Analysis –
Farm Profitability and Marketing Margins

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Learning Outcomes

By the end of this session, you should have a better understanding of:

- Purposes of farm profitability and margin analysis
- Farm gross margins
- Gross and net marketing margins
- Margin analysis

Discussion

What are the purposes and uses of farm profitability analysis?

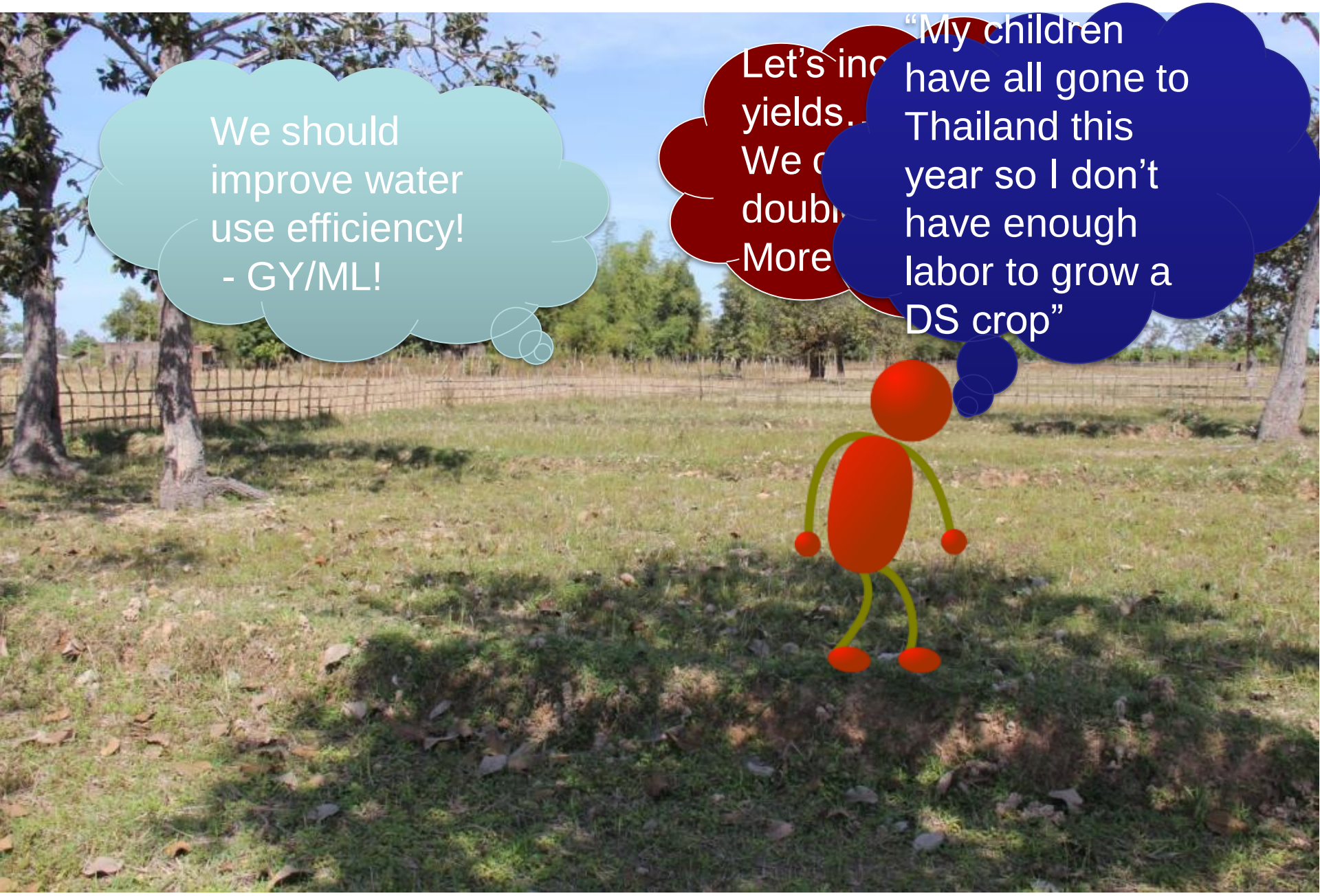
Please provide some examples…

Purposes of Farm profitability Analysis

1. Understand barriers to participation in production (cost analysis, risk analysis)
2. Understand farm competitiveness
   - ✓ Yield
   - ✓ production cost/ha;
   - ✓ production cost/ton;
   - ✓ profitability

Purposes of farm profitability Analysis

3. Assess different crop options
4. Evaluate different technologies
5. Estimate farmer incomes
6. Estimate farm wage incomes
7. Understand farm employment patterns
8. Estimate the impacts from external interventions (before / after; with / without)


We should improve water use efficiency! - GY/ML!
Let's inc
yields.
We c
doubl
More
"My children have all gone to Thailand this year so I don't have enough labor to grow a DS crop"

Increase income with more inputs?

	No-input	Low-input	Medium-input	High-input
Fertiliser applied (kg/ha of N:P_2O_5:K_2O)	0:0:0	31:10:0	60:30:30	120:60:60
Yield of paddy (t/ha)	1.5	2	3	3.75
Gross income (kip/ha)	3,000,000	4,000,000	6,000,000	7,500,000
Total variable cost (kip/ha)	4,180,000	4,950,000	6,335,000	8,265,000
Net income (NI) (kip/ha)	–1,180,000	–950,000	–335,000	–765,000
Gross margin (GM) (kip/ha)	2,320,000	2,770,000	3,825,000	3,725,000
GM per day (kip/day)	26,514	29,785	36,779	33,185
Marginal rate of return (MRR) (%)		30	44	D
Threshold analysis				
Threshold P_r for positive NI (kip/kg)	2,884	2,525	2,118	2,215
Threshold P_r for GM of 50,000 kip/day (kip/kg)	3,539	3,039	2,482	2,530
Threshold P_r for MRR > 50% (kip/kg)		2,335	2,153	4,011
Risk analysis	*Probability of occurrence (%)*			
NI > 0 or GM/day > 40,000 kip	20	32	30	23
GM/day > 50,000 kip	8	16	16	12
MRR > 50%		28	15	5

Note: Labour cost = 40,000 kip/day; paddy price (P_r) = 2,000 kip/kg; US$1 = 8,000 kip; MRR = change in NI over change in total variable costs from moving to next-most-costly scenario, expressed as a percentage; D = dominated scenario, i.e. NI of this scenario is less than NI of medium scenario and no MRR is calculated (CIMMYT 1988)

Source: Newby et al. (2013)

The economic incentive (participatory enterprise budgeting)

Transplanting

- Rice production = 3t/ha
- Gross income = 6,500,000 kip/ha
- NRHR = 4,700,000 kip/ha
- Net Return = -1,140,000 kip/ha
- NRHL = 34,000 kip/day

Drill seeding

- Rice production = 2.5t/ha
- Gross income = 5,417,000
- NRHR = 3,662,000
- Net Return = 1,062,000
- NRHL = 63,000 kip/day

Current wage rate 30,000kip/day + food = 40,000kip/day

Drill seeding + management?

- Rice production = 3t/ha
- 3 days weeding (rotary weeder)
- NRHL = 77,000 kip/day

Participatory enterprise budget analysis

assessing the profitability of off-season mango cultivation

	Two seasons Pemalang (N = 2)		One season Situbondo (N = 5)
Yield (tons/ha)	10.5	25	2 – 7.5
Price (weighted average, IDR/kg)	7,900	5,600	2,000 – 4,900
Revenue (million IDR/ha)	83	140	6 – 34
Cultivation, harvesting, and marketing costs (million IDR/ha)	21	18	4 – 13
Net income (million IDR/ha)	62	122	4.2 – 21
Returns on household labour (‘000 IDR)	660	1,100	198 – 675

Comparing two different chilli production systems in East Java

	Sampang				
	A	B	C	D	E
Cost ('000 IDR/ha)	3,433	4,519	8,893	8,933	12,005
Revenue ('000 IDR/ha)	3,200	4,000	9,000	15,000	20,000
Yield (tons/ha)	0.4	0.5	1.2	1	0.8
Price (IDR/kg)	8,000	8,000	7,500	15,000	22,500
Gross margin ('000 IDR/ha)	(233)	(519)	107	6,067	7,995
Return on family labour (IDR/day)	(3,478)	(9,611)	3,578	62,123	166,563

	Malang		
	A	B	C
Cost ('000 IDR/ha)	49,153	61,348	25,318
Revenue ('000 IDR/ha)	140,000	180,000	60,000
Yield (tons/ha)	20	12	10
Price (IDR/kg)	7,000	15,000	6,000
Gross margin ('000 IDR/ha)	90,847	118,652	34,682
Return on family labour (IDR/day)	2,096,000	n.a.	518,000

comparing production costs

	Malang		Sampang	
	IDR/Ha	%	IDR/Ha	%
Seed	1,560,000	3	573,000	8
Fertilizer	10,419,000	23	718,000	10
Pesticides	17,167,000	38	189,000	3
Hired labour	12,781,000	28	5,640,000	75
Other	3,370,000	7	436,000	6
Total Cost	**45,273,000**	**100**	**7,557,000**	**100**

farm employment patterns for chilli

	Malang	Sampang
Farm employment (person-days / ha)	331	161
Hired farm labour / total farm labour (%)	88	65
Hired female labour / total hired labour (%)	49	71
Female employment / total employment (%)	44	53

Estimating income impact (US$) of interventions in the chayote shoot chain in Tan Lac district

2010	
Net farm income (smallholder sector)	80,000
Collector's net income	6,500
Wage income	30,000
Total net income	**116,500**
Loss of maize income	12,500
Loss of maize collection income	500
Additional net income	103,500
Additional net income per household	170

Farm Gross Margins

Farm Gross Margin = Revenue – Variable Costs

GM = R - VC

Farm Net Income = Revenue – (Fixed Costs + Variable Costs)

NI = R – (FC + VC)

Variable Costs

Vary with level of production or sales

(e.g. seed, agro-chemicals, casual hired labour, fuel)

Fixed Costs

Independent from level of production or sales

(e.g. land rent, equipment, permanent labour force)

Returns on land = Gross Margin or Net Income per ha

= (Revenue/ha) – (Variable Costs/ha)

or

= (Revenue/ha) – (Total Costs/ha)

Returns on labour = Returns on Land / HH labour input (No. person days)

Opportunity Costs or Financial Costs?

Opportunity costs

Cost of employing resources (labour, capital, land) in a particular activity rather than pursuing other business options

Financial costs

Monetary expenditures incurred in carrying out an activity

opportunity costs…

Cost of saved seed = local seed price

Note: saved seed not included in revenue calculation

Cost of unpaid household labor = local farm wage labor rate?

Cost of own transportation = transportation rental cost

Some Issues (I)

1. Sample size
   - ✓ Small: data can be used for illustration purposes
   - ✓ Large: possible to extrapolate (area/province/country)
2. Recall data
3. Seasonality
4. Risk (yield and price variability)

Some Issues (II)

5. Pitfalls of projections based on static analysis
6. Should we cost household labor?
7. Fixed cost analysis
   - ✓ Single-purpose, multi-purpose assets
   - ✓ Capital cost or depreciation cost?

Discussion

What are the purposes and uses of marketing margin analysis?

Please provide some examples…

Gross and Net Marketing Margins

Gross Marketing Margin per ton = Selling price – purchasing Costs

Net Marketing Margin = GM – Variable Costs

Some Issues (I)

- Perishability
- Season
- Market channel size