

CONTENTS

Title	Page
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. Tomato By-Product Meal.	3
2.1.1. Chemical composition.	5
2.1.2. Amino acid contents.	9
2.1.3. Growth performance.	13
2.2. Potato By-Product Meal.	15
2.2.1. Chemical composition.	17
2.2.2. Amino acid contents.	20
2.2.3. Growth performance.	23
2.3. Pea Hulls Meal.	26
2.3.1. Chemical composition.	26
2.3.2. Amino acid contents.	29
2.3.3. Growth performance.	33
2.4. Date Stone Meal.	36
2.4.1. Chemical composition.	37
2.4.2. Amino acid contents.	38
2.4.3. Growth performance.	43
3. MATERIALS AND METHODS.	55
3.1. Tested By-Product Meals.	55
3.2. Experimental Chicks.	55
3.3. Experimental Diets.	56

Title	Page
3.4. Management.	62
3.5. Methods of Interpreting Results.	62
3.5.1. Live body weight.	63
3.5.2. Weight gain.	63
3.5.3. Feed intake.	63
3.5.4. Feed conversion.	64
3.6. Digestibility Trials.	64
3.7. Slaughter Test.	66
3.8. Chemical Analysis.	67
3.9. Amino Acids Determination.	67
3.9.1. Chemical score.	68
3.10. Economic Efficiency.	68
3.11. Statistical Analysis.	69
4. RESULTS AND DISCUSSION.	70
4.1. Chemical Analysis of Tested By-Product Meals.	70
4.2. Amino Acid Contents of Tested By-Product Meals.	73
4.3. Feeding Experiments.	77
4.3.1. First feeding experiment (tomato by-product meal).	77
4.3.1.1. Effect of feeding different dietary levels of tomato by-product meal on growth performance of broiler chicks.	77
4.3.1.1.1. Live body weight.	77

Title	Page
4.3.1.1.2. Weight gain.	79
4.3.1.1.3. Feed intake.	81
4.3.1.1.4. Feed conversion.	84
4.3.1.2. Effect of feeding different dietary levels of tomato by- product meal on nutrients digestibility of broiler chicks.	87
4.3.1.3. Effect of feeding different dietary levels of tomato by-product meal on carcass characteristics and carcass cuts of broiler chicks.	91
4.3.1.4. Effect of feeding different dietary levels of tomato by-product meal on chemical composition of broiler chicks meat.	97
4.3.1.5. Effect of feeding different dietary levels of tomato by-product meal on the economic efficiency of experimental diets	99
4.3.2. Second feeding experiment (potato by-product meal).	101
4.3.2.1. Effect of feeding different dietary levels of potato by- product meal on growth performance of broiler chicks.	101
4.3.2.1.1. Live body weight.	101
4.3.2.1.2. Weight gain.	104
Title	Page

4.3.2.1.3. Feed intake.	106
4.3.2.1.4. Feed conversion.	108
4.3.2.2. Effect of feeding different dietary levels of potato by-product meal on nutrients digestibility of broiler chicks	112
4.3.2.3. Effect of feeding different dietary levels of potato by-product meal on carcass characteristics and carcass cuts of broiler chicks.	116
4.3.2.4. Effect of feeding different dietary levels of potato by-product meal on chemical composition of broiler chicks meat.	122
4.3.2.5. Effect of feeding different dietary levels of potato by-product meal on the economic efficiency of experimental diets.	124
4.3.3. Third feeding experiment (pea hulls meal).	127
4.3.3.1. Effect of feeding different dietary levels of pea hulls meal on growth performance of broiler chicks	127
4.3.3.1.1. Live body weight.	127
4.3.3.1.2. Weight gain	129

Title	Page
-------	------

4.3.3.1.3. Feed intake.	132
4.3.3.1.4. Feed conversion.	132
4.3.3.2. Effect of feeding different dietary levels of pea hulls meal on nutrients digestibility of broiler chicks.	138
4.3.3.3. Effect of feeding different dietary levels of pea hulls meal on carcass characteristics and carcass cuts of broiler chicks.	141
4.3.3.4. Effect of feeding different dietary levels of pea hulls meal on chemical composition of broiler chicks meat.	147
4.3.3.5. Effect of feeding different dietary levels of pea hulls meal on the economic efficiency of experimental diets.	149
4.3.4. Fourth feeding experiment (date stone meal).	151
4.3.4.1. Effect of feeding different dietary levels of date stone meal on growth performance of broiler chicks.	151
4.3.4.1.1. Live body weight.	151
4.3.4.1.2. Weight gain.	153
4.3.4.1.3. Feed intake.	155
4.3.4.1.4. Feed conversion.	158

Title	Page
4.3.4.2. Effect of feeding different dietary levels of date stone meal on nutrients digestibility of broiler chicks.	162
4.3.4.3. Effect of feeding different dietary levels of date stone meal on carcass characteristics and carcass cuts of broiler chicks.	165
4.3.4.4. Effect of feeding different dietary levels of date stone meal on chemical composition of broiler chicks meat.	172
4.3.4.5. Effect of feeding different dietary levels of date stone meal on the economic efficiency of experimental diets.	174
5. SUMMARY AND CONCLUSION.	177
6. REFERENCES	189
7. ARABIC SUMMARY.	--

LIST OF TABLES

No of Table	Title of Table	Page
1	Composition and chemical analysis of starter, grower and finisher control diets.	57
2	Composition and chemical analysis of starter, grower and finisher diets containing tomato by-product meal.	58
3	Composition and chemical analysis of starter, grower and finisher diets containing potato by-product meal.	59
4	Composition and chemical analysis of starter, grower and finisher diets containing pea hulls meal.	60
5	Composition and chemical analysis of starter, grower and finisher diets containing date stone meal.	61
6	Chemical analysis of tested by-product meals (% on DM basis).	71
7	Cell wall constituents of tested by-products meals (% on DM basis).	73
8	Amino acid contents (%) of tested by-product meals.	75
9	Amino acid contents (g/100g protein) of tested by-product meals.	76
10	Live body weight (g \pm SE) of broiler chicks fed different dietary levels of TBM at different ages of the experimental period.	78

No of Table	Title of Table	Page
11	Analysis of variance of live body weight (g) of broiler chicks fed different dietary levels of TBM at different ages of the experimental period.	78
12	Weight gain (g ± SE) of broiler chicks fed different dietary levels of TBM at different experimental periods.	80
13	Analysis of variance of weight gain (g) of broiler chicks fed different dietary levels of TBM at different experimental periods.	80
14	Feed intake (g ± SE) of broiler chicks fed different dietary levels of TBM at different experimental periods.	82
15	Analysis of variance of feed intake (g) of broiler chicks fed different dietary levels of TBM at different experimental periods.	82
16	Feed conversion (g feed / g gain ± SE) of broiler chicks fed different dietary levels of TBM at different experimental periods.	85
17	Analysis of variance of feed conversion (g feed / g gain) of broiler chicks fed different dietary levels of TBM at different experimental periods.	85
18	Effect of feeding different dietary levels of TBM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	88
19	Analysis of variance for the effect of feeding different dietary levels of TBM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	89

No of	Title of Table	Page
--------------	-----------------------	-------------

Table		
20	Effect of feeding different dietary levels of TBM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	92
21	Analysis of variance for the effect of feeding different dietary levels of TBM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	93
22	Effect of feeding different dietary levels of TBM on carcass cuts (%) of broiler chicks at 8 weeks of age.	95
23	Analysis of variance for the effect of feeding different dietary levels of TBM on carcass cuts (%) of broiler chicks at 8 weeks of age.	96
24	Effect of feeding different dietary levels of TBM on chemical composition (%) of broiler chicks meat.	98
25	Analysis of variance for the effect of feeding different dietary levels of TBM on chemical composition (%) of broiler chicks meat.	98
26	Effect of feeding different dietary levels of TBM on the economic efficiency of experimental diets.	100
27	Live body weight (g ± SE) of broiler chicks fed different dietary levels of PBM at different ages of the experimental period.	102
28	Analysis of variance of live body weight (g) of broiler chicks fed different dietary levels of PBM at different ages of the experimental period.	102

No of Table	Title of Table	Page
--------------------	-----------------------	-------------

29	Weight gain (g \pm SE) of broiler chicks fed different dietary levels of PBM at different experimental periods.	105
30	Analysis of variance of weight gain (g) of broiler chicks fed different dietary levels of PBM at different experimental periods.	105
31	Feed intake (g \pm SE) of broiler chicks fed different dietary levels of PBM at different experimental periods.	107
32	Analysis of variance of feed intake (g) of broiler chicks fed different dietary levels of PBM at different experimental periods.	107
33	Feed conversion (g feed / g gain \pm SE) of broiler chicks fed different dietary levels of PBM at different experimental periods	109
34	Analysis of variance of feed conversion (g feed / g gain) of broiler chicks fed different dietary levels of PBM at different experimental periods	109
35	Effect of feeding different dietary levels of PBM on nutrients digestibility (%) of broiler chicks at 8 weeks of age	113
36	Analysis of variance for the effect of feeding different dietary levels of PBM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	114

No of Table	Title of Table	Page
37	Effect of feeding different dietary levels of PBM on	117

	carcass characteristics (%) of broiler chicks at 8 weeks of age.	
38	Analysis of variance for the effect of feeding different dietary levels of PBM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	118
39	Effect of feeding different dietary levels of PBM on carcass cuts (%) of broiler chicks at 8 weeks of age.	120
40	Analysis of variance for the effect of feeding different dietary levels of PBM on carcass cuts (%) of broiler chicks at 8 weeks of age.	121
41	Effect of feeding different dietary levels of PBM on chemical composition (%) of broiler chicks meat.	123
42	Analysis of variance for the effect of feeding different dietary levels of PBM on chemical composition (%) of broiler chicks meat.	123
43	Effect of feeding different dietary levels of PBM on the economic efficiency of experimental diets.	125
44	Live body weight ($g \pm SE$) of broiler chicks fed different dietary levels of PHM at different ages of the experimental period.	128
45	Analysis of variance of live body weight (g) of broiler chicks fed different dietary levels of PHM at different ages of the experimental period.	128

No of Table	Title of Table	Page
46	Weight gain ($g \pm SE$) of broiler chicks fed different dietary levels of PHM at different experimental	131

	periods.	
47	Analysis of variance of weight gain (g) of broiler chicks fed different dietary levels of PHM at different experimental periods.	131
48	Feed intake (g \pm SE) of broiler chicks fed different dietary levels of PHM at different experimental periods.	133
49	Analysis of variance of feed intake (g) of broiler chicks fed different dietary levels of PHM at different experimental periods.	133
50	Feed conversion (g feed / g gain) of broiler chicks fed different dietary levels of PHM at different experimental periods.	134
51	Analysis of variance of feed conversion (g feed / g gain) of broiler chicks fed different dietary levels of PHM at different experimental periods	134
52	Effect of feeding different dietary levels of PHM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	139
53	Analysis of variance for the effect of feeding different dietary levels of PHM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	140

No of Table	Title of Table	Page
54	Effect of feeding different dietary levels of PHM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	142

55	Analysis of variance for the effect of feeding different dietary levels of PHM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	143
56	Effect of feeding different dietary levels of PHM on carcass cuts (%) of broiler chicks at 8 weeks of age.	145
57	Analysis of variance for the effect of feeding different dietary levels of PHM on carcass cuts (%) of broiler chicks at 8 weeks of age.	146
58	Effect of feeding different dietary levels of PHM on chemical composition (%) of broiler chicks meat.	148
59	Analysis of variance for the effect of feeding different dietary levels of PHM on chemical composition (%) of broiler chicks meat.	148
60	Effect of feeding different dietary levels of PHM on the economic efficiency of experimental diets.	150
61	Live body weight ($g \pm SE$) of broiler chicks fed different dietary levels of DSM at different ages of the experimental period.	152
62	Analysis of variance of live body weight (g) of broiler chicks fed different dietary levels of DSM at different ages of the experimental period.	152

No of Table	Title of Table	Page
63	Weight gain ($g \pm SE$) of broiler chicks fed different dietary levels of DSM at different experimental periods.	154
64	Analysis of variance of weight gain (g) of broiler	154

	chicks fed different dietary levels of DSM at different experimental periods.	
65	Feed intake (g \pm SE) of broiler chicks fed different dietary levels of DSM at different experimental periods.	156
66	Analysis of variance of feed intake (g) of broiler chicks fed different dietary levels of DSM at different experimental periods.	156
67	Feed conversion (g feed / g gain) of broiler chicks fed different dietary levels of DSM at different experimental periods.	159
68	Analysis of variance of feed conversion (g feed / g gain) of broiler chicks fed different dietary levels of DSM at different experimental periods	159
69	Effect of feeding different dietary levels of DSM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	163
70	Analysis of variance for the effect of feeding different dietary levels of DSM on nutrients digestibility (%) of broiler chicks at 8 weeks of age.	164

No of Table	Title of Table	Page
71	Effect of feeding different dietary levels of DSM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	166
72	Analysis of variance for the effect of feeding	167

	different dietary levels of DSM on carcass characteristics (%) of broiler chicks at 8 weeks of age.	
73	Effect of feeding different dietary levels of DSM on carcass cuts (%) of broiler chicks at 8 weeks of age.	169
74	Analysis of variance for the effect of feeding different dietary levels of DSM on carcass cuts (%) of broiler chicks at 8 weeks of age.	170
75	Effect of feeding different dietary levels of DSM on chemical composition (%) of broiler chicks meat.	173
76	Analysis of variance for the effect of feeding different dietary levels of DSM on chemical composition (%) of broiler chicks meat.	173
77	Effect of feeding different dietary levels of DSM on the economic efficiency of experimental diets.	175

LIST OF ABBREVIATIONS.

ADL	= Acid detergent lignin.
ADF	= Acid detergent fiber.
Ca	= Calcium.
CF	= Crude fiber.
CP	= Crude protein.
DM	= Dry matter.
DSM	= Date stone meal.
DSPS	= Dehydrated soluble potato solids.
DTP	= Dried tomato pomace.
DTSC	= Dried tomato seed cake.
EE	= Ether extract.
FC	= Feed conversion.
FI	= Feed intake.
g	= gram.
GE	= Gross energy.
Kcal	= Kilo calorie.
LBW	= Live body weight.
ME	= Metabolizable energy.
mg	= Milligram.
MJ	= Mega Joule.
NDF	= Neutral detergent fiber.
NFE	= Nitrogen free extract.
OM	= Organic matter.
P	= Phosphorus.
PBM	= Potato by-product meal.

PHM	= Pea hulls meal.
PKC	= Palm kernel cake.
PKM	= Palm kernel meal.
PSP	= Potato steam peel.
PWM	= Potato waste meal.
TBM	= Tomato by-product meal.
TME _n	= True metabolizable energy.
TS	= Tomato seeds.
WG	= Weight gain.
YC	= Yellow corn.