

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
AGRIBUSINESS MANAGEMENT

AGBM 302: AGRICULTURAL INSURANCE

STREAMS: AGBM

TIME: 2 HOURS

DAY/DATE: MONDAY 14/04/2025

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS

- Answer all questions in section A and any three Questions

QUESTION ONE (25 MARKS)

- Agricultural producers face a variety of risks, explain five sources of risks they face
[5 marks]
- The quality and quantity of historical data dictate the choice of rating method. Discuss four formal methods that are used to rate crop insurance products
[4 marks]
- Explain four reasons for adding Loads to premiums
[4 Marks]
- Explain any two government risk management programs which provide financial risk protection for agricultural producers
[4 Marks]
- Assume a producer is interested in purchasing a yield insurance product with the following characteristics:
Acreage = 1 hectare
Price = 1 US \$ per ton
Deductible = 40%
In addition, the producer has the following yield history, for which the indemnity trigger and payments are:

Year	Yield outcome	Indemnity Trigger	Indemnity payment
1	2.70	1.8	0.00
2	1.72	1.8	0.08
3	3.24	1.8	0.00
4	4.28	1.8	0.00
5	4.20	1.8	0.00
6	4.73	1.8	0.00
7	0.32	1.8	1.48
8	2.77	1.8	0.00
9	4.10	1.8	0.00
10	1.92	1.8	0.00

- a) Calculate the
- i) Expected yield **[1 Mark]**
 - ii) Coverage **[1 Mark]**
 - iii) Liability **[2 Marks]**
 - iv) Pure risk rate **[4 Marks]**

QUESTION TWO (15 MARKS)

- a) Explain three types of reinsurance and relationships between re-insurers **[6 Marks]**
- b) Distinguish between underwriting and loss adjustment insurance programs **[6 Marks]**
- c) Explain three methods which have been used to detect fraud in crop insurance which occurs when producers underreport yields, manipulate yield histories or bribe loss adjusters. **[3 Marks]**

QUESTION THREE (15 MARKS)

- a) Discuss four potential sources for illicit behavior in crop insurance **[8 Marks]**
- b) Explain three issues related to product development and delivery that are offered by agricultural insurance companies and government **[3 Marks]**
- c) Differentiate between biological versus sample harvest approaches to loss adjustment **[4 marks]**

QUESTION FOUR (15 MARKS)

- a) Assume a producer buys an individual yield-based insurance product with the following attributes:
 Deductible = 40%
 Pure Risk Premium Rate = 6%

Load Rate = 3%

Subsidy Rate = 25%

Price of output (wheat)= 1.0

1 hectare is insured

Liability is based on expected yields. Suppose that the producer has the following production history:

Year	Historical Yield (tons per hectare)
1	2.7
2	3.6
3	2.4
4	3.3

i) calculate the following:

- a) Expected yield **[1 Mark]**
- b) Liability **[2 Marks]**
- c) Total premium Rate **[1Mark]**
- d) Total premium **[1 Mark]**
- e) Subsidy **[1Mark]**
- f) Producer premium **[1 Mark]**
- g) Trigger yield **[2 Marks]**

ii) If actual yield is greater than the indemnity trigger, no indemnity will be paid. In our example, if the actual yield is 2.0 tons/ ha, then an indemnity is not generated. If actual yield is less than the indemnity trigger, however, then an indemnity is due. Suppose that the actual harvest yield total 1 ton per hectare. Calculate the indemnity payment of the farm

[2 Marks]

- b) Discuss four risk management tools used by agricultural producers to manage the variability of net farm revenues **[4 Marks]**

QUESTION FIVE (15 MARKS)

- a) Discuss five processes and procedures successful crop insurance programs requires in agricultural production. **[10 Marks]**
 - b) Data collection, analysis and management are central to the success of any insurance program. Explain who requires these data and educational efforts from agricultural production. **[5 marks]**
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