

Reduced Protein for Heritage Chickens



LIVESTOCK BREED
SELECTION



ALTERNATIVE
LIVESTOCK FEED

Farmer-Researcher(s):

Heather Newman, D&H Newman Farm - West

EFAO Contact

Sarah Hargreaves, sarah@efao.ca

This document outlines the steps that Heather will follow to execute her research project, *Reduced Protein for Heritage Chickens*, including design, execution, data collection and data sharing. It also serves as a Memorandum of Understanding between Heather and EFAO.

Background

Heather raises Chantecler chickens, a dual purpose bird that is also Canada's only heritage breed of chickens. Until now, she's raised them on the standard commercial rations, but she suspects they have different feed requirements compared to commercial hybrids. Heather is curious to see if the Chantecler can grow well on a reduced protein feed during the grow-out period. This, in turn, would reduce her feed costs. Even more, it would demonstrate that raising Chanteclers can be an economic enterprise for meat and layers, which better maintains genetic diversity over breeding the birds just for show.

Experimental Design & Feed Rations

During the growing stage of development, Heather will compare a standard commercial ration (16% protein) to a reduced-protein ration (13% protein) with the goal to maintain her current performance metrics (growth, health, livability etc).

Heather will raise 3 cohorts of Chantecler chickens per year, and follow this design for 2+ years. For each cohort, she will raise them as follows:

Age Range	Control ration	Treatment ration	Note
0 - 8 weeks	20% protein		Until birds are feathered out
8 weeks - 6 months	Grower 16%	Grower 13%	Until fully grown; with short transition period of a few days
6 months+ for hens	Layer ration, 17%		Cockerels will be butchered.

Farmer-Led Research 2019:

Reduced Protein for Heritage Chickens



LIVESTOCK BREED
SELECTION



ALTERNATIVE
LIVESTOCK FEED

Cohorts

Heather will grow out three cohorts of Chantecler chicks throughout the 2019 season. When chicks are ready to go to the reduced protein ration (at ~ 8 weeks), she will divide each cohort in half using by placing a divider in the brooder in such a way that approximately half the hens (chicks that crowd to back of brooder) and cockerels are in each group. She will count chick numbers after this separation and adjust as needed. The two groups from the cohort will be grown out in separate pens on pasture until males and culls are butchered and hens are sold as layers or kept as breeding stock.

Heather will weigh each chick in all cohorts **monthly** using a hanging scale.

Measurements

Evaluation Forms

General Flock Records - see [linked sheet](#)

Feed Records

Weight measurements

Health Records

Research Expense Budget

Prices are approximate; NA or in-kind for any materials that you already own or have access to. Please indicate if you intend to give any of the supplies to EFAO's Tool Library for others to use after you are finished with them.

Material	Quantity	Unit	Total Cost	EFAO's Tool Library (Y/N)
Materials for keeping the treatment and control separate				N
Pull-out hanging scales				Y

Farmer-Led Research 2019:

Reduced Protein for Heritage Chickens



LIVESTOCK BREED
SELECTION



ALTERNATIVE
LIVESTOCK FEED

Research Calendar

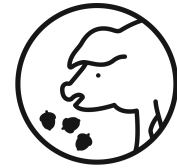
Time	Task	Action Item
March	Hatch 1	
April	Divide and weigh (Cohort 1 divided, not weighed)	
May	Begin grower feed (May 24th)	
	Hatch 2 (April 16th)	
	Weight 1 and move to outdoor pen (moved June 2)	Sarah will check-in
	Divide 2 (may 28th)	
June	Weigh 1 & 2 (June 12)	Sarah will check-in
	Hatch 3 (June 1-15) Move 2 outside	
July	Begin 2 on grower	Sarah will check-in
	Weigh 1 & 2	
Aug	Weight 1, 2 & 3	Sarah will check-in
Sep	Process 1 (Sep 11) Record live hen weights and carcass weights	Sarah will check-in
	Begin grower for 3	
Oct	Weigh 2 & 3	Sarah will check-in
Nov	Process 2, record live hen weights and carcass weights	Sarah will check-in
	Weigh 3	
Dec	Weigh 3	Sarah will check-in
Jan	Process 3, record live hen weights and carcass weights	Sarah will check-in

Farmer-Led Research 2019:

Reduced Protein for Heritage Chickens



LIVESTOCK BREED
SELECTION



ALTERNATIVE
LIVESTOCK FEED

Deadline for data, progress report and photo submission
October 31, 2019 or earlier - with as much data as is available.

Memorandum of Understanding

Please refer to efao.ca/research-mou for Memorandum of Understanding.

Acknowledgements

We thank members of the Advisory Panel, Jason Hayes, Matt Jones, Ken Laing, Annie Richard, Darrell Roes, Steven Wolgram and Dr. Ralph Martin, for their thoughtful input that helped guide the design of this trial. We are also very grateful for help from Dr. Elijah Kiarie and Dr. Michelle Edwards for help and advice with the trial design.

Funding

Funding for this project was made possible by support from the Ontario Trillium Foundation, an agency of the Government of Ontario, and Robert and Moira Sansom Ideas Foundation, a fund within London Community Foundation.

The Robert and Moira Ideas Foundation,
a fund within the

Ontario
Trillium Foundation



Fondation Trillium
de l'Ontario

An agency of the Government of Ontario
Un organisme du gouvernement de l'Ontario



LONDON
COMMUNITY
FOUNDATION

Reduced Protein for Heritage Chickens



LIVESTOCK BREED SELECTION



ALTERNATIVE LIVESTOCK FEED

Feed Records

Start when chicks are separated and the reduced protein ration starts. Print a sheet for every cohort.

Cohort # _____ 1 _____ started May 24 2019_ note: 12 bags of starter @ 25kg each used			
Date	A-Commercial Ration - Control (kg or lb)	B- Reduced protein ration (kg or lbs)	
May 24-june 20	88kg 11 * 8kg buckets	72 kg 9 * 8kg buckets	
June 21- July 29	184kg 23 * 8kg buckets	120 kg 15 * 8kg buckets	
Aug -Sept 11	136kg 17* 8kg buckets	80kg 10* 8kg buckets	
	Cohort #1 processed Sept. 11		



Reduced Protein for Heritage Chickens

			LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED

Weight Records

Weigh the chicks **MONTHLY**. Print a sheet for every cohort.

Cohort #: _____ <u>1</u> _____					
Date: _____ <u>June 12/19</u> _____					
#	Control A -lbs	Treatment B- lbs	#	Control A- lbs	Treatment B- lbs
1	3	2.7	21	1.25	
2	3.4	2.0	22	3.2	
3	2.5	3.0	23	3	
4	3.3	3.3	24	1.7	
5	3.5	3.75	25	1.7	
6	3.2	1.75	26	3.9	
7	2.2	1.7	27	2	
8	1.5	3.0	28	3.25	
9	2.8	2.25	29	2.25	
10	2.8	2.25	30	3.0	
11	2.2	2.5	31	2.2	
12	2.3	2.7	32		
13	3.4	2.4	33		
14	3.7	2.25	34		
15	3.25	2.0	35		
16	3.0	2.75	36		
17	3.8	2.0	37		



Reduced Protein for Heritage Chickens

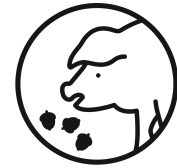
18	4.3	2.7	38	LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
19	4.75	2.4	39		
20	4.5		40		

Farmer-Led Research 2019:

Reduced Protein for Heritage Chickens



LIVESTOCK BREED
SELECTION



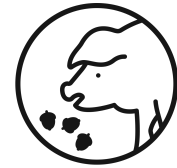
ALTERNATIVE
LIVESTOCK FEED

Health Records

General vigour, even feathering, good colouring in the legs, eyes and mouth, healthy excrement, foot pad lesion.

Cohort #1- predator issues caused heavy losses. Weasel inside and racoon when first moved outside. Some birds in both groups have foot injuries from the racoon.

Cohort #2- An overcrowding issue caused some reduced growth rates early on in development



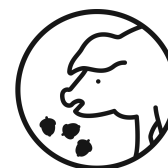
Reduced Protein for Heritage Chickens

			LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED

Weight Records

Weigh the chicks **MONTHLY**. Print a sheet for every cohort.

Cohort #: _____ <u>2</u> _____					
Date: _____ <u>June 12/19</u> _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	1.6	1.3	21	1.5	1.5
2	1.5	1.75	22	1.75	1.7
3	1.2	1.75	23	1.25	1.5
4	1.3	1.5	24	1.5	1.4
5	1.2	1.9	25	1.5	1.7
6	1.25	1.4	26	2.2	1.5
7	0.7	1.75	27	1.9	1.25
8	1.2	1.4	28	1.7	1.5
9	1.4	1.8	29	1.6	1.2
10	1.8	1.6	30	1.4	1.4
11	1.4	2.2	31	1.6	1.4
12	1.5	1.9	32	1.3	1.0
13	2.8	2.5	33	1.75	1.4
14	1.5	1.5	34	1.8	2.1
15	1.8	2.4	35	1.2	1.3
16	2.0	1.7	36	1.6	1.6



Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
17	1.5	1.6	37	2.9		
18	1.3	1.8	38	1.0		1.5
19	1.5	2.0	39	1.5		1.75
20	1.8	2.2	40	1.6		1.2
41	1.6	1.0	46	1.3		1.75
42	1.75	1.5	47	1.0		1.25
43	1.0	1.7	48	1.25		1.6
44	2.25	1.5	49	1.25		1.0
45	1.1	2.2	50	1.2		1.0

Weight Records

Weigh the chicks **MONTHLY**. Print a sheet for every cohort.

Cohort #: _____ 1 _____					
Date: _____ July 29 _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	4.5	3.75	21	5.25	
2	4.75	4.75	22	4.75	
3	5.25	2.75	23	5.0	
4	5.5	5.25	24	5.75	
5	4.0	5.0	25	3.5	
6	5.0	4.75	26	5.75	
7	6.25	5.5	27	5.0	
8	5.75	6.25	28	4.5	
9	5.5	5.25	29	3.5	
10	5.75	4.25	30	4.25	
11	6.25	6.25	31	4.25	
12	2.25	5.5	32	4.25	



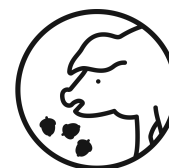
Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
13	5.5	4.25	33	3.75		
14	5.5	5.25	34			
15	6.0	5.25	35			
16	4.75	4.25	36			
17	4.25	4.0	37			
18	5.0		38			
19	2.25		39			
20	3.75		40			

Weight Records

Weigh the chicks **MONTHLY**. Print a sheet for every cohort.

Cohort #: _____ 2 _____					
Date: _____ july 29 _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	3.5	3.25	21	4.0	2.5
2	3.75	5.0	22	3.25	3.0
3	4.0	3.5	23	3.5	3.0
4	2.5	3.75	24	3.5	3.75
5	4.25	3.75	25	3.5	2.5
6	3.5	3.5	26	3.25	3.0
7	4.0	4.0	27	3.0	3.25
8	2.5	3.5	28	4.75	4.75
9	3.25	4.0	29	4.0	3.0
10	2.75	3.5	30	5.5	3.5
11	5.75	2.75	31	3.75	4.25
12	2.5	3.0	32	4.75	3.0



Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
13	3.25	3.25	33	3.0		
14	3.0	4.0	34	3.75		3.5
15	3.25	3.75	35	3.75		2.5
16	3.25	2.25	36	2.75		
17	3.0	3.25	37	2.5		3.0
18	3.25	3.0	38	2.75		
19	3.5	3.25	39	4.0		
20	3.5	4.75	40	2.75		
41	3.5		49	3.0		
42	3.5		50	3.0		
43	4.0		51	3.0		
44	4.5		52	3.25		
45	2.0		53	3.75		
46	3.25		54	3.75		
47	3.25		55	4.0		
48	3.75		56			

Cohort #: _____ 3 _____					
Date: _____ july 29 2019 _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	1.5	1.5	21	2.0	0.75
2	2.0	2.5	22	1.5	1.0
3	1.25	2.5	23	1.5	0.5
4	2.25	1.5	24	1.25	1.0
5	3.25	1.75	25	1.5	1.25
6	1.25	1.0	26	1.5	1.0



Reduced Protein for Heritage Chickens

				LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
7	1.25	1.5	27		
8	2.5	2.5	28		
9	2.25	1.5	29		
10	1.25	1.75	30		
11	2.25	1.25	31		
12	1.25	2.25	32		
13	2.0	1.5	33		
14	0.75	1.25	34		
15	1.25	2.0	35		
16	1.25	1.25	36		
17	1.5	1.25	37		
18	1.25	1.0	38		
19	2.75	1.25	39		
20	1.25	1.0	40		

Cohort #: _____ <u>1</u> _____					
Date: _____ <u>Aug 24, 2019</u> _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	4.5	6.5	21	5.0	
2	3.75	6.75	22	4.75	
3	4.75	4.25	23	3.25	
4	6.25	6.5	24	6.0	
5	5.25	6.5	25	5.5	
6	6.0	6.5	26	6.0	
7	5.75	5.25	27	6.25	



Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
8	3.75	5.25	28	6.75		
9	4.5	4.5	29	6.25		
10	5.25	6.0	30	4.5		
11	6.25	5.25	31	5.0		
12	7.25	4.5	32			
13	4.5	4.25	33			
14	4.5	6.25	34			
15	7.0	6.0	35			
16	6.75	6.0	36			
17	6.5		37			
18	7.0		38			
19	5.5		39			
20	7.0		40			

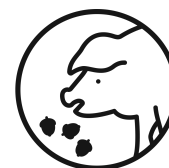
Cohort #: _____ 2 _____					
Date: _____ Aug. 24, 2019 _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	4.75	3.75	21	6.25	5.0
2	5.0	4.5	22	5.25	3.5
3	5.0	4.5	23	2.25	3.25
4	4.25	4.0	24	5.0	4.75
5	6.25	4.25	25	5.25	4.25
6	3.75	6.0	26	4.0	4.0
7	3.75	4.5	27	6.5	3.75
8	3.75	5.75	28	4.5	4.0



Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
9	2.5	3.5	29	3.5	3.75	
10	3.25	3.75	30	4.25		2.75
11	3.0	5.75	31	2.25		3.5
12	3.25	5.5	32	3.25		4.0
13	3.75	4.25	33	3.75		3.5
14	4.75	4.0	34	4.5		4.25
15	6.0	3.75	35	3.75		3.25
16	3.75	4.25	36	4.0		3.5
17	5.25	3.5	37	3.5		4.0
18	3.0	4.25	38	5.5		3.5
19	4.75	2.25	39	3.25		3.0
20	3.5	3.75	40	3.75		
41	5.0		50	4.0		
42	3.75		51	3.5		
43	3.0		52	3.25		
44	4.25		53	4.0		
45	3.5		54	2.25		
46	3.75		55			
47	3.5					
48	3.25					
49	2.25					

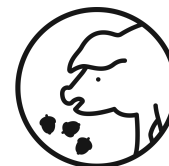
Cohort #: <u>3</u>					
Date: <u>Aug. 24, 2019</u>					
#	Control - A	Treatment -B	#	Control- A	Treatment -B



Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
1	2.25	2.25	21	3.5		
2	2.75	2.0	22	2.5		
3	3.5	2.25	23	2.25		
4	2.25	3.75	24	2.0		
5	3.25	3.5	25	2.25		
6	4.75	2.25	26	2.25		
7	3.25	1.0	27	2.0		
8	2.0	3.0	28	2.0		
9	3.25	3.0	29	2.25		
10	4.75	3.25	30	1.5		
11	3.25	2.0	31			
12	2.75	2.0	32			
13	3.25	1.5	33			
14	2.25	2.0	34			
15	1.75	2.0	35			
16	4.0	1.75	36			
17	2.5	2.0	37			
18	2.5	2.0	38			
19	2.25	2.0	39			
20	1.25	1.75	40			

Cohort #: _____ 1 _____ Weights of birds at and after processing					
Date: _____ Sept 12, 2019 _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1	Dressed weights	Dressed weights	21	Live weights	
2	4.52	4.7	22	4.75	
3	4.72	4.83	23	5.75	



Reduced Protein for Heritage Chickens

					LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
4	4.61	5.29	24	4.5		
5	4.94	5.27	25	5.25		
6	4.25	5.07	26	4.75		
7	2.36	3.97	27	5.5		
8	4.23	4.89	28	5.25		
9	3.7	3.53	29	4.5		
10	4.85	Live weights (sept 19)	30	5.0		
11	5.34	6.0	31			
12	5.38	6.25	32			
13	5.07	5.0	33			
14	4.85	7.0	34			
15	3.24	7.25	35			
16	5.14	7.25	36			
17	4.43		37			
18	5.73		38			
19	5.2		39			
20			40			

Cohort #: _____					
Date: _____					
#	Control - A	Treatment -B	#	Control- A	Treatment -B
1			21		
2			22		
3			23		
4			24		
5			25		



Reduced Protein for Heritage Chickens

6			26	LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED
7			27		
8			28		
9			29		
10			30		
11			31		
12			32		
13			33		
14			34		
15			35		
16			36		
17			37		
18			38		
19			39		
20			40		

Cohort # _____ started 2019_			
Date	A-Commercial Ration - Control (kg or lb)	B- Reduced protein ration (kg or lbs)	



Reduced Protein for Heritage Chickens

			LIVESTOCK BREED SELECTION	ALTERNATIVE LIVESTOCK FEED