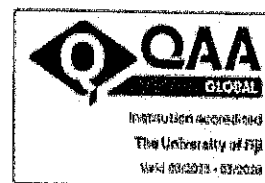




The University of Fiji
(An Entity of Arya Pratinidhi Sabha of Fiji)



SCHOOL OF BUSINESS AND ECONOMICS
Semester 2, 2025

FINAL EXAMINATION PAPER

ECO305: AGRICULTURAL ECONOMICS

Important Instructions to Students:

1. Read the questions, instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper**.
3. Silent, non-programmable calculators are allowed but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask from the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. This paper contains three (3) sections A, B and C. All questions are compulsory to answer.
6. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
7. This is a **Closed Book Examination**. The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1 - 20	Multiple Choice	20	36 minutes
B	21 - 28	Conceptual & Technical Questions	50	90 minutes
C	29	Case Study Questions	30	54 minutes
		TOTAL	100	180 Minutes

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(Circle the letter that represents the most appropriate answer in the grid provided in the Answer booklet).

1. Which of the following best describes the nature of agricultural supply?
 - A. Highly elastic in the short term.
 - B. Constant throughout the year.
 - C. Highly seasonal and weather dependent.
 - D. Unaffected by biological processes.

2. Why is agricultural supply relatively inelastic in the short run?
 - A. Farmers can easily switch crops.
 - B. Weather conditions are stable.
 - C. Crops and animals take time to mature.
 - D. Demand is constant.

3. Which of the following is a factor affecting demand for agricultural products?
 - A. Availability of storage.
 - B. Consumer preferences and health trends.
 - C. Transportation infrastructure.
 - D. Weather conditions.

4. Which market intervention aims to stabilize prices for farmers?
 - A. Price supports and subsidies.
 - B. Free market competition.
 - C. Removal of tariffs.
 - D. Population control policies.

5. Considering the relationship between total revenue (TR), total costs (TC), and profits (π), and understanding the concept of opportunity costs, what can be inferred about the profit maximization point for a business enterprise?
 - A. The profit maximization point occurs where the gap between TR and TC is widest, ignoring opportunity costs.
 - B. Profit maximization is achieved solely by minimizing accounting costs, irrespective of TR.
 - C. Profit maximization is only relevant when a firm's TC are decreasing.
 - D. Opportunity costs must be included to accurately identify the profit maximization point.

6. Considering the relationship between total, fixed, and variable costs in the production process, which of the following statements accurately reflects the impact on average total costs (ATC) when a firm increases its level of output?
- A. ATC remains constant because total fixed costs (TFC) are spread out over a larger number of units.
 - B. ATC decreases because total variable costs (TVC) per unit decrease as output increases.
 - C. ATC decreases initially and then may increase due to the spreading of TFC over a larger output and the behavior of TVC.
 - D. ATC increases due to the proportional increase in TFC and TVC as output increases.
7. Which of the following scenarios correctly describes the relationship between Average Cost (AC) and Marginal Cost (MC) when a firm experiences economies of scale?
- A. AC and MC remain constant as output expands.
 - B. AC and MC both decrease as output expands.
 - C. AC decreases while MC increases as output expands.
 - D. MC decreases while AC remains unchanged as output expands.
8. Which of the following scenarios correctly illustrates the effects of technology change on supply, as well as the concept of equilibrium in the context of market supply and demand?
- A. A negative technological change decreases the cost of producing a commodity, leading to an increase in supply, thus creating a surplus at the current market price.
 - B. A positive technological change reduces the supply of a product because the new method of production is less efficient, resulting in a higher equilibrium price.
 - C. A positive technological change leads to a lower cost of production, increasing the quantity supplied and potentially creating a surplus if the price remains unchanged.
 - D. A negative technological change increases the efficiency of producing a good, thereby raising the equilibrium quantity above what is demanded at the current price.
9. Which factor influences the demand for agricultural products and can lead to increased market performance due to its effect on local and global trade dynamics?
- A. The development of transportation infrastructure.
 - B. Government interventions in stabilizing agricultural product prices.
 - C. Changes in consumer preferences and dietary trends.
 - D. Increasing storage facilities for perishable goods.

10. What happens to the equilibrium price and quantity of wheat if there is a bumper harvest?
- A. Price rises, quantity falls.
 - B. Price falls, quantity rises.
 - C. Price rises, quantity rises.
 - D. Price falls, quantity falls.
11. Which factor most significantly differentiates agricultural production from industrial production?
- A. Heavy reliance on climate variations.
 - B. Uniform product quality.
 - C. Division of labor within small units.
 - D. Immediate response to price changes.
12. What is the main objective of agricultural marketing?
- A. To control input prices.
 - B. To connect farmers with consumers efficiently.
 - C. To increase government revenue.
 - D. To limit agricultural exports.
13. Which of the following best describes value addition in agricultural marketing?
- A. Selling products at higher prices.
 - B. Improving product value through processing or packaging.
 - C. Increasing farm size to produce more output.
 - D. Offering government subsidies.
14. Which innovation has most improved transparency in agricultural markets?
- A. Mobile-based price information systems.
 - B. Use of pesticides.
 - C. Traditional open-air markets.
 - D. Middlemen negotiations.
15. What is a key challenge in agricultural marketing in developing countries?
- A. Excessive demand for farm products.
 - B. Poor infrastructure and lack of storage facilities.
 - C. Overuse of modern marketing tools.
 - D. Decline in agricultural production.

16. How does e-commerce benefit agricultural marketing?

- A. Reduces the need for branding.
- B. Reduces market competition.
- C. Increases dependence on middlemen.
- D. Allows direct sales from farmers to consumers.

17. Which of the following describes the demand for staple food products?

- A. Perfectly elastic.
- B. Relatively inelastic.
- C. Unrelated to income.
- D. Highly responsive to price changes.

18. What is a common adaptation strategy used by Pacific farmers to cope with climate variability?

- A. Over-irrigation.
- B. Crop diversification and intercropping.
- C. Land abandonment.
- D. Expanding monocultures.

19. What is the purpose of “climate-smart agriculture”?

- A. To maximize profits without concern for the environment.
- B. To rely solely on imported technologies.
- C. To replace traditional farming methods.
- D. To integrate adaptation, mitigation, and productivity goals.

20. Which international agreement aims to reduce greenhouse gas emissions in agriculture?

- A. Kyoto Protocol.
- B. Montreal Protocol.
- C. Paris Agreement.
- D. Rio Declaration.

21. Evaluate the benefits and challenges of organic farming in profit maximization? (5 marks)
22. Discuss the economic and social benefits of adopting sustainable farming practices in the Pacific. (5 marks)
23. Where does the marginal product curve intersect the average product curve? Why? (5 marks)
24. How do global trade policies influence agricultural production and costs? (5 marks)
25. Elaborate on adaptation strategies that Pacific farmers use to cope with climate change? (5 marks)
26. Discuss the role of government price controls in the agricultural sector of Pacific Island economies. (5 marks)
27. Discuss the *main challenges* to achieving sustainable agriculture in Pacific Island countries. (5 marks)

28. Root crops are produced according to production function: $q = 2K + L$

Where:

q = Output of root crops per hour

K = Capital input per hour

L = Labour input per hour

- a. If $K = 10$, how much L is needed to produce 100 root crops per hour? (2 marks)
- b. If $K = 25$, how much L is needed to produce 100 root crops per hour? (2 marks)
- c. Graph the $q = 100$ isoquant. Indicate the points on that isoquant defined in part a and part b. (3 marks)
- d. Calculate and comment on the RTS along this isoquant? (4 marks)
- e. Graph the $q = 50$ and $q = 200$ isoquant for this production function also on a different pair of axes. Describe the shape of the entire isoquant map. (4 marks)

Question 29

Read the case study “Sustainable Agriculture in the Pacific – The Organic Learning Farms Network & Broader Initiatives in Fiji and Solomon Islands” and answer questions (a) to (e).

Sustainable Agriculture in the Pacific – The Organic Learning Farms Network & Broader Initiatives in Fiji and Solomon Islands**Introduction**

The Pacific islands face unique environmental, economic, and social challenges. Climate change impacts—such as sea-level rise, increased cyclones, prolonged droughts, soil degradation—and heavy dependence on imported food have made sustainable agriculture not only desirable, but essential. In response, several initiatives in Fiji and surrounding Pacific Island countries have pioneered organic, agroecological, and climate-smart agricultural practices aimed at increasing resilience, improving food security, preserving biodiversity, and supporting sustainable rural livelihoods.

This case study looks primarily at the **Pacific Organic Learning Farms Network (POLFN)** in Fiji and Solomon Islands; in addition to related programs (climate-smart agriculture in villages, soil management training, and agricultural marketing reforms), examining their approaches, outcomes, challenges, and lessons learned.

POLFN: Organic Learning Farm Network**Background & Objectives**

The POLFN is a regional project driven by the Pacific Organic and Ethical Trade Community (POETCom) in partnership with the Pacific Community (SPC), governments, and other stakeholders. Its core goals are:

1. Establish organic learning farms in selected countries (including Fiji, Tonga, Solomon Islands, Nauru) that are both environmentally sustainable and economically viable.
2. Train smallholder farmers (“First Circle Farmers”) to convert to organic and agroecological practices.
3. Develop market mechanisms for organic produce and products including forest products, to enable reliable market access and ensure returns.
4. Strengthen knowledge sharing and capacity building, conserving biodiversity, improving soil and water health, reducing dependence on synthetic chemical inputs.

Activities & Implementation

- In Fiji, POLFN launched two demonstration farms: Mudrenicagi (Bua Province) and Navuso (Rewa Province). These serve as learning centres for interested farmers to see agroecological practices in action.
- Trainings have been provided to smallholder farmers (e.g. 50 farmers trained in June 2024) focusing on soil health, agroforestry, organic production, soil fertility management, composting, and integrating trees and crops.
- Knowledge exchange, farmer-to-farmer learning, and community engagement are part of the strategy.

Outcomes & Early Impacts

- Improved awareness of soil health; for example, in Taveuni farmers were trained in soil management, including recognizing nutrient depletion, and adopting practices to maintain organic matter and nutrients.
- Increased interest among smallholder farmers to transition to organic farming due to perceived benefits—healthier soil, lower input costs, potential access to organic markets.
- The organic farms have started functioning as hubs not just for production, but for demonstration, education, and community collaboration. This tends to enhance community ownership and sustainability.

Challenges

- **Market access:** Farmer's ability to find reliable, fair markets for organic produce remains constrained, especially for remote islands. Certification, supply chain costs, and consistency are hurdles.
- **Behavioural and cultural change:** Some farmers are accustomed to conventional inputs (fertilizers, pesticides), instant returns, or monocultural systems; shifting to agroecology takes time and investment.
- **Soil degradation** has already progressed in many areas; restoring fertility takes time, resources, organic inputs, which might not always be readily available.
- **Knowledge & capacity gaps** among extension services and farmers, needing ongoing training and follow-up.

Other Complementary Sustainable Agriculture Initiatives

Climate-Smart Agriculture in Welagi Village, Taveuni (Fiji)

The government launched a "Climate Smart Food Security" programme in Welagi village, as part of which climate-resilient crops such as breadfruit, vudi, dalo ni Tana, kumala (sweet potato), and

dwarf coconuts were distributed to households. Sustainable practices like contour farming, better soil management, agro-inputs suited to local conditions were emphasized. (

Soil Management Training Workshops in Taveuni

Supported by SPC and ACIAR, farmers were trained in soil fertility and health—learning how to manage organic matter, rotate crops, recognize nutrient deficiencies (especially potassium), and reduce reliance on chemical fertilizers. These workshops address long-term productivity, ecosystem health, and climate resilience.

Agrifood Systems Transformation (STODAS / Pacific Agri-Innovate)

The STODAS project (Sustainable Transformation of Domestic Agrifood Systems) in Fiji, Samoa, and Solomon Islands is aimed at strengthening domestic agricultural production and consumption, supporting agribusinesses (including youth and women), and creating incubation centres. This approach underlines that sustainable agriculture is not only about farm practices, but also about value-chains, processing, markets, inclusion, and innovation.

Regional Strategy: Growing the Pacific 2050

In June 2025, Pacific Ministers of Agriculture and Forestry endorsed the **Growing the Pacific 2050 Strategy**. It sets strategic pathways: healthy, regenerative, secure, integrated, and enabled. It envisions catalytic initiatives including climate-resilient systems, supporting agribusiness, private sector, strengthening biosecurity and agrobiodiversity.

Lessons Learned & Best Practices

From these initiatives, there are several important takeaways:

- **Demonstration and learning farm centres** are effective in showing sustainable practices in places, letting farmers see results first hand, which increases adoption.
- **Local-appropriate agroecological techniques** (e.g. organic inputs, agroforestry, climate-resistant crops) are more sustainable than blanket importation of high-input models.
- **Policy alignment and institutional support** matter—government engagement, strategic plans, regional cooperation (SPC, FAO, etc.), funding from international partners.
- **Inclusion of local communities, gender, youth** ensure the interventions are socially acceptable and sustainable.
- **Market linkages and value chain development** are critical. It's not enough to produce sustainably; farmers need access to markets where they can get a fair price, possibly premium markets.

Challenges & Recommendations

Some challenges persist:

- Transition costs: Organic conversion often has a lag before full yield recovery or market premium. Farmers may face income shortfalls initially.
- Certification and standards: Organic certification, traceability, and quality standards can be barriers, especially for smallholders.
- Infrastructure, transport, logistics: Remoteness of many islands increases cost of inputs and distribution.
- Climate change intensifying: More frequent and severe weather events mean risk is high.

Recommendations:

1. Strengthen extension services and continuous training, not just one-off workshops.
2. Support finance mechanisms (microcredit, grants) that allow farmers to absorb initial costs of transition.
3. Develop local and regional organic market infrastructure (processing, certification, transport).
4. Combine sustainable agricultural practices with ecosystem conservation (e.g. agroforestry, watershed protection).
5. Use participatory approaches: involve communities in design, monitoring, adaptation to ensure cultural fit and long-term sustainability.

Conclusion

Sustainable agriculture in the Pacific is increasingly seen not just as an environmental goal, but as central to food security, economic resilience, and adaptation to climate change. Initiatives such as the POLFN demonstrate that organic and agroecological methods, when supported by learning centres, policy backing, market linkages, and community participation, can make meaningful progress. But scaling these practices, ensuring equitable access, and maintaining livelihoods through transitions remain challenging. Continued investment in infrastructure, capacity, markets, and strategies at national and regional levels is needed to ensure sustainable agricultural futures in the Pacific.

References

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- SPC. "Fijian farmers better equipped for sustainable agriculture." 25 June 2024.
- SPC. "Fiji farmers train in soil management for food, ecosystems, and climate change." 15 March 2022.

- SPC / POETCom / Kiwa Initiative. "Pacific Organic Learning Farm Network Project." SPC Land Resources Division.
 - Government of Fiji. "Climate-Smart Agriculture Approach Introduced to Welagi Village." 11 December 2021.
 - FAO. "Growing resilience -- Empowering students through climate-smart agriculture in Fiji." 14 June 2023.
 - SPC. "Revolutionising agriculture in Solomon Islands: Zai Na Tina and Gwa'ufaniu Organic Farm Learning Centres launched." 13 September 2023.
 - SPC. "Pacific heads of agriculture and forestry unite to endorse the agriculture and forestry strategy ... Growing the Pacific 2050." 1 June 2025.
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Questions

- Explain how the POLFN initiative in Fiji addresses the three pillars of sustainability—environmental, social, and economic. Describe specific examples. (6 marks)
- What are the major challenges for farmers in Pacific Island countries when switching from conventional to organic or agroecological agriculture? How might policy makers address these challenges? (6 marks)
- Discuss the role of Soil Health in climate resilience and sustainable agricultural productivity using examples from Fiji. (6 marks)
- Evaluate the importance of market access and value chain development in sustaining organic farming initiatives in the Pacific. What strategies could enhance these? (6 marks)
- Critically analyse how regional strategies like Growing the Pacific 2050 can contribute to sustainable agriculture in Pacific Island countries. How do they complement grassroots initiatives like POLFN? (6 marks)

---The End---

