Data collection to optimise technical and economic results

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Programme Training Expert Broiler Management Part 2

Welcome	9:00
Data collection to optimise technical and economic results	**9:30**
Coffee break	10:30
Ventilation principles for broilers in hot climates	11:00
Lunch	12:00
Water quality in broiler houses	13:00
Antibiotics in Indonesia / Holland or Poultry Diseases	14:00
Coffee break	14:30
Innovations in the broiler sector based on AFM	15:00
Closing ceremony. Certificates after training part 2	16:00
End	16:30

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Data collection in the DIFS-LIVE program

Technical and economic data

Differences between farms

Experiment: cheap feed, cheap chicks or both?

Open vs closed houses: pay-back time

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Manual data collection

general data

house dimensions

number of bird places,

cleaning time

performance data

- body weight development
- feed consumption,
- mortality,
- slaughter age.

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Economic data

price of the day old chicks,

feed,

broiler selling price at the gate

other costs

- electricity,
- water,
- heating / gas,
- health care,
- litter,
- catching and transport,
- cleaning,
- carcass disposal.

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Based on this, we calculate **feed margin per 100 broilers**:

slaughter income – feed and day-old chick price per round and per year.

An overview of the other costs can be made per 100 broilers, which gives an estimate for the annual income of the broiler farm.

Using this data, the pay-back time can be estimated of any quality investment.

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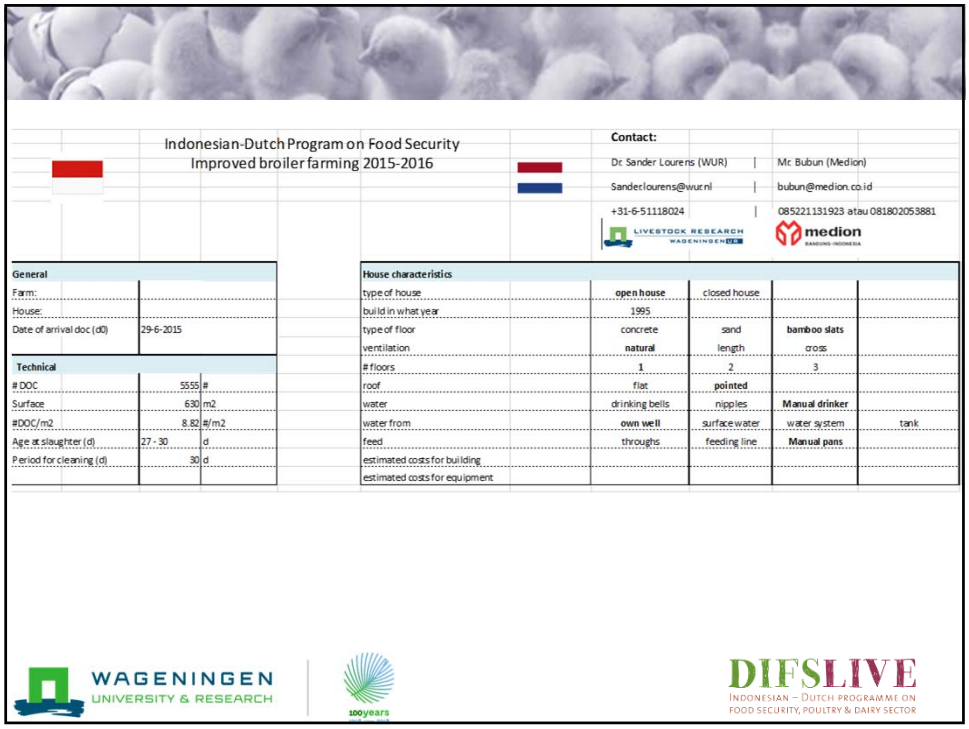

Indonesian-Dutch Program on Food Security
Improved broiler farming 2015-2016

Contact:

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medion BANDUNG-INDONESIA

General		
Farm:		
House:		
Date of arrival doc (d0)	29-6-2015	
Technical		
# DOC	5555	#
Surface	630	m2
#DOC/m2	8.82	#/m2
Age at slaughter (d)	27 - 30	d
Period for cleaning (d)	30	d

House characteristics				
type of house	**open house**	closed house		
build in what year	1995			
type of floor	concrete	sand	**bamboo slats**	
ventilation	**natural**	length	cross	
# floors	1	2	3	
roof	flat	**pointed**		
water	drinking bells	nipples	**Manual drinker**	
water from	**own well**	surface water	water system	tank
feed	throughs	feeding line	**Manual pans**	
estimated costs for building				
estimated costs for equipment				

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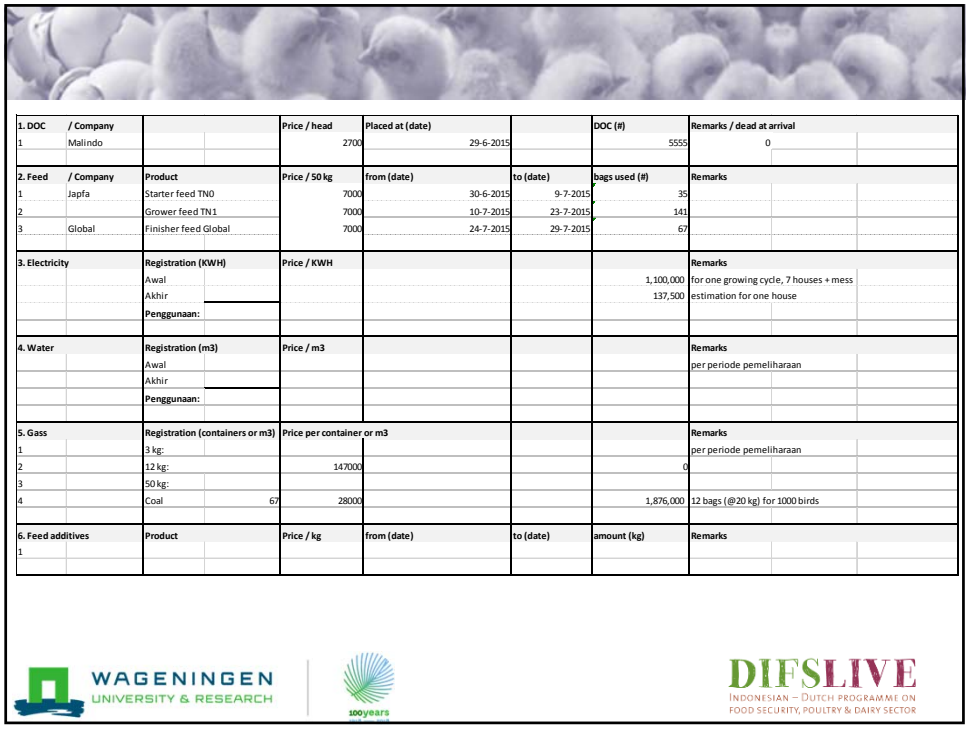
Age d	House temp °C	BW (R308) g	BW (farm) g	Feed (R308) g	Bags required per day (#50 kg bags)	Feed given (#50 kg bags)	Mortality #/d	Cum. Mortality #	Chicks removed #	Chicks present #
	↓ fill in ↓		↓ fill in ↓			↓ fill in ↓	↓ fill in ↓		↓ fill in ↓	
0	29-6-2015	**42**								
1	30-6-2015	**52**		**15**		1	8	8		5547
2	1-7-2015	**66**		**15**		2	8	16		5539
3	2-7-2015	**81**		**20**		2	10	26		5529
4	3-7-2015	**100**		**20**		3	5	31		5524
5	4-7-2015	**122**		**20**		3	4	35		5520
6	5-7-2015	**148**		**30**		4	5	40		5515
7	6-7-2015	**177**		**30**		4	4	44		5511
8	7-7-2015	**208**	205	**30**		5	4	48		5507
9	8-7-2015	**242**		**35**		5	3	51		5504
10	9-7-2015	**279**		**40**		6	3	54		5501
11	10-7-2015	**320**		**45**		6	4	58		5497
12	11-7-2015	**364**		**50**		7	4	62		5493
13	12-7-2015	**410**		**55**		7	5	67		5488
14	13-7-2015	**459**		**60**		8	5	72		5483
15	14-7-2015	**511**	530	**66**		8	4	76		5479
16	15-7-2015	**567**		**72**		9	4	80		5475
17	16-7-2015	**626**		**78**		10	5	85		5470
18	17-7-2015	**688**		**84**		11	4	89		5466
19	18-7-2015	**753**		**90**		11	5	94		5461
20	19-7-2015	**822**		**96**		12	6	100		5455
21	20-7-2015	**891**		**102**		12	5	105		5450
22	21-7-2015	**964**	965	**109**		13	6	111		5444
23	22-7-2015	**1039**		**116**		13	5	116		5439
24	23-7-2015	**1115**		**123**		14	8	124		5431
25	24-7-2015	**1193**		**130**		14	15	139		5416
26	25-7-2015	**1272**		**137**		14	10	149		5406
27	26-7-2015	**1353**	1353	**144**		14	15	164	1770	3621
28	27-7-2015	**1436**	1436	**151**		10	6	170	750	2865
29	28-7-2015	**1521**	1521	**158**		8	5	175	2415	445
30	29-7-2015	**1608**	15	**165**		5	5	180	435	5
31	30-7-2015	**1697**		**172**		2	5	185		0



1. DOC	/ Company		Price / head	Placed at (date)		DOC (#)	Remarks / dead at arrival
1	Malindo		2700	29-6-2015		5555	0
2. Feed	**/ Company**	**Product**	**Price / 50 kg**	**from (date)**	**to (date)**	**bags used (#)**	**Remarks**
1	Japfa	Starter feed TN0	7000	30-6-2015	9-7-2015	35	
2		Grower feed TN1	7000	10-7-2015	23-7-2015	141	
3	Global	Finisher feed Global	7000	24-7-2015	29-7-2015	67	
3. Electricity		**Registration (KWH)**	**Price / KWH**				**Remarks**
		Awal				1,100,000	for one growing cycle, 7 houses + mess
		Akhir				137,500	estimation for one house
		Penggunaan:					
4. Water		**Registration (m3)**	**Price / m3**				**Remarks**
		Awal					per periode pemeliharaan
		Akhir					
		Penggunaan:					
5. Gass		**Registration (containers or m3)**	**Price per container or m3**				**Remarks**
1		3 kg:					per periode pemeliharaan
2		12 kg:	147000			0	
3		50 kg:					
4		Coal 67	28000			1,876,000	12 bags (@20 kg) for 1000 birds
6. Feed additives		**Product**	**Price / kg**	**from (date)**	**to (date)**	**amount (kg)**	**Remarks**
1							

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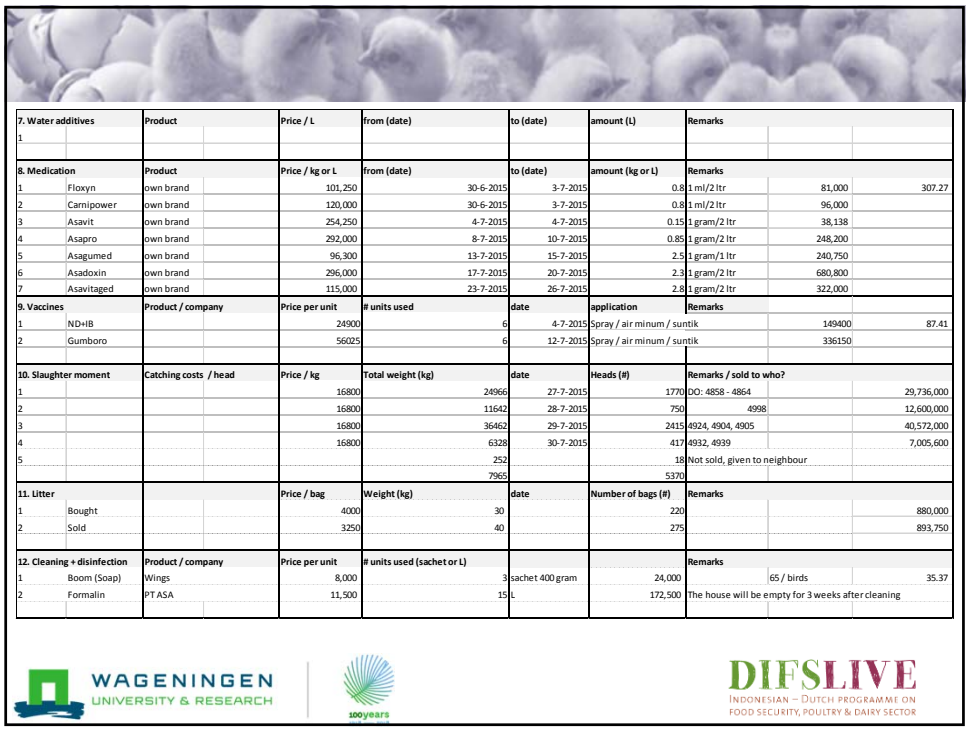

7. Water additives		Product	Price / L	from (date)	to (date)	amount (L)	Remarks		
1									
8. Medication		**Product**	**Price / kg or L**	**from (date)**	**to (date)**	**amount (kg or L)**	**Remarks**		
1	Floxyn	own brand	101,250	30-6-2015	3-7-2015	0.8	1 ml/2 ltr	81,000	307.27
2	Carnipower	own brand	120,000	30-6-2015	3-7-2015	0.8	1 ml/2 ltr	96,000	
3	Asavit	own brand	254,250	4-7-2015	4-7-2015	0.15	1 gram/2 ltr	38,138	
4	Asapro	own brand	292,000	8-7-2015	10-7-2015	0.85	1 gram/2 ltr	248,200	
5	Asagumed	own brand	96,300	13-7-2015	15-7-2015	2.5	1 gram/1 ltr	240,750	
6	Asadoxin	own brand	296,000	17-7-2015	20-7-2015	2.3	1 gram/2 ltr	680,800	
7	Asavitaged	own brand	115,000	23-7-2015	26-7-2015	2.8	1 gram/2 ltr	322,000	
9. Vaccines		**Product / company**	**Price per unit**	**# units used**	**date**	**application**	**Remarks**		
1	ND+IB		24900	6	4-7-2015	Spray / air minum / suntik		149400	87.41
2	Gumboro		56025	6	12-7-2015	Spray / air minum / suntik		336150	
10. Slaughter moment		**Catching costs / head**	**Price / kg**	**Total weight (kg)**	**date**	**Heads (#)**	**Remarks / sold to who?**		
1			16800	24966	27-7-2015	1770	DO: 4858 - 4864		29,736,000
2			16800	11642	28-7-2015	750	4998		12,600,000
3			16800	36462	29-7-2015	2415	4924, 4904, 4905		40,572,000
4			16800	6328	30-7-2015	417	4932, 4939		7,005,600
5				252		18	Not sold, given to neighbour		
				7965		5370			
11. Litter			**Price / bag**	**Weight (kg)**	**date**	**Number of bags (#)**	**Remarks**		
1	Bought		4000	30		220			880,000
2	Sold		3250	40		275			893,750
12. Cleaning + disinfection		**Product / company**	**Price per unit**	**# units used (sachet or L)**			**Remarks**		
1	Boom (Soap)	Wings	8,000	3	sachet 400 gram	24,000		65 / birds	35.37
2	Formalin	PT ASA	11,500	15	L	172,500	The house will be empty for 3 weeks after cleaning		

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Input Broilers		H1-R1	
Production period	days	30	
Cleaning period	days	30	
BW to slaughter	g	1483	
Mortality	%	3.33	
Feed (kg)	kg	12150	
BW (kg)	kg	7965	
FCR	kg feed/kg growth	1.53	
Stocking density	#/m^2	9	
DOC price	IDR/doc	Rp 2,700	
Feed price	IDR/100 kg	Rp 700,000	
Broiler price	IDR/kg	Rp 16,800	*
Other costs per 100 birds			
Electricity		Rp 2,475	
Water		Rp -	
Heating / gas / charcoal		Rp 33,771	
Feed additives		Rp -	
Water additives		Rp -	
Health care - medicins		Rp 30,727	
Health care vaccines		Rp 8,741	
Litter (dry rice hulls)		Rp 15,842	
Litter (manure sold)		Rp -16,089	
Catching and transport		Rp -	
Cleaning		Rp 3,537	
Levies		Rp -	
Carcass disposal		Rp -	

	E-R1	(€)
DOC	**5555**	
per round	29,374,813	1,836
per year	178,696,776	11,169

REPORT house 1-R1 Per 100 DOC per round	Units	Price / unit (€)		Amount (€) house E-R1	
Profits					
Kg slaughter ready chicken	143.4	Rp	16,800	Rp	2,408,857
Minus: costs DOC and feed					
- DOC	100	Rp	2,700	Rp	270,000
- feed	218.7	Rp	7,000	Rp	1,531,053
Feed gain				**Rp**	**607,804**
Feed gain per m^2 per year				***Rp***	***326,023***
Minus: other costs per 100 birds					
Electricity				Rp	2,475
Water				Rp	-
Heating / gas / charcoal				Rp	33,771
Feed additives				Rp	-
Water additives				Rp	-
Health care - medicines				Rp	30,727
Health care - vaccinations				Rp	8,741
Litter (dry rice hulls)				Rp	15,842
Litter (manure sold)				Rp	-16,089
Catching and transport				Rp	-
Cleaning				Rp	3,537
Levies				Rp	-
Carcass disposal				Rp	-
Gross margin				**Rp**	**528,800**
Gross margin per 100 placed DOC per year				**Rp**	**3,216,864**
Gross margin per m^2 per year				**Rp**	**283,646**

Data collection in the DIFS-LIVE program

Technical and economic data

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Production data		Average	Farm A	Farm B
Round		-	1	1
Date of arrival doc	d0	-	1-9-2015	29-6-2015
DOC	#	4779	3000	5555
Surface	m2	457	400	630
Stocking density	#/m2	10.5	7.5	8.8
Production period	d	30	24	30
Cleaning period	d	26	14	30
Slaughter weight	g	1339	1106	1483
Mortality	%	6.0	5.3	3.3
Feed	kg	8855	5200	12150
BW	kg	5905	3139	7965
FCR	kg/kg	1.52	1.66	1.53
Economics				
DOC price	IDR/doc	3,864	3,900	2,700
Feed price	IDR/kg	6,967	6,797	7,000
Broiler price	IDR/kg	18,119	16,504	16,800
Profits per 100 DOC				
Slaughter ready chicken	kg	126	105	143
Income	IDR	2,276,489	1,728,950	2,408,857

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Costs per 100 DOC		Average	Farm A	Farm B
DOC	IDR	386,364	390,000	270,000
Feed	IDR	1,278,180	1,179,633	1,531,053
Electricity	IDR	10,377	29,167	2,475
Water	IDR	-		-
Heating / gas / charcoal	IDR	55,548	46,500	33,771
Feed additives	IDR	25,982		-
Water additives	IDR	3,269		-
Health care - medicines	IDR	34,264	12,321	30,727
Health care - vaccinations	IDR	11,043	8,603	8,741
Litter (dry rice hulls)	IDR	25,449	30,250	15,842
Litter (manure sold)	IDR	-16,170		-16,089
Catching and transport	IDR	6,000		-
Cleaning	IDR	14,702	25,800	3,537
Levies	IDR	-		-
Carcass disposal	IDR	-		-

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Margin per 100 DOC		Average	Farm A	Farm B
Feed gain	IDR	558,238	159,317	607,804
Gross margin	IDR	416,460	15,974	528,800
Gross margin per year	IDR	2,727,477	153,430	3,216,864
Gross margin per m2 per year	IDR	307,282	11,507	283,646
Margin per house				
per round	IDR	18,749,791	479,206	29,374,813
per year	IDR	121,653,035	4,602,895	178,696,776
per round	EUR	1,172	30	1,836
per year	EUR	7,603	288	11,169

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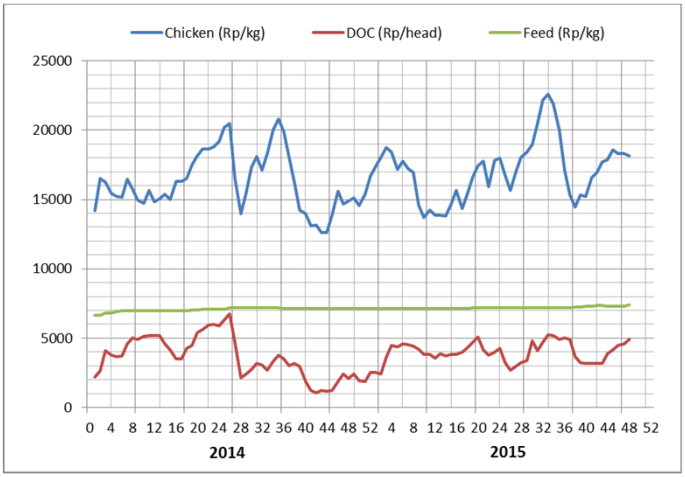

Figure 1. Prices for slaughter ready chicken, day old chicks (doc) and feed in 2014-2015, averaged for the districts of Bogor, Sukabumi, Bandung, Bekasi and Tangerang.

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Ways to reduce costs?

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	Control	Cheap feed	Cheap chicks	Cheap feed + cheap chicks
General data				
Farm				
House	Kandang 1+6	Kandang 4+5	Kandang 2	Kandang 3
type of house	open house	open house	open house	open house
build in what year	1990	1990	1990	1990
type of floor	sand	sand	sand	sand
ventilation	natural	natural	natural	natural
# floors	1	1	1	1
roof	pointed	pointed	pointed	pointed
water	Manual drinker	Manual drinker	Manual drinker	Manual drinker
water from	own well	own well	own well	own well
feed	Manual pans	Manual pans	Manual pans	Manual pans
Production period				
Round	3	3	3	3
Date of arrival doc (d0)	3-2-2017	3-2-2017	3-2-2017	3-2-2017
# DOC	7,400	7,600	3,800	4,000
Surface (m2)	740	760	380	400
#DOC/m2	10.0	10.0	10.0	10.0
Production period (d)	33.5	35.0	32.0	35.0
Cleaning period (d)	21.0	21.0	21.0	21.0
BW to slaughter (g)	1,399	903	1,288	935
Mortality (#)	405	821	527	687
Mortality (%)	10.9	21.6	13.9	17.2
Feed (kg)	8,550	8,900	7,900	8,700
BW (kg)	4,687	3,063	4,320	3,026
FCR (kg/kg)	1.82	2.91	1.83	2.88

	Control	Cheap feed	Cheap chicks	Cheap feed + cheap chicks
Economics				
DOC price (IDR)	5,275	5,275	4,000	4,000
Feed price (IDR/kg)	6,656	5,743	6,662	5,743
Broiler price (IDR/kg)	16,000	16,000	16,000	16,000
Profits per 100 DOC				
Slaughter ready chicken (kg)	142.2	103.3	132.0	91.3
Slaughter ready chicken (IDR)	2,275,894	1,653,358	2,111,628	1,461,298
Litter (manure sold, IDR)	21,622	21,053	21,053	20,000

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Costs per 100 DOC	Control	Cheap feed	Cheap chicks	Cheap feed + cheap chicks
DOC (IDR)	527,500	527,500	400,000	400,000
Feed (IDR)	1,906,820	1,944,319	1,821,201	1,864,604
Electricity (IDR)	-	-	-	-
Water (IDR)	-	-	-	-
Heating / gas / charcoal (IDR)	32,432	31,579	31,579	30,000
Feed additives (IDR)	-	-	-	-
Water additives (IDR)	-	-	-	-
Health care - medicines (IDR)	12,281	12,281	12,281	12,281
Health care - vaccinations (IDR)	17,405	16,947	16,947	16,100
Litter (dry rice hulls) (IDR)	30,000	30,000	30,000	30,000
Catching and transport (IDR)	-	-	-	-
Cleaning (IDR)	6,940	6,757	6,757	5,405
Levies (IDR)	-	-	-	-
Carcass disposal (IDR)	-	-	-	-

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Margins per 100 DOC	Control	Cheap feed	Cheap chicks	Cheap feed + cheap chicks
Feed gain per round (IDR)	-158,426	-818,461	-109,572	-803,306
Gross margin per round (IDR)	-235,863	-894,973	-186,084	-877,092
Gross margin per year (IDR)	-1,582,922	-5,833,308	-1,281,523	-5,716,761
Gross margin per m2 per year (IDR)	-428	-1,535	-337	-1,429
Margins per house				
per round (IDR)	-8,726,941	-34,008,988	-7,071,200	-35,083,686
per year (IDR)	-58,568,102	-221,665,723	-48,697,885	-228,670,454
per round (EUR)	-545	-2,126	-442	-2,193
per year (EUR)	-3,661	-13,854	-3,044	-14,292

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Cheap feed is very costly!
Cheap chicks for open houses?

What about buying very expensive feed of premium quality?

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Economics of closed versus open broiler houses

Peter van Horne, Wageningen Economic Research, the Netherlands
Rick van Emous, Wageningen Livestock Research, the Netherlands
Bubun Setiawan Hirawan, Medion, Indonesia

Traditional open broiler house with a high roof, natural ventilation, open side walls and manual feeding.

Closed broiler house with two floors with a low ceiling, tunnel ventilation, (semi) closed side walls (with plastic curtains) and automatic feeding.

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We assume that on both farms **40,320 broilers** are kept (average in Indonesia).

Open housing: 7 houses of 8 meter wide and 80 meter long.
The total ground surface area of the open house is 4,480 m^2.
The average density is 9 broilers per m^2 poultry house.
The average empty period between flocks is 28 days.

Closed housing: 2 levels in a house of 12 meter wide and 105 meter long.
The total ground surface area of the house is 1,260 m^2.
The total surface available for the broilers is 2,520 m^2 (2 levels)
The average density is 16 broilers per m^2 living area.
The average empty period between flocks is 28 days.

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Table 1. Production performance data in open and closed broiler housing: average, farm A en farm B.

	average		farm A		farm B	
	open	closed	open	closed	open	closed
Growing period (days)	30.3	30	30.1	29.6	30.5	30.5
Final Live weight (kg)	1.53	1.66	1.60	1.67	1.46	1.65
Mortality (%)	7.9	3.2	6.8	3.3	9	3.2
Feed conversion	1.6	1.42	1.54	1.39	1.67	1.45

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Table 2. Investment (IDR per m^2 ground surface area) for building, electricity, equipment and generator on a broiler farm with open and closed housing and total investment (IDR).

	open	closed
Poultry house, building	125,000	700,000
Poultry house, electricity	5,000	300,000
Equipment	40,000	400,000
Generator	0	100,000
Total	170,000	1,500,000

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Table 3. Production costs (in IDR per broiler housed and per kg live weight) for open and closed broiler housing in West Java, Indonesia.

	open	closed
Day old chick	4,500	4,500
feed	15,782	15,972
electricity	100	400
heating	700	400
animal health	600	450
other variable costs	1,040	1,040
total variable costs per broiler housed	**22,722**	**22,762**
poultry house	369	629
equipment	138	484
general costs	35	35
labour	958	636
total fixed per broiler housed	**1,501**	**1,784**
total costs per broiler housed	**24,223**	**24,546**
total costs per kg live weight	**17,190**	**15,276**

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The payback period is calculated taking the total investment for the closed house divided by the annual cash flow. To estimate annual cash flow, a farm gate price of 16,000 IDR per kg live weight was used. For the basic situation the payback period is 4.5 years (Table 4).

Table 4. Payback period for a closed house at different production results and prices.

	years
closed housed average situation	4.5
farm 1 production results	3.6
farm 2 production results	6.1
lower revenue price (16,000 to 15,750)	6.0
lower feed price (7,000 to 6,500)	2.7
Higher price day old chicks (4,500 to 5000)	6.5

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Before a farmer can invest in closed housing for broilers, some conditions have to be met.

1) a location has to be available with a good connection to the electricity network. Access to reliable electricity is essential for climate control in the closed house with mechanical ventilation. In case of power cuts, a back-up system is necessary, such as a generator.

2) better qualified workers are needed to manage the poultry house. These workers need the knowledge and skills to control the climate and to use the other automated equipment. In most cases, a higher payment is needed for a part of the workers to attract these qualified workers.

3) investments in closed housing are high -> loan. Generally, 70 to 80% of the total investment can be financed by a loan, 20 to 30% should be funded by the farmer. Banks in Indonesia have strict conditions for loans in the poultry sector. Showing good production results and keeping record of technical data and financial results of several previous years (usually 3) is often needed to convince the bank of the potential of the investment. Some banks have special programmes for investments in closed housing.

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The production costs per kg final live weight on a farm with closed broiler housing in West Java, Indonesia, were 11% lower than on a farm with open broiler housing, because of better production performance.

With the same growing period, a farm with closed housing has higher final live weight, lower feed conversion, and lower mortality. The payback period of an investment in closed housing was estimated at 4.5 years on average.

On a farm with good production performance, the payback period can be even shorter than 4.0 years. The payback period is highly dependent on the farm gate revenue price, feed price and day-old chicks price.

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Thanks for your attention!!

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Programme Training Expert Broiler Management Part 2

Welcome	9:00
Data collection to optimise technical and economic results	9:30
Coffee break	**10:30**
Ventilation principles for broilers in hot climates	11:00
Lunch	12:00
Water quality in broiler houses	13:00
Antibiotics in Indonesia / Holland or Poultry Diseases	14:00
Coffee break	14:30
Innovations in the broiler sector based on AFM	15:00
Closing ceremony. Certificates after training part 2	16:00
End	16:30

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