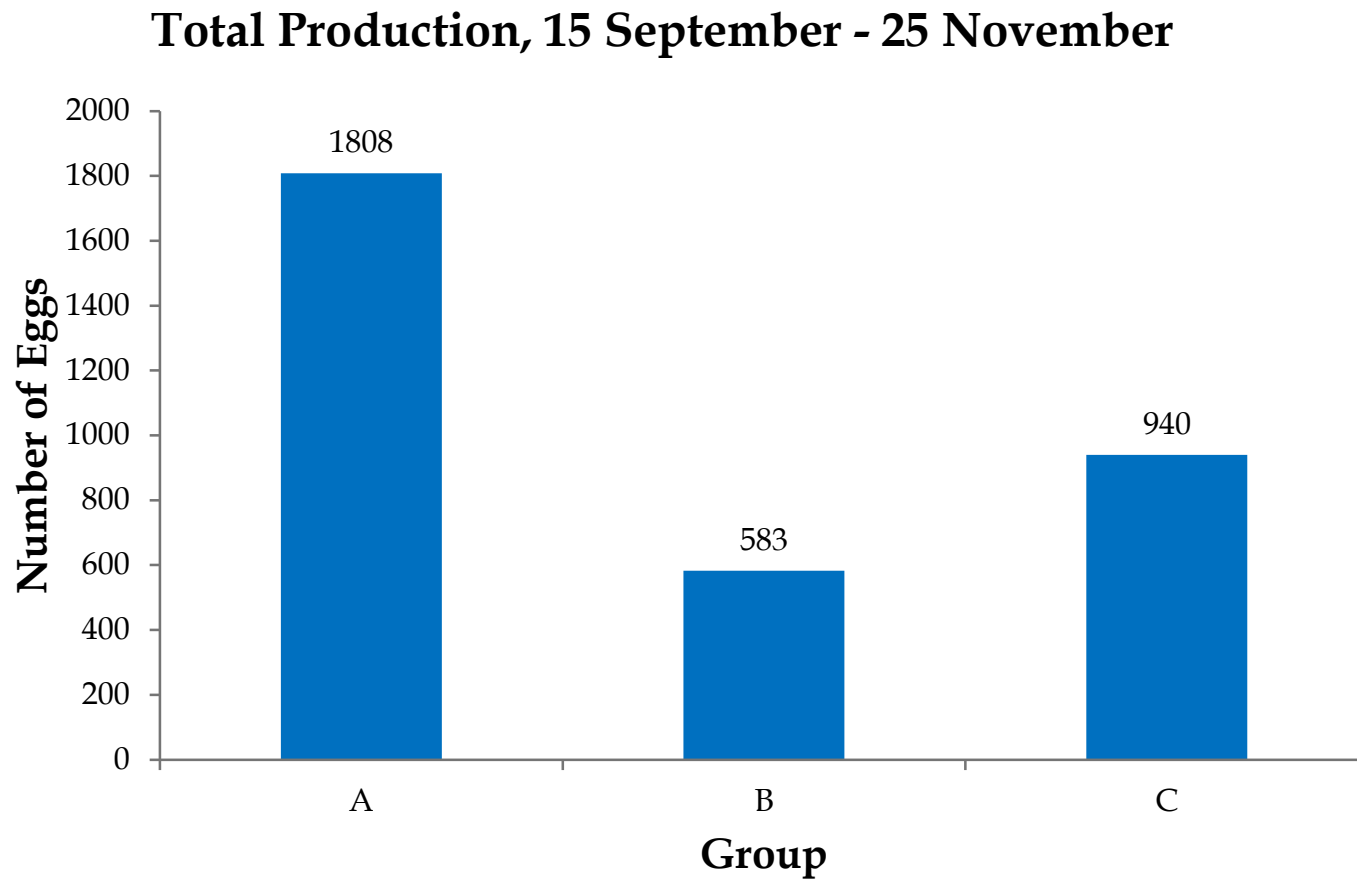


Total Eggs Produced

Total Production, 21 May - 29 August



Total Eggs Produced



Feed Cost Effectiveness

Feed Cost Effectiveness					
	Amount of Feed Consumed Daily (lbs)	Cost per Chicken Pen per Day	Cost Per Chicken per Day	Cost Per Egg	Cost per Dozen
A	9.5	\$3.60	\$0.09	\$0.128	\$1.54
B	9.5	\$1.58	\$0.04	\$0.113	\$1.36
C	13.2	\$4.98	\$0.13	\$0.334	\$4.01
D	9.5	\$1.58	\$0.04	\$0.207	\$2.48

Future Direction

BioPod™

- Using Black Soldier Fly larvae
- Feed compost to larvae
- Feed the larvae to Chickens



Future Direction

Red Wiggler Composting Worm



What Can I Feed?

Appendix C: Commercial Layer Nutritional Requirements							
Feed Intake	0.28	0.26	0.24	0.22	0.2	0.18	0.16
Approximate Protein (%)	13	14	15.5	17	19	20.5	22.1
Metabolizable Energy (Kcal/Lb)	1227	1227	1275	1295	1295	1295	1318
Calcium (%)	3	3.25	3.5	3.6	3.8	4	4.25
Available Phosphorus (%)	0.35	0.4	0.4	0.42	0.45	0.45	0.47
Sodium (%)	0.17	0.18	0.18	0.19	0.2	0.2	0.22
Amino Acids (% of Diet)							
Argine	0.55	0.6	0.68	0.75	0.82	0.9	0.98
Lysine	0.49	0.56	0.63	0.7	0.77	0.84	0.91
Methionine	0.28	0.31	0.34	0.37	0.41	0.47	0.56
Methionine/Cystine	0.48	0.53	0.58	0.64	0.71	0.8	0.91
Tryptophan	0.1	0.12	0.14	0.15	0.17	0.18	0.2
Histidine	0.13	0.14	0.15	0.17	0.19	0.25	0.25
Leucine	0.64	0.73	0.82	0.91	1	1.09	1.18
Isoleucine	0.43	0.5	0.57	0.63	0.69	0.73	0.82
Phenylalanine	0.34	0.38	0.42	0.47	0.52	0.57	0.61
Phenylalanine+Tyrosine	0.55	0.65	0.75	0.83	0.91	0.99	1.08
Threonine	0.43	0.5	0.57	0.63	0.69	0.73	0.82
Valine	0.49	0.56	0.63	0.7	0.77	0.82	0.91
Vitamins (per Lb)							
Vitamin A (I.U.)				3410			
Vitamin D (I.U.)				1150			
Choline (mg)				550			
Riboflavin (mg)				2			
Pantothenic Acid (mg)				4.5			
Vitamin B ₁₂ (mg)				0.005			
Folic Acid (mg)				0.35			
Biotin (mg)				0.07			
Niacin (mg)				18			
Vitamin K (mg)				1			
Vitamin E (I.U.)				12			
Thiamin (mg)				1			
Pyridoxine (mg)				1.5			
Trace Minerals (PPM)							
				PPM			
Manganese				70			
Iron				80			
Copper				8			
Zinc				60			
Selenium				0.3			
Iodine				0.4			

Note: Trace mineral requirements remain the same for all rations.

* The information contained in this table has been obtained from Commercial Poultry Nutrition, by S Leeson and J.D. Summers

Thank You!



John Arbuckle Singing Prairie Farm 660-332-4020