



ALKACEL 20 X WS TRIAL

INTEGRATOR BROILER

CONTROLLED TEMPERATURE (COOL CELL), AUTOMATED

37,000 BIRDS X 2 BLDGS

2015

**COMPREHENSIVE FEED PROTEIN AND FIBER, MANURE PROTEIN AND FIBER,
NITROGEN AND FIBER INTAKE AND EXCRETION PROFILE, AND GROWTH
PERFORMANCE**



ALKACEL 20X ws TREATMENT REGIMEN

Dose: 5gms/10lt of drinking water

Delivery mode: via DOSATRON to automatic waterer system

Frequency: continuous, 24/7, day 1 to harvest

Feed and Manure Assay Lab: LQCC

DATA GATHERED

Feed: Total Feed Intake
CP
Total Protein Intake
NDF , ADF, Total Fiber Intake

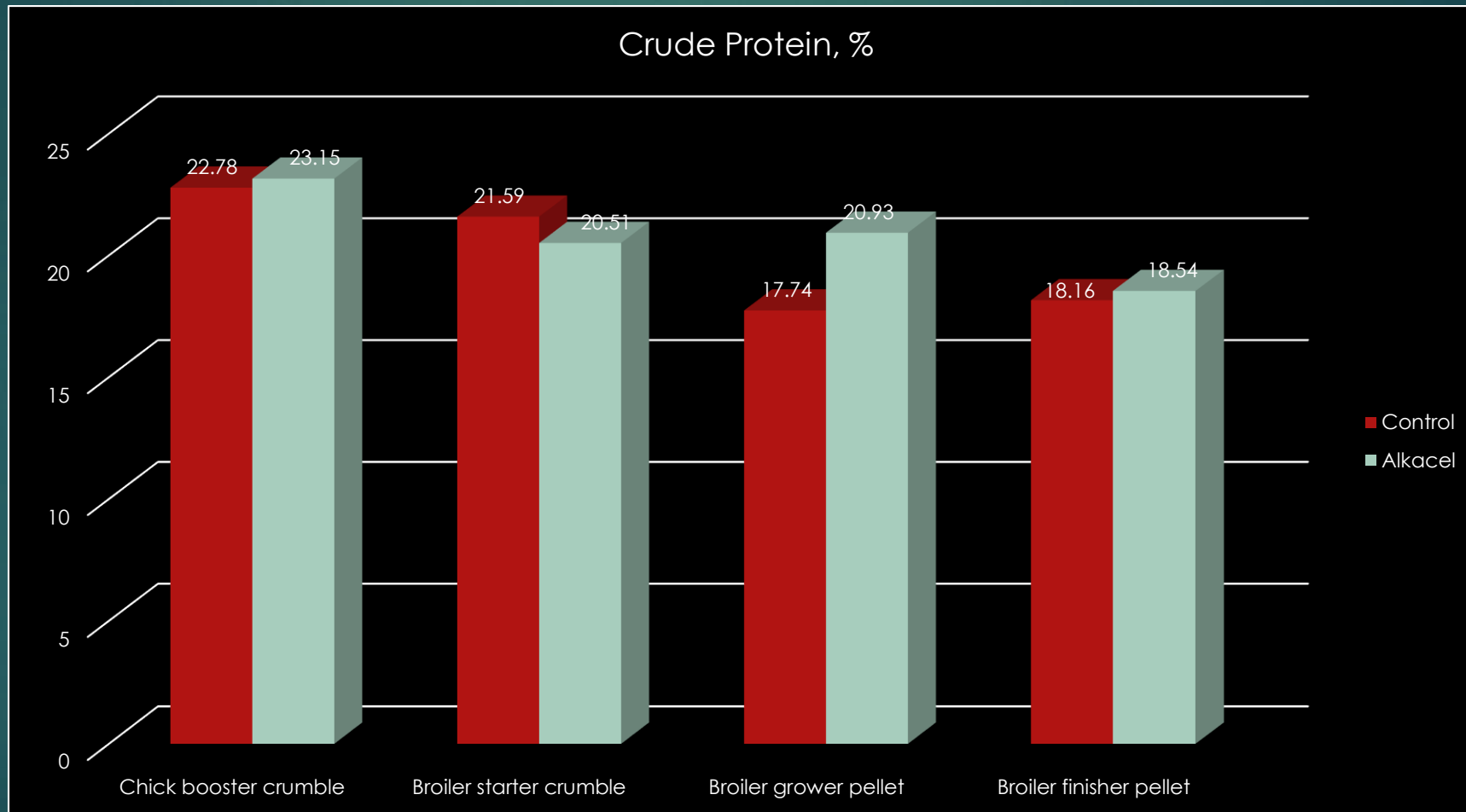
Manure: Total manure excretion,
Manure CP, Total Kjeldahl N and
Kjeldahl N without acid (Urinary N)
Total Protein excretion, Total N excretion, Total Urinary
origin N, Total Proteinaceous origin N
Total NDF in manure, Total Fiber excretion

Productivity: Total harvest weight, Days to harvest, ADG
FCR, Mortality

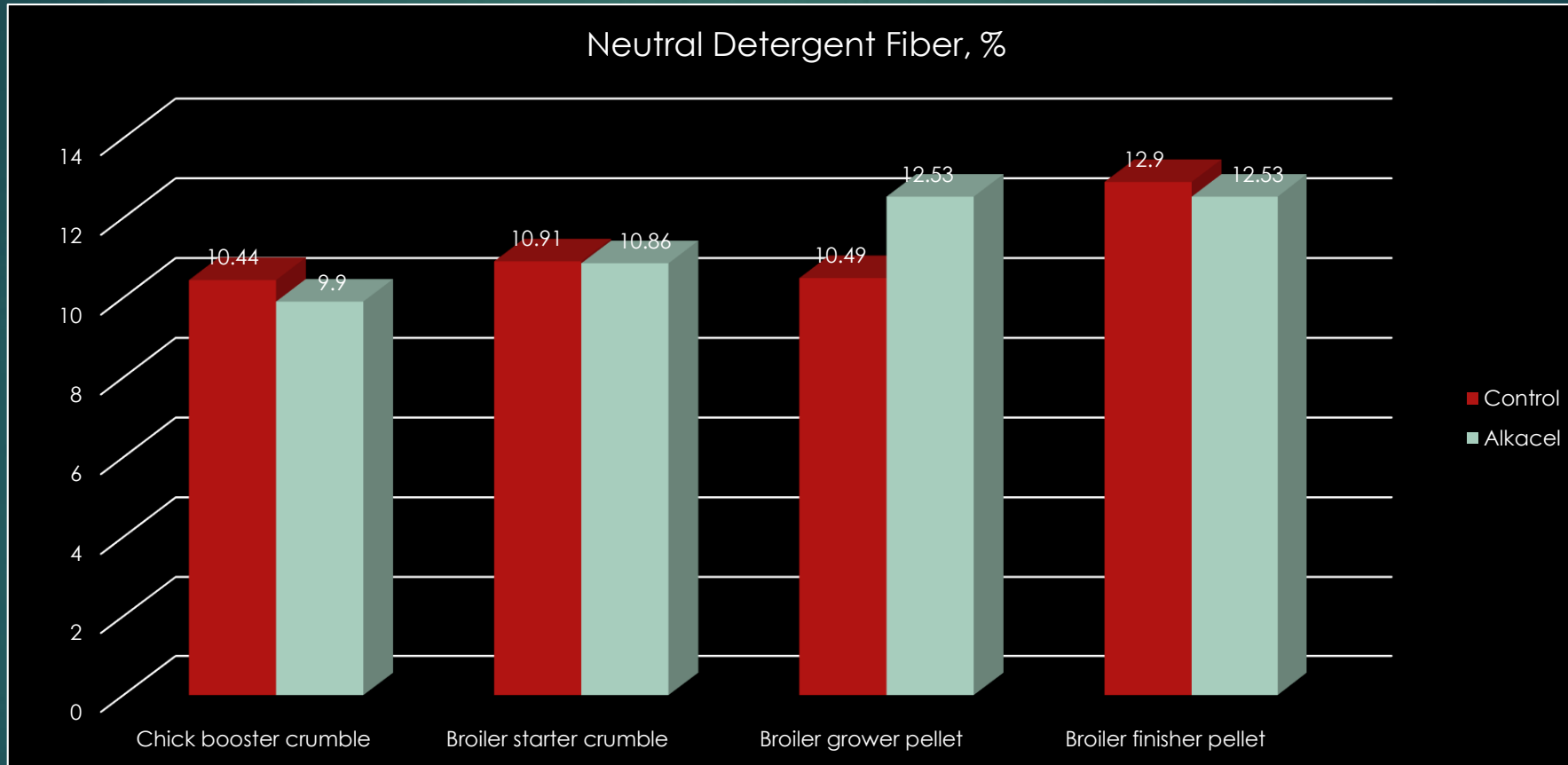
TRIAL Layout

Group	Feed Stage	No. of Replicate per Feed Stage	No. of Chickens per Replicate	No. of Trials per Replicate	Dosage in Water	Length of Administration	Day of Manure Collection	Data to be Collected from Manure	Day of Feed Collection	Data to be Collected from Feeds	Other data to be collected
Control	4	4	9,250	2	None	none	Day 4 Day 14 Day 22 Day 28	Crude Protein NDF, Total Nitrogen, Nitrogen without acid	Day 4 Day 14 Day 22 Day 28	CP, NDF,	ADG, FCR, Mortality, Feed Intake, Manure Volume
Treatment	4	4	9,250	2	1 tsp per 10 liters	24hr Day 1 to Harvest	Day 4 Day 14 Day 22 Day 28	Crude Protein NDF, Total Nitrogen, Nitrogen without acid	Day 4 Day 14 Day 22 Day 28	CP, NDF,	ADG,FCR, Mortality Feed Intake, Manure Volume

Crude Protein in Different Feeds



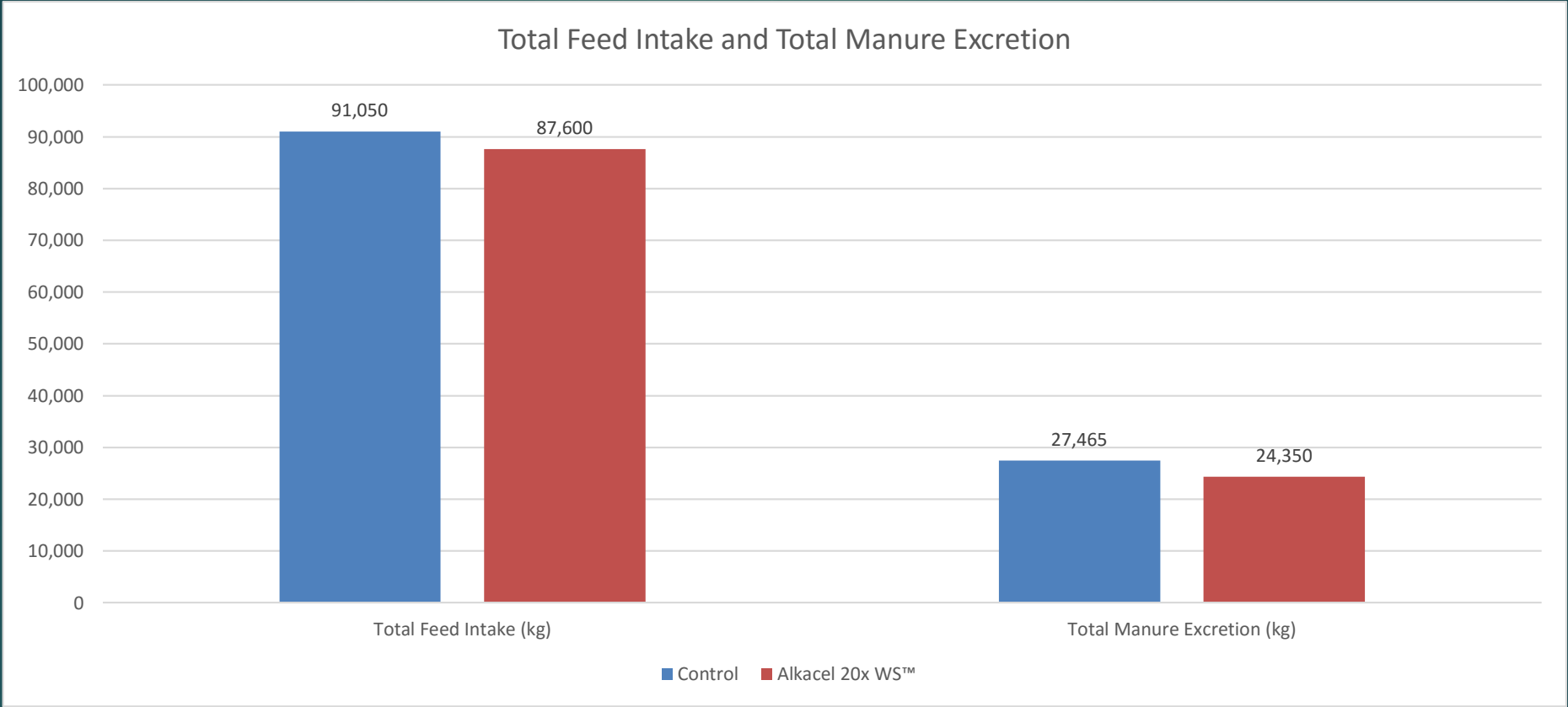
Neutral Detergent Fiber in Different Feeds



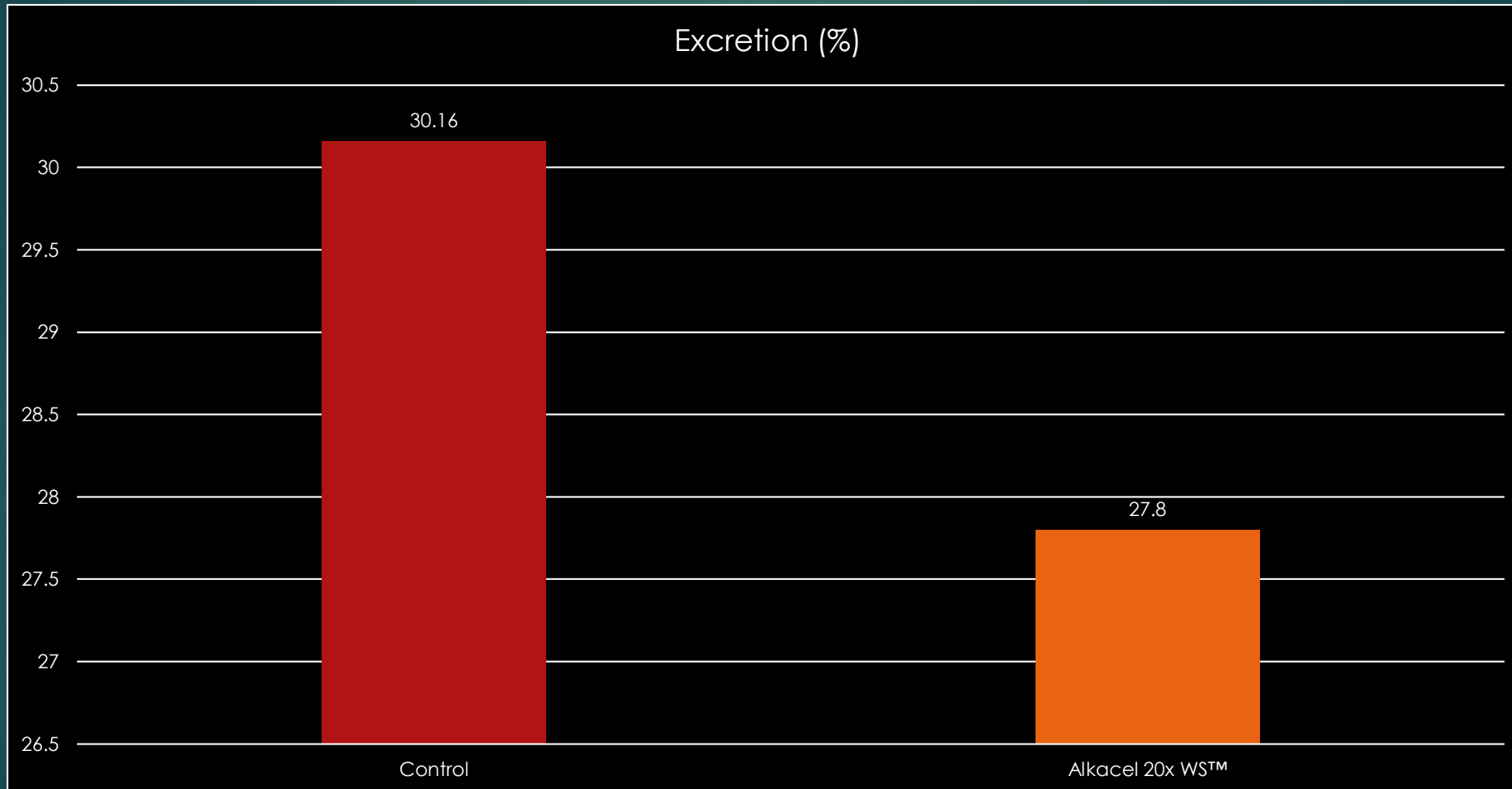
Comparative Total Feed Intake, Total Manure Excretion and Percent Excretion

Group	Total Feed Intake (kg)	Total Manure Excretion (kg)	Excretion (%)
Control	91,050	27,465	30.16
Alkacel 20x WS™	87,600	24,350	27.80
Difference	3,450	3,115	2.36
% Difference	-3.79%	-11.34%	-7.82%

Total Feed Intake and Total Manure Excretion



Excretion Percentage



N ASSAY OF MANURE

	CHICK CRUMBLE	STARTER CRUMBLE	GROWER	FINISHER	AVE.
TOTAL KJELDAHL N %					
CONTROL	3.84	3.34	3.35	3.22	3.43
ALKACEL	3.44	3.46	3.27	3.63	3.45
TOTAL KJELDAHL W/O ACID N %					
CONTROL	1.14	0.12	1.08	0.65	0.75
ALKACEL	1.37	0.19	1.83	0.79	1.04

Kjeldahl N = total N present in Manure. $N \times 6.25 = CP$ or Total Protein

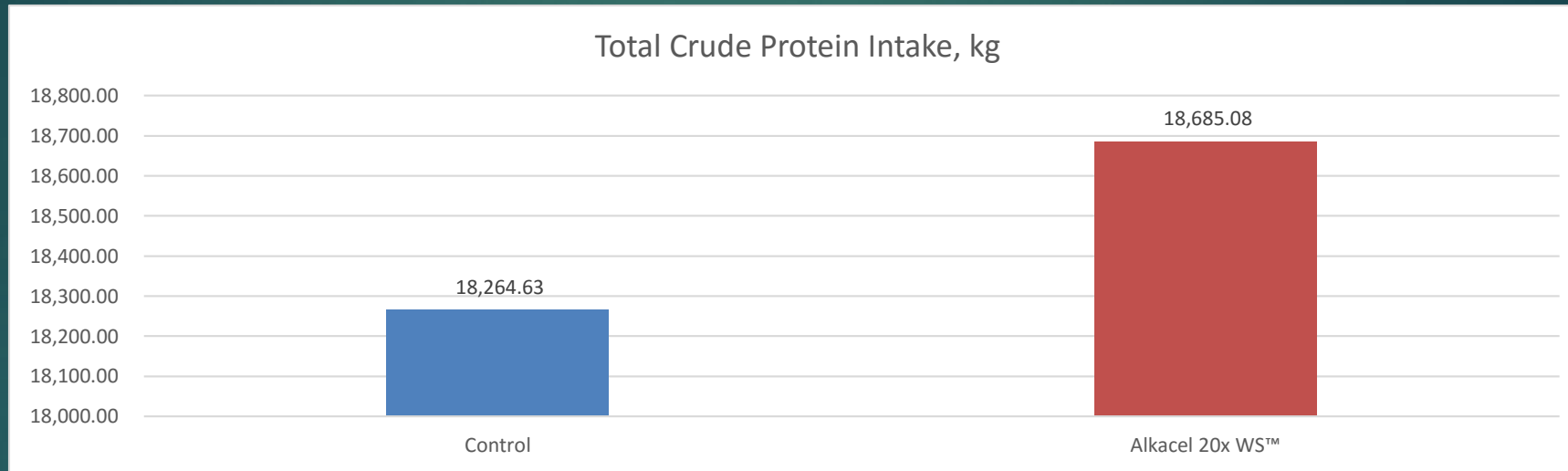
Kjeldahl w/o acid N = total "free" or unbound N, representing urinary origin

Kjeldahl N – Kjeldahl w/o acid N = Bound N or Proteinaceous Origin N

Comparative Protein Intake, Protein Excretion and Nitrogen Excretion

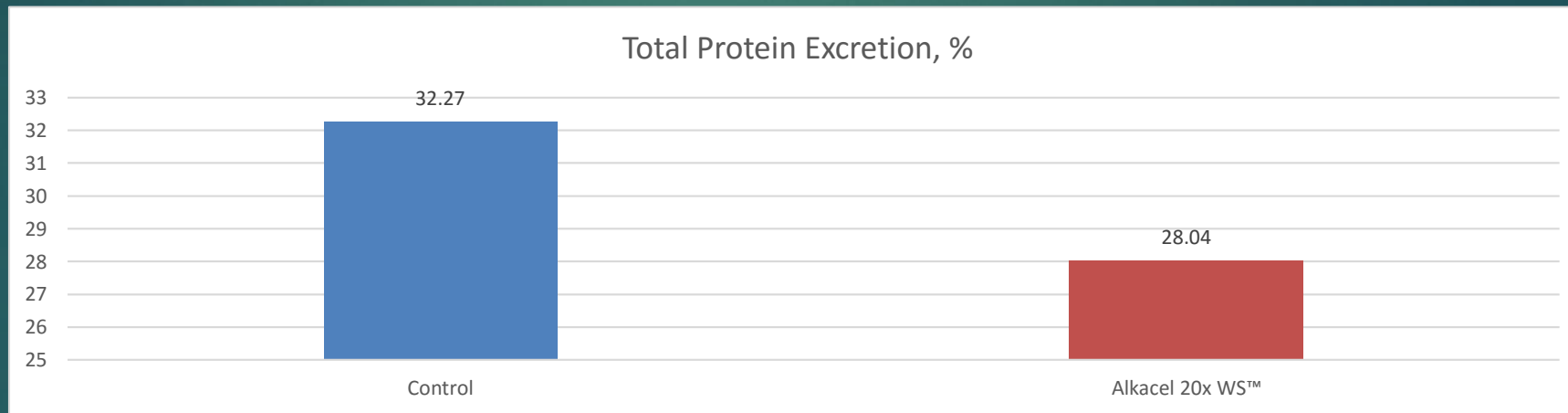
Group	Total Feed Intake, kg	Average Crude Protein in Feeds, %	Total Crude Protein Intake, kg	Total Manure Excretion kg	Average Crude Protein in Manure, %	Total Protein Excretion In Manure kg	Total Protein Excretion In Manure %	Total Nitrogen Excretion, kg
Control	91,050	20.06	18,264	27,465	21.46	5,893.99	32.27	943.04
Alkacel 20x WST TM	87,600	21.33	18,685	24,350	21.52	5,240.12	28.04	838.42
Difference						-653.87	-4.23	-104.62
% Difference						-11.09	-13.11	-11.09

Total Crude Protein Intake



In Figure 3a, graph shows the total crude protein intake of both treatment groups. Alkacel 20x WS™ has a larger protein intake of 18,685.08 kg which is 420.45 kg (2.25%) greater than the control.

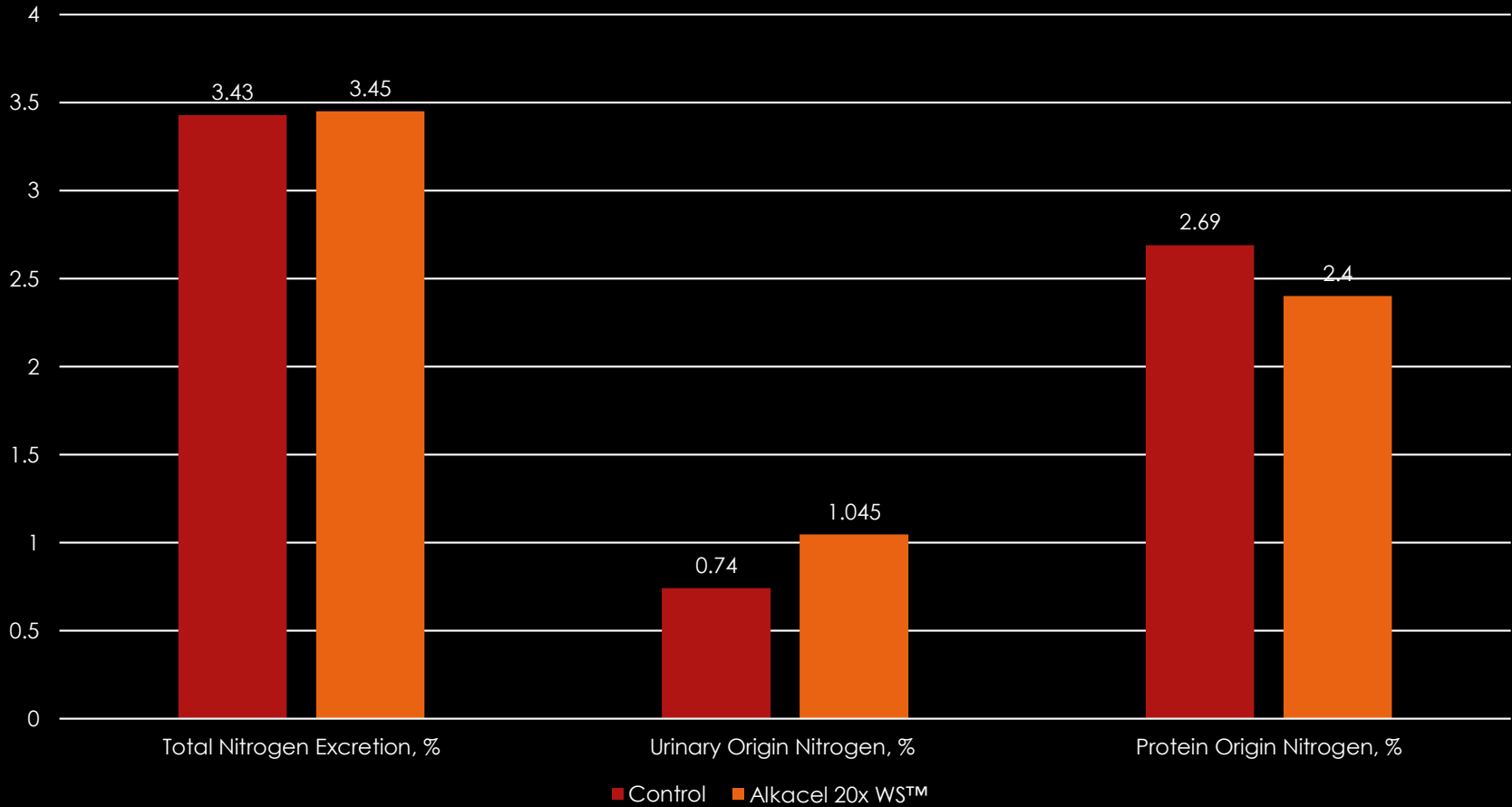
Total Protein Excretion Percentage



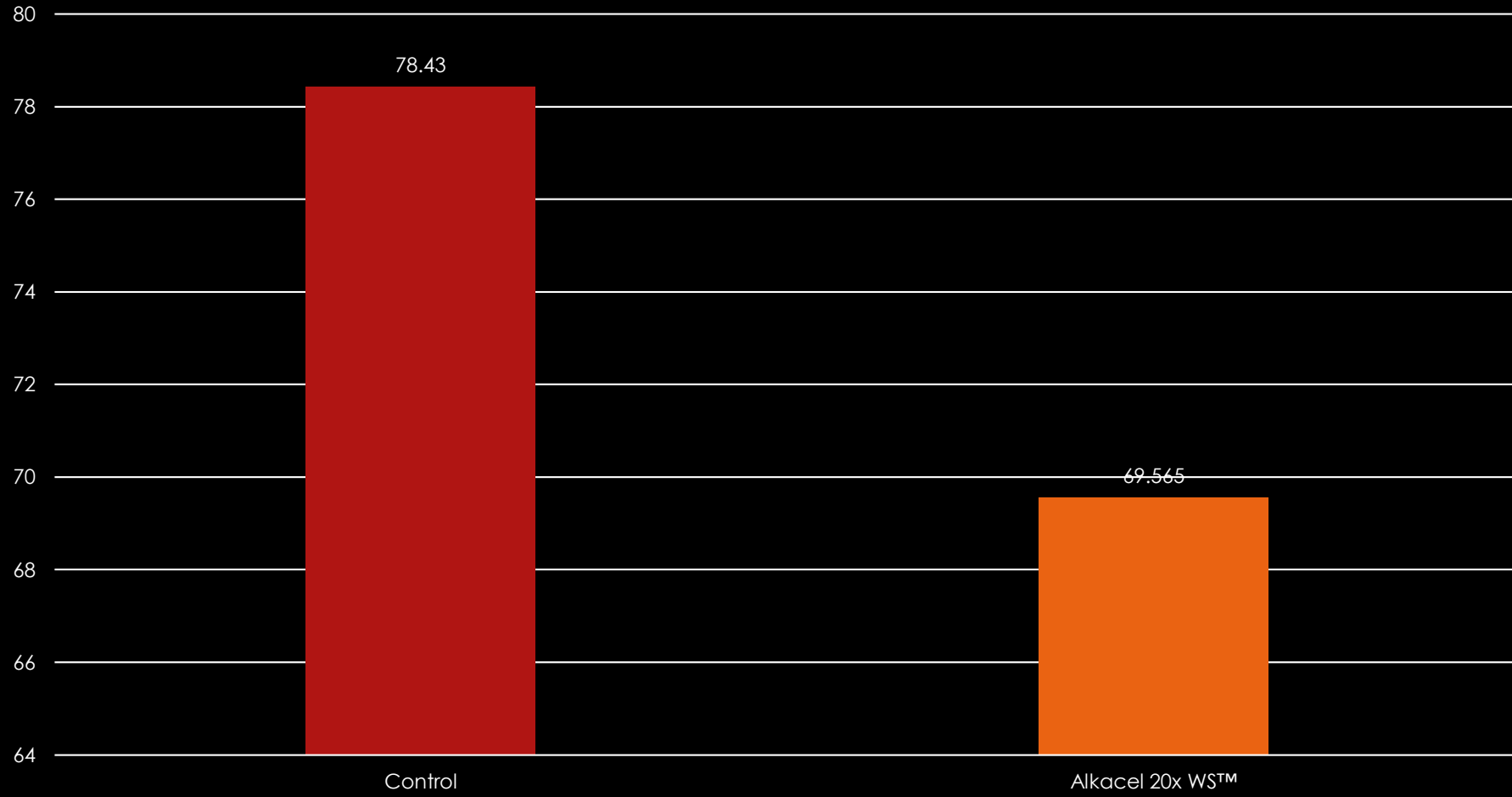
Comparative Nitrogen Excretion, Urinary Nitrogen, Protein Origin Nitrogen, And Total Nitrogen Excretion from Protein Origin

Group	Average Nitrogen Excretion, % (Ave. Kjeldahl Nitrogen in Manure)	Average Urinary Origin Nitrogen, % (Ave. Kjeldahl Nitrogen without Acid of Manure)	Ave. Protein Origin Nitrogen, % (Proteinaceous Nitrogen)	Total Nitrogen Excretion of Protein Origin, %
Control	3.43	0.740	2.69	78.43
Alkacel 20x WS™	3.45	1.045	2.40	69.56
Difference			-0.29	-8.86
% Difference			-10.78	-11.30

Nitrogen Excretion



Total Nitrogen Excretion of Protein Origin, %



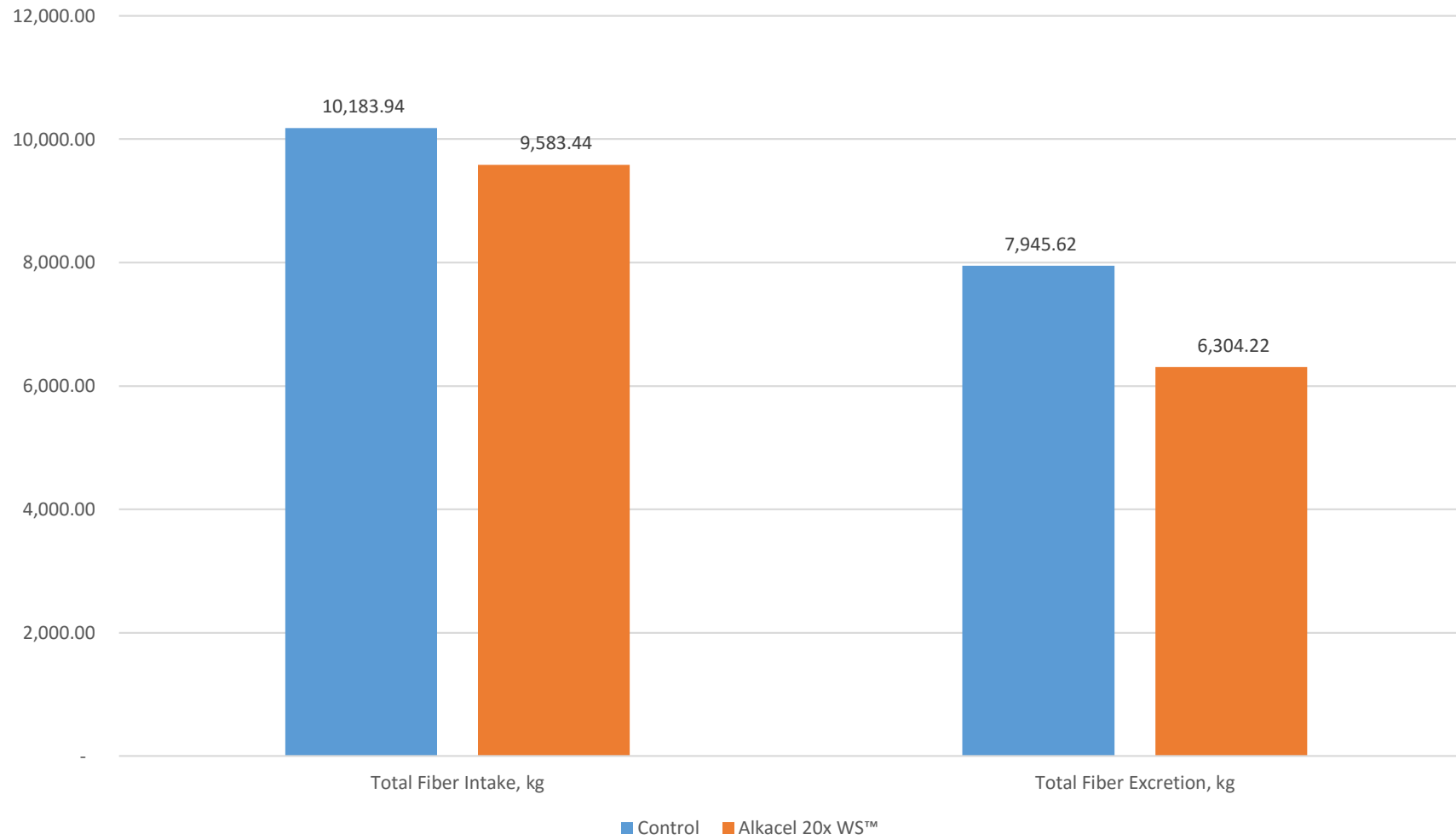
NDF/TOTAL FIBER ASSAY OF MANURE

	broiler Crumble	starter crumble	broiler grower	broiler finisher
NDF, ave.				
Control	23.13	31.33	31.87	29.49
Alkacel 20x ws	20.5	25.8	31.22	26.07
DIFFERENCE	-2.63	-5.53	-0.65	-3.42
% DIFF	-11.37	-17.65	-2.04	-11.60

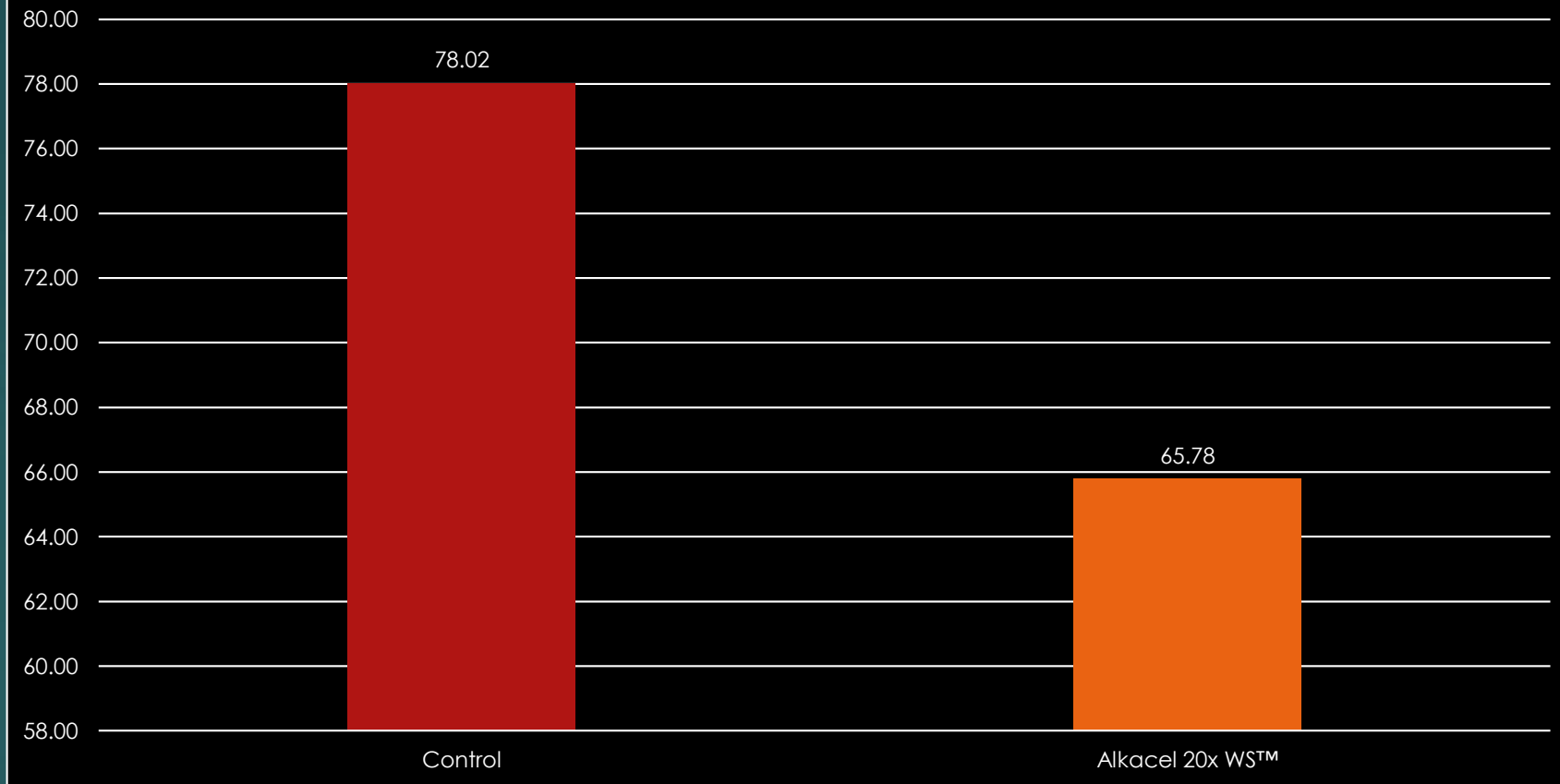
Comparative Total Fiber Intake, and Total Fiber Excretion.

Group	Total Feed Intake, kg	Average NDF in Feeds, %	Total Fiber Intake, kg	Total Manure Excretion, kg	Average NDF in Manure, %	Total Manure Fiber Excretion, kg	Total Fiber Excretion, %
Control	91,050	11.185	10,183.94	27,465	28.95	7,945.62	78.02
Alkacel 20x WS™	87,600	10.94	9,583.44	24,350	25.89	6,304.22	65.78
Difference						-1,641.41	-12.24
% Difference						-20.66	-15.69

Fiber Intake and Fiber Excretion



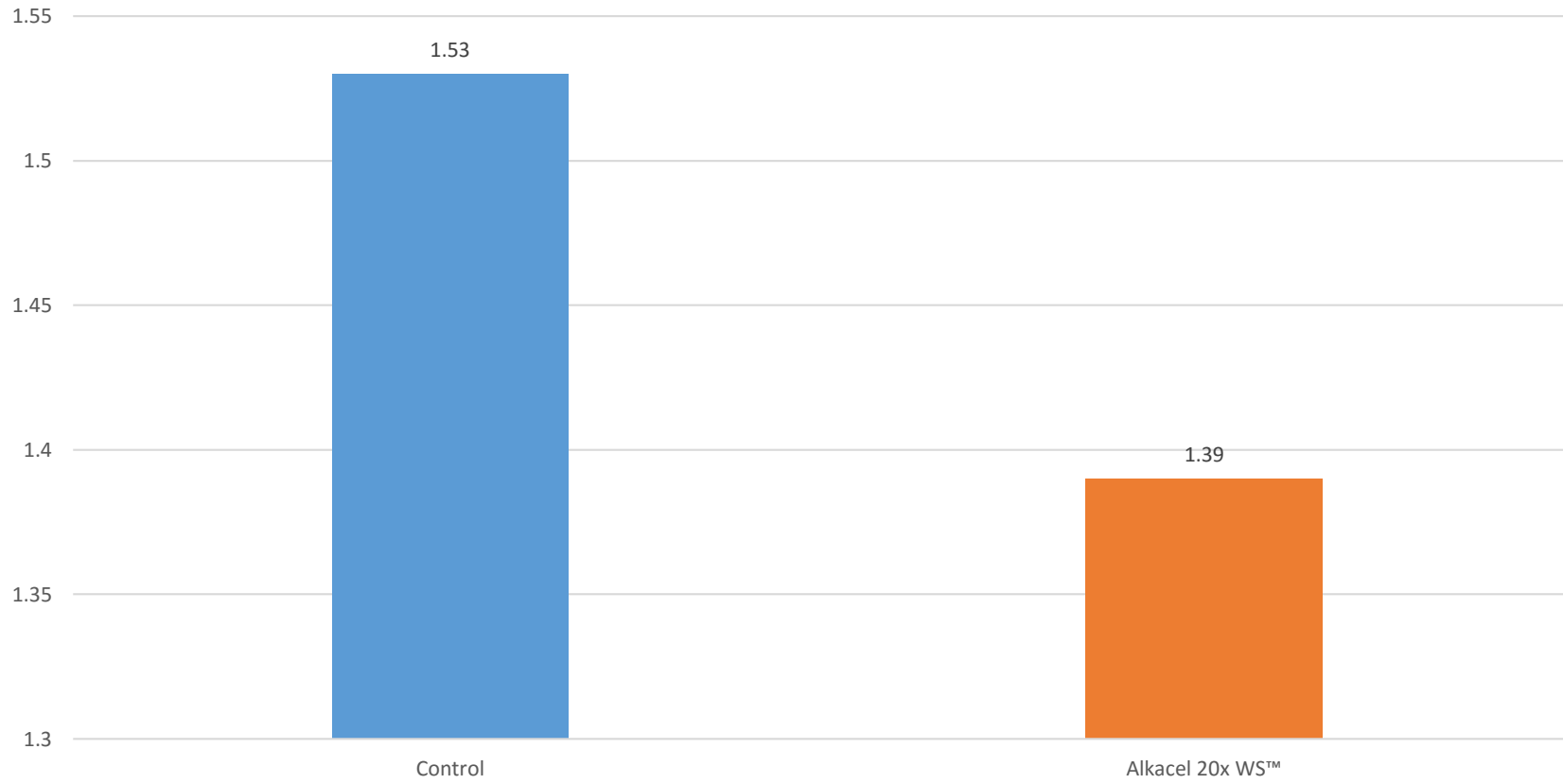
Total Fiber Excretion (%)



Comparative Total Feed Intake, Total Broiler Harvest Weight and Feed Conversion Ratio (FCR)

Group	Total Feed Intake (kg)	Total Broiler Harvest Weight (kg)	Feed Conversion Ratio
Control	91,050	59,568.35	1.53
Alkacel 20x WS™	87,600	63,555.50	1.39
Difference			-0.14
% Difference			-9.15

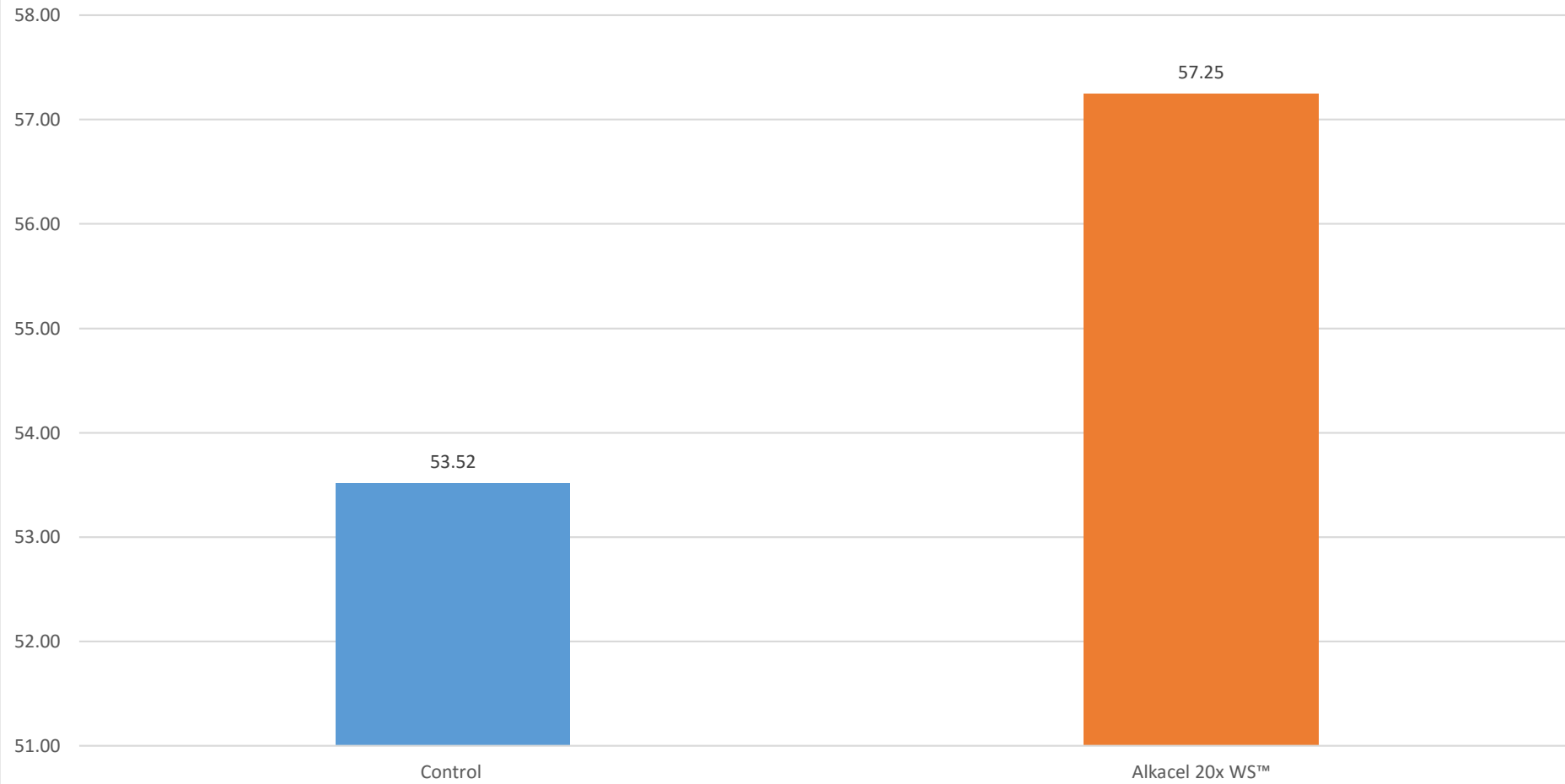
Feed Conversion Ratio



Average Daily Gain

Group	Average Initial Weight (g)	Average Harvest Weight (g)	Days Covered	Average Daily Gain (g)
Control	50.5	1,656.5	30	53.52
Alkacel 20x WS™	50	1,767.5	30	57.25
Difference				+3.73
% Difference				+6.52%

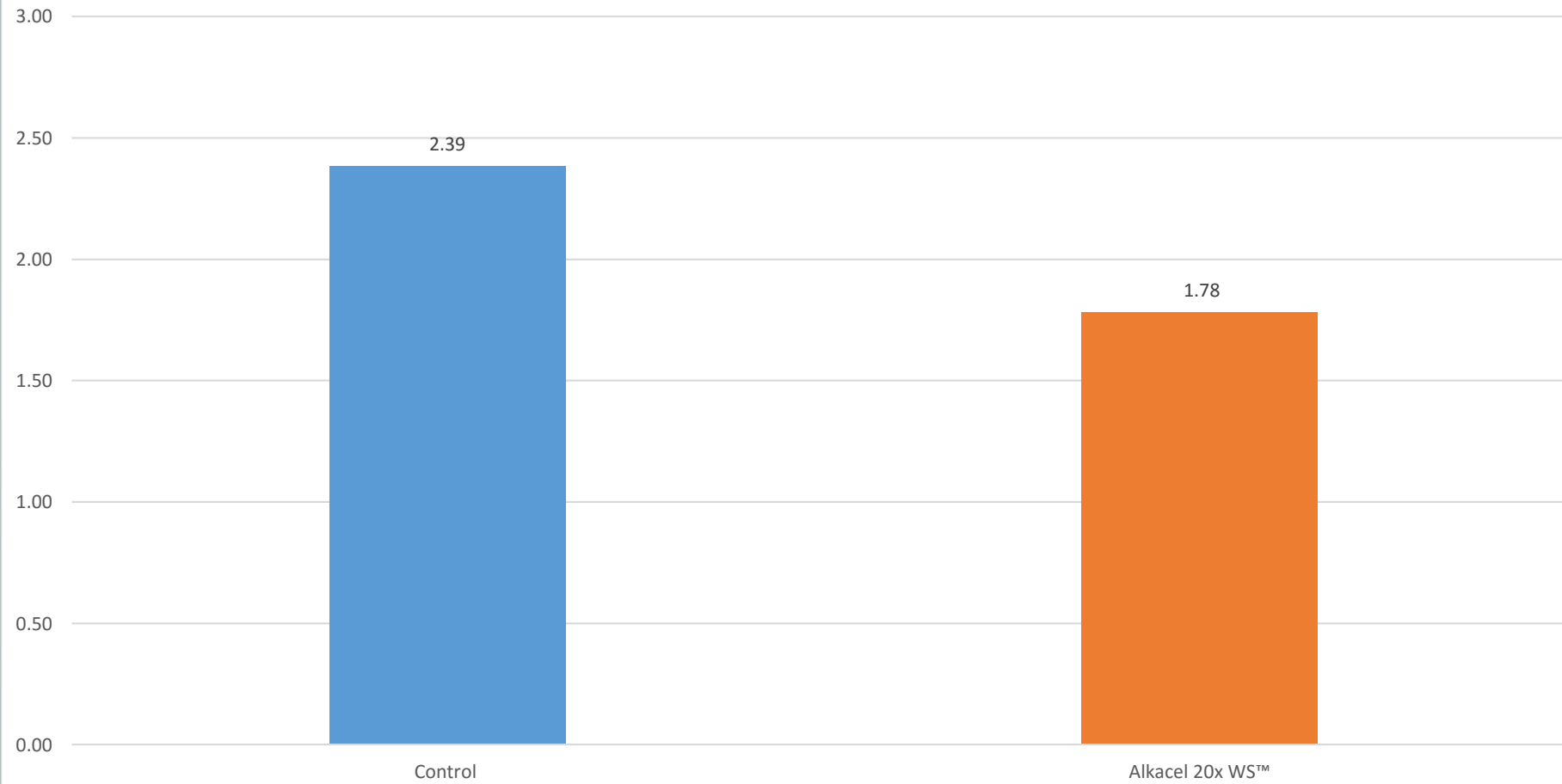
Average Daily Gain (grams)



Mortality Rate

Group	Initial Population	Harvest Population	Mortality	Mortality Rate
Control	36,848	35,969	879	2.38%
Alkacel 20x WS™	36,608	35,956	652	1.78%
Difference			-227	-0.6%
% Difference			-25.82	-25.21%

Mortality Rate (%)



IMPACT SUMMARY

LOWER FEED INTAKE	BY 3.79%
LOWER MANURE EXCRETION	BY 11.34%
LOWER PROTEIN EXCRETION	BY 13.11%
LOWER N EXCRETION	BY 11.09%
LOWER EXCRETION OF PROTEIN ORIGIN N	BY 11.30%
LOWER FIBER EXCRETION	BY 15.69%
BETTER ADG	BY 6.52%
BETTER FCR	BY 9.15%
LOWER MORTALITY RATE	BY 25.21%

COST BENEFIT

ITEM	TOTAL FEED INTAKE, KG	COST/KG PhP AVE.	TOTAL COST	COST ALKACEL 20X ws	TOTAL HARVEST WEIGHT, KG	PRICE /KG	TOTAL VALUE	GROSS PROFIT AFTER FEED
CONTROL	91,050	25	2,276,250	0	59,568	75	4,467,600	2,191,350
ALKACEL	87,600	25	2,190,000	41,625	63,555	75	4,766,625	2,535,000
DIFFERENCE								+ 343,650
% DIFF.								+15.68%
NET DIFFERENCE/BIRD				9.29 pesos/bird	ROI	1:8		

*Alkacel 20X ws consumption at 0.75kg/500 birds day 1 to harvest (day 1 to 30), at 750pesos/kg