สารบัญ	
	หน้า
กิตติกรรมประกาศ	ค
บทคัดย่อภาษาไทย	
บทกัดย่อภาษาอังกฤษ	n
สารบัญตาราง	Ŋ
สารบัญภาพ	ฎ
สารบัญตารางภาคผนวก	Ą
อักษรย่อและสัญลักษณ์	ъ
บทที่ 1 บทนำ	1
วัตถุประสงค์	3
ประโยชน์ที่คาดว่าจะได้รับ	3
บทที่ 2 ตรวจเอกสาร	4
ไก่ลูกผสมพื้นเมือง	5
สายพันธุ์ต่อสมรรถภาพการผลิต	9
น้ำหนักตัวแรกเกิด	9
อัตราการเจริญเติบโต	. 9
ปริมาณอาหารที่กินและประสิทธิภาพการใช้อาหาร	10
อัตราการตาย	10
ค้นทุน	11
คุณภาพซาก	11
คุณภาพเนื้อ	13
ด้านสี ค่าความเป็นกรดเป็นค่าง และความสามารถในการอุ้มา	น้ำ 13
การประเมินด้านการตรวจชิม	17
องค์ประกอบทางเกมี	23
เนื้อเยื่อเกี่ยวพันและคอลลาเจน	25
การใช้สารละลายแคลเซียมคลอไรค์	27

สารบัญ (ต่อ)

คุณภาพใขมันในกล้ามเนื้อ (fat quality)	28
การสะสมใขมัน	28
ระคับคอเลสเตอรอลในกล้ามเนื้อ	32
การประเมินค่าการหืน	35
บทที่ 3 อุปกรณ์ และวิธีการ	42
อุปกรณ์และเครื่องมือ	42
สารเคมี	43
สัตว์ทคลอง	44
อาหารทดลอง	44
คอกทดลอง	45
การบันทึกผล และการศึกษาประสิทธิภาพการผลิต	45
การศึกษาคุณภาพซาก และการบันทึกผล	45
การศึกษาคุณภาพเนื้อ	46
การศึกษาคุณภาพใขมันในเนื้อ	47
การวางแผนการทคลอง และการวิเคราะห์ค่ำทางสถิติ	47
บทที่ 4 ผลการทดลอง	49
บทที่ 5 วิจารณ์ผลการทดลอง	68
บทที่ 6 สรุปผลการทดลอง	81
เอกสารอ้างอิง	82
ภาคผนวกก	92
ภาคผนวก ข	103
ภาคผนวก ค	107
ภาคผนวกง	116
ประวัติผู้เขียน	165

สารบัญตาราง

Tab	le	หน้า
1	Chicken yield percentage	12
2	The correlation (r) between fat to total fat and carcass fat	2) 12
3	Compounds proposed as key odour compounds in cooked poultry meat	19
4	Taste compounds present in meat	22
5	Off – flavour of some aldehyde	22
6	Functional property of protein	24
7	Tissue distribution of collagen types	26
8	The common biology fatty acid	32
9	Fatty acid composition of animal fats; typical value (m/m %)	33
10	Flavor thresholds of classes of lipid oxidation compounds	41
11	Productive performance of Native Chickens, Native x Rhode	52
	Island Red and Native x Rhode Island Red - Barred Plymouth Rock Chickens	
12	The carcass quality of Native Chickens, Native x Rhode Island Red	54
	and Native x Rhode Island Red - Barred Plymouth Rock Chickens	
13	External and internal organ percentage of Native Chicken, Native x	55
	Rhode Island Red and Native x Rhode Island Red – Barred Plymouth	
	Rock Chicken	
14	Effect of breeds on meat quality of breast and thigh muscle of chickens	57
15	Effect of breeds on tenderness of breast and thigh muscle of chickens	58
16	Effect of breast and thigh immersion with calcium chloride on water	62
	holding capacity and shear force value	
17	Effect of breeds on fat quality of breast and thigh muscle of chickens	63

สารบัญภาพ

Figu	re	หน้า
1	The obstacle production of Native chickens	5
2	Scheme of cross breeding for improved performance, carcass and meat	8
	quality of Thai native chicken	
3	Scheme of discolor	16
4	The reaction sequence for the biosynthesis of fatty acid In forming	31
	palmitate, the pathway is repeated for seven cycles of C ₂ elongation	
	followed by a final hydrolysis step	
5	Biosynthesis of cholesterol in human	34
6	the 19 reaction conversion of lanosterol of cholesterol to cholesterol	36
7	Mechanism processing of oxidative reaction	38
8	The general decomposition of hydroperoxides into aldehydes and ketones	39
9	Decomposition of methyl linolenate hydroperoxides, cleavage	40
	at the arrow yields the products indicated, AH = anti - oxidant	
10	A comparison of body weight (A), mortality rate (B)	64
	and feed cost/gain (C) of different breeds	
11	A comparison of carcass quality (A), thigh color (B)	65
	and shear force value of breast (C) of different breeds	
12	A comparison panel scores of breast (A)	66
	and free fatty acid of thigh (B) of different breeds	
12	A comparison cholesterol of breast (A) and thigh (B) of different breeds	67

สารบัญตารางภาคผนวก

App	endix table	หน้า
1	Example of questionnaire for panel test	117
2	ANOVA of body weight at 0 week (R – Square = 0.980)	118
3	ANOVA of body weight at 4 week (R – Square = 0.930)	118
4	ANOVA of body weight at 8 week (R – Square = 0.945)	118
5	ANOVA of body weight at 12 week (R – Square = 0.934)	118
6	ANOVA of daily weight gain at $0-4$ week (R – Square = 0.909)	118
7	ANOVA of daily weight gain at $4 - 8$ week (R- Square = 0.759)	119
8	ANOVA of daily weight gain at 8 – 12 week (R – Square = 0.451)	119
9	ANOVA of daily weight gain at $0 - 8$ week (R - Square = 0.855)	119
10	ANOVA of daily weight gain at $0 - 12$ week (R - Square = 0.929)	119
11	ANOVA of feed intake at $0-4$ week (R – Square = 0.561)	119
12	ANOVA of feed intake at $4 - 8$ week (R – Square = 0.273)	120
13	ANOVA of feed intake at $8 - 12$ week (R - Square = 0.447)	120
14	ANOVA of feed intake at $0 - 8$ week (R – Square = 0.539)	120
15	ANOVA of feed intake at $0 - 12$ week (R - Square = 0.574)	120
16	ANOVA of feed conversion ratio at 0 – 4 week (R – Square = 0.647)	120
17	ANOVA of feed conversion ratio at 4 – 8 week (R – Square = 0.258)	121
18	ANOVA of feed conversion ratio at 8 – 12 week (R – Square = 0.161)	121
19	ANOVA of feed conversion ratio at $0 - 8$ week $(R - Square = 0.462)$	121
20	ANOVA of feed conversion ratio at $0 - 12$ week (R - Square = 0.418)	121
21	ANOVA of mortality rate at $0-4$ week (R - Square = 1.000)	121
22	ANOVA of mortality rate at $4 - 8$ week (R - Square = 0.890)	122
23	ANOVA of mortality rate at $8 - 12$ week (R - Square = 0.891)	122
24	ANOVA of mortality rate at $0 - 8$ week (R – Square = 0.985)	122

App	endix table	หน้า
25	ANOVA of mortality rate at $0 - 12$ week (R - Square = 0.984)	122
26	ANOVA of live weight (R - Square = 0.221)	122
27	ANOVA of dressing percentage (R – Square = 0.023)	123
28	ANOVA of Pectolaris major (R - Square = 0.924)	123
29	ANOVA of thigh (R - Square = 0.648)	123
30	ANOVA of wing (R – Square = 0.257)	123
31	ANOVA of drumstick (R – Square = 0.199)	123
32	ANOVA of bone (R – Square = 0.046)	124
33	ANOVA of weight loss $(R - \text{Square} = 0.702)$	124
34	ANOVA of head & neck (R – Square = 0.265)	124
35	ANOVA of blood (R – Square = 0.413)	124
36	ANOVA of shank (R – Square = 0.718)	124
37	ANOVA of feather (R – Square = 0.792)	125
38	ANOVA of liver (R – Square = 0.844)	125
39	ANOVA of gizzard (R – Square = 0.522)	125
40	ANOVA of heart (R - Square = 0.787)	125
41	ANOVA of spleen (R – Square = 0.929)	125
42	ANOVA of pH of breast (R - Square = 0.414)	126
43	ANOVA of pH of thigh (R - Square = 0.190)	126
44	ANOVA of pH of A x B ($R - Square = 0.844$)	126
45	ANOVA of conductivity – value of breast $(R - Square = 0.515)$	126
46	ANOVA of conductivity – value of thigh $(R - Square = 0.345)$	127
47	ANOVA of conductivity – value A x B ($R - Square = 0.747$)	127
48	ANOVA of L - value of breast $(R - Square = 0.173)$	127

App	pendix table	หน้า
49	ANOVA of L – value of thigh $(R - Square = 0.829)$	127
50	ANOVA of L – value of A x B (R – Square = 0.803)	128
51	ANOVA of a* - value of breast (R - Square = 0.356)	128
52	ANOVA of a^* - value of thigh $(R - \text{Square} = 0.891)$	128
53	ANOVA of a^* – value of A x B (R – Square = 0.945)	128
54	ANOVA of b* - value of breast (R - Square = 0.829)	129
55	ANOVA of b^* - value of thigh (R – Square = 0.945)	129
56	ANOVA of b^* – value of A x B (R – Square = 0.816)	129
57	ANOVA of protein percentage of breast ($R - \text{Square} = 0.215$)	129
58	ANOVA of protein percentage of thigh $(R - \text{Square} = 0.071)$	130
59	ANOVA of protein percentage of A x B (R – Square = 0.916)	130
60	ANOVA of fat percentage of breast (R - Square = 0.626)	130
61	ANOVA of fat percentage of thigh (R - Square = 0.787)	130
62	ANOVA of fat percentage of A x B (R – Square = 0.932)	131
63	ANOVA of moisture percentage of breast (R - Square = 0.104)	131
64	ANOVA of moisture percentage of thigh $(R - Square = 0.351)$	131
65	ANOVA of moisture percentage of A x B (R – Square = 0.367)	131
66	ANOVA of drip loss of breast (R - Square = 0.147)	132
67	ANOVA of drip loss of thigh (R - Square = 0.306)	132
68	ANOVA of drip loss A x B (R – Square = 0.263)	132
69	ANOVA of thawing loss of breast $(R - Square = 0.0065)$	132
70	ANOVA of thawing loss of thigh $(R - Square = 0.043)$	133
71	ANOVA of thawing loss of A x B ($R - \text{Square} = 0.034$)	133
72	ANOVA of cooking loss of breast $(R - Square = 0.060)$	133

App	pendix table		หน้า
73	ANOVA of cooking loss of thigh (R – Square = 0.13	54)	133
74	ANOVA of cooking loss of A x B ($R - Square = 0.4$	21)	134
75	ANOVA of grilling loss of breast $(R - Square = 0.1)$	75)	134
76	ANOVA of grilling loss of thigh $(R - Square = 0.02)$	7)	134
77	ANOVA of grilling loss of A x B $(R - Square = 0.29)$	98)	134
78	ANOVA of maximum force (N) of breast (R - Squa	re = 0.468)	135
79	ANOVA of maximum force of thigh (N) (R - Squar	e = 0.156)	135
80	ANOVA of maximum force (N) A x B (R - Square	= 0.432)	135
81	ANOVA of energy (J) of breast (R – Square = 0.379)	135
82	ANOVA of energy (J) of thigh (R - Square = 0.342)	7	136
83	ANOVA of energy (J) of A x B (R - Square = 0.304	.)	136
84	ANOVA of extension (mm) of breast (R - Square =	0.406)	136
85	ANOVA of extension (mm) of thigh (R - Square =	0.258)	136
86	ANOVA of extension (mm) of A x B (R – Square =	0.286)	137
87	ANOVA of soluble collagen of breast (R - Square =	= 0.100)	137
88	ANOVA of soluble collagen of thigh (R - Square =	0.048)	137
89	ANOVA of soluble collagen of A x B (R - Square =	= 0.123)	137
90	ANOVA of insoluble collagen of breast (R - Square	e = 0.079)	138
91	ANOVA of insoluble collagen of thigh (R - Square	= 0.109)	138
92	ANOVA of insoluble collagen of A x B (R - Square	e = 0.456)	138
93	ANOVA of total collagen of breast (R - Square = 0	.442)	138
94	ANOVA of total collagen of thigh $(R - Square = 0.$	015)	139
95	ANOVA of total collagen of A x B (R – Square = 0	.506)	139
06	ANOVA of tenderness score of breast (R - Square	= 0.016)	139

App	endix table	หน้า
97	ANOVA of tenderness score of thigh (R - Square = 0.173)	139
98	ANOVA of tenderness score of A x B (R - Square = 0.439)	140
99	ANOVA of juiciness score of breast (R – Square = 0.212)	140
100	ANOVA of juiciness score of thigh (R – Square = 0.075)	140
101	ANOVA of juiciness score of A x B (R – Square = 0.218)	140
102	ANOVA of flavor score of breast (R - Square = 0.0006)	141
103	ANOVA of flavor score of thigh (R - Square = 0.191)	141
104	ANOVA of flavor score of A x B (R - Square = 0.188)	141
105	ANOVA of acceptability score of breast (R - Square = 0.017)	141
106	ANOVA of acceptability score of thigh $(R - Square = 0.040)$	142
107	ANOVA of acceptability score of A x B (R – Square = 0.285)	142
108	ANOVA of moisture absorption 0 min of breast (R – Square = 0.189)	142
109	ANOVA of moisture absorption 0 min of thigh (R - Square = 0.381)	142
110	ANOVA of moisture absorption 180 min of breast (R – Square = 0.521)	143
111	ANOVA of moisture absorption 180 min of thigh (R - Square = 0.213)	143
112	ANOVA of moisture absorption 240 min of breast (R – Square = 0.007)	143
113	ANOVA of moisture absorption 240 min of thigh (R – Square = 0.679)	143
114	ANOVA of moisture absorption 300 min of breast (R - Square = 0.171)	143
115	S ANOVA of moisture absorption 300 min of thigh (R - Square = 0.162)	144
116	6 ANOVA of cooking loss 0 min of breast (R - Square = 0.016)	144
117	ANOVA of cooking loss 0 min of thigh $(R - \text{Square} = 0.018)$	144
118	3 ANOVA of cooking loss 180 min of breast (R – Square = 0.252)	144
119	ANOVA of cooking loss 180 min of thigh (R - Square = 0.470)	144
120	ANOVA of cooking loss 240 min of breast (R – Square = 0.111)	145

Appendix table		หน้า
121 ANOVA of cooking loss 240 min of thigh	(R - Square = 0.0.569)	145
122 ANOVA of cooking loss 300 min of breas	ot $(R - \text{Square} = 0.335)$	145
123 ANOVA of cooking loss 300 min of thigh	$(\mathbf{R} - \mathbf{Square} = 0.654)$	145
124 ANOVA of cooking loss of A x B x C (R	- Square = 0.228)	146
125 ANOVA of thawing loss 0 min of breast (R - Square = 0.096)	146
126 ANOVA of thawing loss 0 min of thigh (F	R - Square = 0.945)	146
127 ANOVA of thawing loss 180 min of breas	st $(R - Square = 0.048)$	146
128 ANOVA of thawing loss 180 min of thigh	$_{1}(R-Square=0.253)$	147
129 ANOVA of thawing loss 240 min of breas	st $(R - Square = 0.108)$	147
130 ANOVA of thawing loss 240 min of thigh	ı (R – Square = 0.608)	147
131 ANOVA of thawing loss 300 min of bream	st $(R - Square = 0.352)$	147
132 ANOVA of thawing loss 300 min of thigh	$_{1}(R - Square = 0.494)$	147
133 ANOVA of thawing loss of A x B x C (R	- Square = 0.567)	148
134 ANOVA of maximum force (N) 0 min of	breast (R - Square = 0.233)	148
135 ANOVA of maximum force (N) 0 min of	thigh $(R - Square = 0.022)$	148
136 ANOVA of maximum force (N) 180 min	of breast $(R - Square = 0.186)$	148
137 ANOVA of maximum force (N) 180 min	of thigh $(R - Square = 0.008)$	149
138 ANOVA of maximum force (N) 240 min	of breast $(R - Square = 0.255)$	149
139 ANOVA of maximum force (N) 240 min	of thigh $(R - Square = 0.020)$	149
140 ANOVA of maximum force (N) 300 min	of breast $(R - Square = 0.048)$	149
141 ANOVA of maximum force (N) 300 min	of thigh $(R - Square = 0.077)$	149
142 ANOVA of maximum force (N) of A x E	$3 \times C (R - Square = 0.248)$	150
143 ANOVA of energy (J) 0 min of breast (R	- Square = 0.506)	150
144 ANOVA of energy (J) 0 min of thigh (R	- Square = 0.193)	150

Appendix table		หน้า
145 ANOVA of energy (J) 180 min of brea	ast (R - Square = 0.351)	150
146 ANOVA of energy (J) 180 min of thig	h (R - Square = 0.067)	151
147 ANOVA of energy (J) 240 min of brea	ast (R - Square = 0.145)	151
148 ANOVA of energy (J) 240 min of thig	h (R - Square = 0.084)	151
149 ANOVA of energy (J) 300 min of brea	ast (R - Square = 0.102)	151
150 ANOVA of energy (J) 300 min of thig	gh (R - Square = 0.120)	151
151 ANOVA of energy (J) of A x B x C (I	R - Square = 0.672	152
152 ANOVA of extension (mm) 0 min of	breast (R - Square = 0.445)	152
153 ANOVA of extension (mm) 0 min of	thigh $(R - Square = 0.378)$	152
154 ANOVA of extension (mm) 180 min	of breast (R - Square = 0.099)	152
155 ANOVA of extension (mm) 180 min	of thigh $(R - Square = 0.089)$	153
156 ANOVA of extension (mm) 240 min	of breast (R – Square = 0.184)	153
157 ANOVA of extension (mm) 240 min	of thigh $(R - Square = 0.226)$	153
158 ANOVA of extension (mm) 300 min	of breast (R - Square = 0.047)	153
159 ANOVA of extension (mm) 300 min	of thigh (R - Square = 0.127)	153
160 ANOVA of extension (mm) of A x B	x C (R - Square = 0.482)	154
161 ANOVA of palmitic acid of breast (R	1 - Square = 0.009	154
162 ANOVA of palmitic acid of thigh (R	- Square = 0.304)	154
163 ANOVA of palmitic acid of A x B (F	R - Square = 0.273	155
164 ANOVA of stearic acid of breast (R	- Square = 0.398)	155
165 ANOVA of stearic acid of thigh (R -	· Square = 0.666)	155
166 ANOVA of stearic acid of A x B (R	- Square = 0.504)	155
167 ANOVA of arachidic acid of breast ((R - Square = 0.273)	156
160 ANOVA of arashidia said of thigh (R - Square = 0.370	156

Appendix table		หน้า
169 ANOVA of arachidic acid of A x B (R -	- Square = 0.469)	156
170 ANOVA of total saturated fatty acid of l	oreast (R - Square = 0.198)	156
171 ANOVA of total saturated fatty acid of	thigh $(R - Square = 0.653)$	157
172 ANOVA of total saturated fatty acid of	$A \times B (R - Square = 0.475)$	157
173 ANOVA of oleic acid of breast (R - Squ	are = 0.195)	157
174 ANOVA of oleic acid of thigh (R - Squ	are = 0.556)	157
175 ANOVA of oleic acid of A x B (R - Squ	uare = 0.372)	158
176 ANOVA of linoleic acid of breast (R -	Square = 0.049)	158
177 ANOVA of linoleic acid of thigh (R - S	quare = 0.325)	158
178 ANOVA of linoleic acid of A x B (R -	Square = 0.287)	158
179 ANOVA of linolenic acid of breast (R -	- Square = 0.862)	159
180 ANOVA of linolenic acid of thigh (R -	Square = 0.251)	159
181 ANOVA of linolenic acid of A x B (R -	- Square = 0.572)	159
182 ANOVA of total unsaturated fatty acid	of breast (R - Square = 0.199)	159
183 ANOVA of total unsaturated fatty acid	of thigh $(R - \text{Square} = 0.653)$	160
184 ANOVA of total unsaturated fatty acid	of A x B $(R - Square = 0.471)$	160
185 ANOVA of FAR of breast (R - Square	= 0.203)	160
186 ANOVA of FAR of thigh (R - Square	= 0.650)	160
187 ANOVA of FAR of A x B (R – Square	= 0.461)	161
188 ANOVA of C 18:0/C 18:2 of breast (R	- Square = 0.682)	161
189 ANOVA of C 18:0/C 18:2 of thigh (R	– Square = 0.516)	161
190 ANOVA of C 18:0/C 18:2 of A x B (R	- Square = 0.611)	161
191 ANOVA of P/S ratio of breast (R - Sq	uare = 0.051)	162
102 ANOVA of P/S ratio of thigh (R - Squ	are = 0.109	162

App	endix table	หน้า
193	ANOVA of P/S ratio of A x B (R – Square = 0.120)	162
194	ANOVA of adjust P/S ratio of breast (R – Square = 0.032)	162
195	ANOVA of adjust P/S ratio of thigh (R - Square = 0.007)	163
196	ANOVA of adjust P/S ratio of A x B (R – Square = 0.081)	163
197	ANOVA of DBI of breast $(R - Square = 0.089)$	163
198	ANOVA DBI of thigh (R – Square = 0.481)	163
199	ANOVA of DBI of A x B (R – Square = 0.235)	164
200	ANOVA TBA of breast (R – Square = 0.189)	164
201	ANOVA TBA of thigh $(R - Square = 0.025)$	164
202	ANOVA of TBA of A x B $(R - Square = 0.157)$	164

อักษรย่อและ สัญลักษณ์

a* redness (red – green index)

ACP acyl carrier protein

ADG average daily gain

adjust P/S ratio adjust polyunsaturated : saturated fatty acid (non stearic)

AH anti oxidant

ANOVA Analysis of Variance

AOAC Association of Official Analytical Chemists

ATP adenosine triphosphate

b* yellowness (yellow – blue index)

BHA butylate hydroxyanisole

BHT butylate hydroxytoluene

Ca²⁺ calcium ion

CaCl₂ calcium chloride

Cl chloride ion

CORT corticosterone

CRD completely random design

DBI double bond index

DFD dark firm and dry

F₁ crossbred average

FCR feed conversion ratio

FI feed intake

FID flame ionized detector

g gravity g gram

GC gas chromatography

GMP glutamine monophosphate

IMP inosine monophosphate

°K kelvin degree

อักษรย่อและสัญลักษณ์ (ต่อ)

Kg kilogram

L lightness

M mole

MSG monosodium glutamate

N normal

N Native chicken

NR Native chicken x Rhode Island Red

NRB Native chicken x Rhode Island Red – Barred Plymouth Rock

P₁ purebred average

PSE pale soft exudative

P/S ratio polyunsaturated : saturated fatty acid

SAS Statistical Analysis System

SCP sterol carrier protein

TBA thiobarbituric acid

TBHQ butylate hydroquinone

WHC water holding capacity

XY, ZW heterogametic

XX, ZZ homogametic

β beta

γ gramma