06 Gross Margin Calculation in Animal Production (Broilers)

Introduction

Welcome to the first video about Gross Margin calculation in animal production. This example is based on the fattening of white hybrid broilers. The principle of the Gross Margin calculation is identical to that in crop production: the variable costs are subtracted from the gross output. In animal husbandry, examples of variable costs include replacement, feed, and veterinary costs.

This example calculation is based on the data collected from the farm, which needs to be finalized in the Gross Margin calculation. The type of animals is white hybrid broilers that need, on average, 70 days of fattening at this farm. Because some data cannot be precisely measured for a single animal, a total unit is calculated for 100 animal places available at the farm. In further steps, the transformation into an annual Gross Margin is made. Data are collected in chronological order from cleaning, disinfection, and preparation, through the fattening of broilers, until the selling for slaughtering. After cleaning and preparation, 100 day-old chickens were bought externally to start the fattening process.

Data Collection

They were fed with different feedstuffs as explained by the farmer. The total amounts for all 100 animals during the fattening process were taken. Used medicals and veterinary products are listed by the farmer. For a better overview, feedstuff is highlighted in green, while medicals are marked in blue. At the end, the farmer explained the external labour he hired to take care of the chickens on a daily basis. Additionally, the selling process and available data were listed.

Gross Margin Calculation

As in the previous gross margin calculations, all thematic costs were summed up here. The sales of chickens happened on different days to individual customers. Some bought a large amount, while others bought only a few. Accordingly, prices were adjusted as bargained. Family labour used within this production process is listed, but all opportunity costs are not taken into account in this first stage of calculation.

Before calculating the gross margins, we can check whether there is a difference from the crop production calculation. For animals, a gross margin is calculated either per animal or per unit. This is the only difference, as the usage of hectares cannot be taken into account. The time period of one year and the local currency stay identical.

Preparation Steps

Now we can start the calculation by doing an overview of the production process and necessary preparation steps. First, we insert the weight of one animal at the beginning and at the end of the fattening process. This is farm-specific data, and out of this, the weight gain per day can be calculated. The total weight gain is divided by the number of fattening days, which is 70. This result is interesting to know but not mandatory for the Gross Margin.

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Afterwards, the fattening period is entered, which is 70 days. Additionally, a period of 8 days is required to clean, disinfect, and prepare the places before starting a new cycle. One cycle has a duration of 78 days in this example. The next data is the carcass: how many kilograms of the sold broiler can be used as meat after slaughtering. This figure is necessary when the sales are done according to meat kilogram. The more important figure here is the number of animal losses, which die and cannot be sold after fattening. This figure is considered as 5 percent. Now, the number of cycles per year can be calculated by dividing 365 days by 78 days, which is the duration of one cycle. The result is 4.7 possible cycles in one year.

Gross Margin Calculation Per Cycle

Now we can start with the gross margin. The form looks slightly different, but the principle behind it is always identical. The important part is that first, the gross margin per cycle is calculated. Afterwards, it will be converted into gross margins per year by multiplying by the number of possible cycles.

Gross Outputs:

- **Main Product (Meat):** Within one cycle, 95 fattened broilers are sold. The other 5 are lost due to various reasons like disease. The average price for all sold broilers is calculated by dividing the total sales (293,800) by the total sold broilers (95). The main output is 293,800. Additionally, 2.5 sacks of dung were sold at 1,200 per bag, which can be taken into account as a side product.

Variable Costs:

- **Day-Old Chickens:** 100 in total at 500 each, resulting in 50,000 for replacement per cycle.
- **Feedstuff:** The farmer used maize, soy seed cake, mineral concentrate, palm kernel cake, wheat bran, fishmeal, and palm oil. For every part of the feeds, the individual price is multiplied by the amount used per cycle to get the total amount in local currency.
- **Hired Labour:** A contractor was hired to clean and prepare the stable before the animals could enter, paid 4,000 per cycle. Additionally, a permanent employee takes care of the chicken on a daily basis, paid 500 per hour for 1 hour per day over 70 days.
- **Veterinary, Medicals, Vaccinations:** The quantities are measured throughout the whole period of fattening.
- **Other Variable Costs:** Include transport for the maize, disinfection costs, charcoal, and transport for chickens and sold broilers.

Total Variable Costs: The sum of all entered data without the gross output is 244,937.5. This leads to a gross margin of 51,862.5 per 100 broilers per cycle.

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Annual Gross Margin Calculation

To calculate the gross margin per unit and year, another calculation is required. The template form includes a column to convert the gross margins per unit and cycle to the unit and year level. The number of cycles per year is 4.7. We can multiply either all quantities by 4.7 and multiply the prices by the new quantities, or multiply all “currencies” by 4.7. If in a hurry, multiply the result gross margin by 4.7.

Results:

- **Gross Output:** 1,394,960
- **Variable Costs:** 1,151,206.25
- **Gross Margin:** 243,753.8

The end result for this calculation video is a Gross Margin of 243,753.8 per 100 broiler places per year.

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ANNEX 1: Collected data on the farm

Input/Output: livestock

Farm:	XYZ	Type/Breed:	Broilers / White hybrids (100 Animals)	Reference period:	70 days

Inputs/Costs

Date	Name/purpose/use of input	Quantity	Unit (size)	Price per unit	Replacem	Feedstuffs	Medicals	Fuel/Electr	Transport	Hired lab/serv.	Other	**Total**	Stock size: Hens	Cocks	Chicks
01.06.	Cleaning & desinfection	1	times	625							625	**625**			
01.06.	Contract work cleaning	1	times	4.000						4.000		**4.000**			
10.07.	Day-old chicken	100	chick	500	50.000				500			**50.500**			100
10.07.	Maize	340	kg	190		64.600			4.000			**68.600**			100
10.07.	Soja seed cake	90	kg	450		40.500						**40.500**			100
10.07.	Mineral conc.	27	kg	700		18.900						**18.900**			100
10.07.	Palm kernel cake	26	kg	100		2.600						**2.600**			100
10.07.	Wheat bran	11	kg	100		1.100						**1.100**			100
10.07.	Fishmeal	6	kg	450		2.700						**2.700**			100
10.07.	Palm oil	5	kg	600		3.000						**3.000**			100
10.07.	Vaccination	1	dose	875			875					**875**			100
10.07.	Antistress	50	g	25			1.250					**1.250**			100
10.07.	Char coal	2		5.000				10.000				**10.000**			98
20.07.	Anticox	75	g	35			2.625					**2.625**			97
21.07.	Antibiotics	75	g	30			2.250					**2.250**			95
	Deworming	12,5	g	25			313					**312,5**			95
All period	Hired labour	70	hours	500						35.000		**35.000**			
	selling...								1.000			**1.000**			
				Total:	50.000	133.400	7.313	10.000	5.500	39.000	625	**245.838**			

Use of products (Please list when animals or products were sold, given away, etc.)

Date	Use of yield *)	Quantity	Unit	Price/Value	Revenue
24.08.	selling chicken to...	65	chicken	2900	188.500
28.08.	selling chicken to...	5	chicken	3000	15.000
01.09.	selling chicken to...	12	chicken	3300	39.600
05.09.	selling chicken to...	13	chicken	3900	50.700
10.09.	selling manure	2,5	bags	1200	3.000
					0
				Total:	296.800

*) specify: sold as..., sold to..., kept for seed, home consumption, given as gift, lost

Use of family labour

Activity	Man days
Buying chicken and feedstuffs	0,5
marketing	1
cleaning	0,5
Total:	2

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ANNEX 2: Gross Margin calculation for broilers

Profitability analysis for: Fattening chicken (broilers) **Unit = 100 places per**

Basic data Source: free assumptions

Live weight at beginning and end of the fattening period	50	g (initial)	2.800	g (final)
Weight gain in total and per day	2.750	g total	39,29	g / day
Fattening period and cleaning period	70	days	8	days
Length of fatt. period and place utilization	78	days	89,744	%
Marketable weight (carcass yield) & losses	80	% of livew.	5,00	% losses
Number of animals & livestock units (LSU) per unit*	468	anim./year	4,7	cyles/year

x 4,7 cycles per year

Output and costs:			Price/Unit	Unit	100 birds x 1 Cycle Quantity	100 birds x 1 Cycle **Currency**	100 places / year Quantity	100 places / year **Currency**
Gross output	Main output: meat		3092,6	head	95	293800	446,5	1380860
	By-product: dung		1200	bag	2,5	3000	11,75	14100
Proportional variable special costs	Day-old chicks for stock replacem.		500	chick	100	50000	470	235000
	Feed	Maize	190	kg	340	64600	1598	303620
		Soja seed cake	450	kg	90	40500	423	190350
		Mineral conc.	700	kg	27	18900	126,9	88830
		Palm kernel cake	100	kg	26	2600	122,2	12220
		Wheat bran	100	kg	11	1100	51,7	5170
		Fishmeal	450	kg	6	2700	28,2	12690
		Palm oil	600	kg	5	3000	23,5	14100
	Hired services used (all period)		500	hour	70	35000	329	164500
	Hired services used (cleaning)		4000	complete	1	4000	4,7	18800
	Vet, medicals, vacc.	Vaccination	875	dose	1	875	4,7	4112,5
		Antistress	25	g	50	1250	235	5875
		Anticox	35	g	75	2625	352,5	12337,5
		Antibiotics	30	g	75	2250	352,5	10575
		Deworming	25	g	12,5	312,5	58,75	1468,75
	Other: Transport for Maize		4000		1	4000	4,7	18800
	Other: Desinfection costs		625	unit	1	625	4,7	2937,5
	Other: Charcoal for heating		5000	sacks	2	10000	9,4	47000
	Other:Transport day-chicken		500	unit	1	500	4,7	2350
	Other: Transport for selling		100	unit	1	100	4,7	470
							0	0
Gross Margin (practical approach)						51862,5		243753,8

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Side calculation average price

	Heads sold	Price per head	
	65	2900	188500
	5	3000	15000
	12	3300	39600
	13	3900	50700
Sum	95	3092,631579 (Average price)	293800

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