



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2013

Marking Scheme

Agricultural Economics

Higher Level

Note to teachers and students on the use of published marking schemes

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

Future Marking Schemes

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.

LEAVING CERTIFICATE 2013

AGRICULTURAL ECONOMICS

HIGHER LEVEL

MARKING SCHEME

AND

SUPPORT NOTES

Marking Scheme and Support Notes for use with the Marking Scheme

In considering the marking scheme the following points should be noted:

- The support notes presented are not exclusive.
- The support notes in many cases contain key phrases which must appear in the candidate's answer in order to merit the assigned marks.
- Further relevant points of information presented by candidates are marked and rewarded on their merits.
- The detail required in any answer is determined by the context and the manner in which the question is asked and by the number of marks assigned to the answer in the examination paper. Requirements may therefore vary from year to year.

PART I (120 Marks)

20 QUESTIONS – 15 QUESTIONS TO ANSWER.

ALL QUESTIONS CARRY EQUAL MARKS (8 MARKS)

Outline Marking Scheme

- | | | | |
|-----|------------------------------|-----|------------------------------|
| 1. | 8 marks (3 m + 3 m + 2 m) | 11. | 2 @ 4 marks each |
| 2. | 8 marks | 12. | 8 marks (4 m + 4 m) |
| 3. | 8 marks (4 m + 4 m) | 13. | 2 @ 4 marks each |
| 4. | 8 marks (4 @ 2 m) | 14. | 2 @ 4 marks each (2 m + 2 m) |
| 5. | 8 marks (4 m + 4 m) | 15. | 8 marks |
| 6. | 8 marks (4 m + 4 m) | 16. | 8 marks (4 m + 4 m) |
| 7. | 8 marks (4 m + 4 m) | 17. | 2 @ 4 marks each |
| 8. | 8 marks | 18. | 8 marks (4 m + 4 m) |
| 9. | 8 marks (4 m + 4 m) | 19. | 8 marks (4 m + 4 m) |
| 10. | 2 @ 4 marks each (2 m + 2 m) | 20. | 8 marks (3 m + 3 m + 2 m) |

PART 2 (200 Marks)

4 QUESTIONS TO ANSWER AT 50 MARKS EACH.

1. (a)	Price-cost squeeze	10 marks (5 m + 5 m)	10
(b)	Years:	6 m (3 m + 3 m)	
	Explanation:	2 @ 5 m (3 m + 2 m)	16
(c)	Inputs:		
(i)	3 sets of examples	3 @ 3 m each (2 m + 1 m)	9
(ii)	3 Factors	3 @ 5 m each (3 m + 2 m)	15
			[50 marks]
2. (a)	Credit terms:	3 @ 4 m (2 m + 2 m)	
	Refer to current climate	3 @ 2 m each	18
(b)	Calculation:	12 marks (6 @ 2 m)	12
(c)	Two reasons:	2 @ 10 m (5 m + 5 m)	20
			[50 marks]
3. (a)	Calculations:	5 @ 3 m for actions	
		3 m for correct final total	18
(b)	Role of exports:	3 @ 6 marks (4 m + 2 m)	18
(c)	Budgetary Benefits of CAP	7 marks (4 m + 3 m)	
	Trade Price Benefits	7 marks (4 m + 3 m)	14
			[50 marks]

4.	(a)	Total Product Curve:	10 marks	10
	(b)	Three explanations:	3 @ 10 m each (5 m + 5 m)	30
	(c)	Illustration	5 marks	
		Explanation of impact	5 marks (3 m + 2 m)	10
				[50 marks]

5.	(a)	Explanation of YED:	10 marks (5 m + 5 m)	10
	(b)	Three calculations	3 @ 5 marks each	15
	(c)	Three explanations:	3 @ 5 marks each (3 m + 2 m)	15
	(d)	Explanation:	10 marks (5 m + 5 m)	10
				[50 marks]

6.	(a)	(i)	Illustration	5 marks	
			Explanation of impact:	5 marks (3 m + 2 m)	
		(ii)	Two costs:	2 @ 5 marks each	
		(iii)	Two ways:	2 @ 5 marks each	30
	(b)	(i)	Illustration	5 marks	
			Explanation of impact:	5 marks (3 m + 2 m)	
		(ii)	Two ways:	2 @ 5 marks each	20
				[50 marks]	

AGRICULTURAL ECONOMICS 2013

HIGHER LEVEL

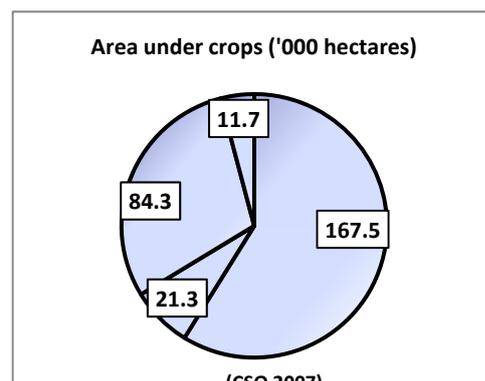
SUPPORT NOTES

PART I (120 Marks)

ANSWER FIFTEEN QUESTIONS

1. In Ireland approximately 285,000 hectares of land is used for crop production. The pie chart on the right shows the number of hectares under each of the four main crop types. Complete the table below by filling in the number of hectares used for each crop type.

Crop	Area in ('000 Hectares)
Barley	167.7
Oats	21.3
Potatoes	11.7 (given)
Wheat	84.3



2. Conacre is the rental of agricultural land for a period of up to **11 months**.
3. When collecting official statistics/data, the Central Statistics Office (CSO) defines agriculture as:
The economic activity involved in the production of crops and livestock on the farms of the country. A unit, both technically and economically, which has a single management and which undertakes agricultural activity/farming as its main activity.
The science, art, and business of cultivating soil, producing crops, and raising livestock.
4. Assume that in a given year the Agricultural Output Price Index (AOPI) was 80 and the Agricultural input Price Index (AIPI) was 125. Use the space below to calculate the farmers' terms of trade.
- Answer: Terms of Trade = $\text{AOPI} / \text{AIPI} * 100 = 80 / 125 * 100 = 64\%$
5. In 2011, Ireland exported approximately **90 %** of its net beef output, with approximately **50%** of it going to the UK market.
6. What do the following initials represent in agricultural policy?
- (i) **REPS**: Rural Environmental Protection Scheme
 - (ii) **AEOS**: Agri-Environment Options Scheme.

7. **Real GDP is defined as:** a measure of the quantity of goods and services produced within an economy within a given period of time. Nominal GDP is influenced by both changes in output and prices, while Real GDP accounts for changes in price due to inflation. To adjust for price changes, real GDP is calculated using prices from a specific year, the base year. This allows real GDP to accurately measure changes in output separate from changes in prices.
8. **If a farm has a liquidity ratio of 0.67:1 and a net worth or equity ratio of 0.66:1, which of the following best describes the financial position of the farm?**

The farm is solvent but it has some liquidity problems.	✓
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9. **State two benefits for a dairy farmer for being part of a registered Milk Production Partnership.**

There are currently over 600 registered milk partnerships in Ireland. There has been significant growth in the number of farmers forming such partnerships and they have identified by the DAFM as of critical importance to the future development of agriculture.

- (i) Combined finance
- (ii) Increased manpower
- (iii) Economies of scale
- (iv) Social benefits and well being
- (v) Occupational health and safety

10. **Distinguish between inflation and deflation:**

Inflation occurs where there is a tendency for overall/general prices in the economy to rise, while deflation (which is much rarer) occurs where general price levels decrease over time.

11. **State two characteristics of Irish farming that can limit successful marketing.**

- (i) Structure of farming-large number of relatively small units
- (ii) Wide geographical dispersion
- (iii) Seasonality of supply
- (iv) Bulky and perishable nature of products
- (v) Over supply of international markets.

12. **The Milk Quota Trading Scheme** is the principal means by which additional milk quota is acquired by producers. The scheme is operated by the Department but is run on a Co-op area basis. Under the scheme, producers are afforded the opportunity to **sell and buy quotas**. A maximum of 30% of the quota offered for sale in a given Co-op area is made available to priority category producers at a price set by the Minister for Agriculture, Fisheries and Food. The remainder is traded on the market exchange at a Market Clearing Price, set by supply and demand.

13. **State two types of legislative instrument used by the EU.**

- (i) Regulation
- (ii) Directive
- (iii) Decision.

14. Distinguish between *Ad Valorem* and *Variable* levies:

Ad Valorem levy is calculated as a certain percentage of the import price of the produce. As the product price increases, the levy increases.

Variable levy moves in the opposite direction to the import price so that the product cannot enter below a minimum price no matter how cheap it is on the external market. The market dictates the price. The variable levy is the difference between the market price and the final imported price.

15. In Ireland a small number of dairy processors control the majority of the market share between them. This indicates that the dairy processing market is **oligopolistic**.

16. The role of the Food Safety Authority of Ireland (FSAI) is to take all reasonable steps to ensure that food produced, distributed or marketed in the State meets the **highest standards of food safety** and hygiene. The FSAI aims to ensure that food **complies with legal requirements**, or where appropriate with recognised **codes of good practice**.

17. State two impacts of the economic recession on Irish consumer behaviour in relation to food.

- (i) Discerning consumers: shopping around more for better prices, targeting stores with special offers or coupons
- (ii) Delaying purchasing decisions, especially for durable goods
- (iii) Substituting eating out for cooking at home
- (iv) Increased awareness of buying Irish products or those produced locally
- (v) Increased awareness of food quality and freshness, with less purchase of convenience foods
- (vi) More doing without items that used to be previously purchased
- (vii) Spending less on shopping trips, but making shopping trips more often.

18. *Gross Capital Formation in agriculture* is additions in any time period to farm assets, e.g. land improvements, buildings, breeding livestock, machinery and equipment.

19. The *technically efficient* region of production is:

All points on the Production Function/Total Product Curve/Production Possibility Frontier (PPF) are said to be technically efficient. All resources are being used efficiently.

20. Write TRUE or FALSE after each of the following statements:

Real interest rates are nominal interest rates adjusted for inflation.	TRUE
Nominal interest rates are real interest rates adjusted for inflation.	FALSE
Real interest rates are negative if the inflation rate is less than nominal interest rates.	FALSE

PART 2 (200 MARKS)

6 QUESTIONS – 4 QUESTIONS TO ANSWER AT 50 MARKS EACH

1. (a) State what is meant by the term ‘price-cost squeeze’.

Price-cost squeeze: The tendency for input prices over time to increase more rapidly or fall more slowly than product/output prices.

- (b) Using the given graph identify the years between 2007 and 2011 when Irish farmers experienced a price-cost squeeze and explain your answer.

Years: 2007 to 2009.

Explanation:

Between 2007 and 2008, output prices were rising, but input prices were rising even faster, thus resulting in a price-cost squeeze.

Between 2008 and 2009, input prices fell, but output prices fell even faster, resulting in a price cost squeeze.

- (c) Inputs can be categorised as:

1.	Those supplied within farming and used mainly within farming.
2.	Those supplied from outside farming but used mainly within farming.
3.	Those supplied from outside farming but used within and outside farming.

- (i) State **two** examples in each category.
(ii) Discuss the factors that influence changes in the price of inputs in **each** category.

1. Those supplied within and used mainly within farming itself:

Examples: feedstuffs, seed and land.

Prices tend to move in line with product prices.

Weather conditions may affect prices.

2. Those supplied from outside farming but used mainly within farming:

Examples: fertilizers, agrichemicals, machinery and veterinary services.

Prices are dependent on demand from farmers and market supply.

3. Those supplied from outside farming but used within and outside farming:

Examples: fuel, transport, labour and capital.

Prices are determined by forces outside farming and these prices move in line with general inflation as measured by Consumer Price Index (CPI).

2. (a) **When applying for credit, a farmer needs to consider its term, security and its cost.** Discuss **each** of these aspects of credit, with reference to the current economic climate.

Term: referring to the **length of time** over which credit is being sought. The term of credit can be described as short term (less than 1 year), medium term (1 to 5 years) or long-term (greater than 5 years). Which term is sought will often depend on the form of investment being made (e.g. purchase of livestock or investment in farm development) and the resulting level of credit being sought. Longer term borrowings can involve a larger total eventually repaid over the full term. However, extending the term of a loan can also reduce monthly repayments and thereby reduce financial stress in the current climate.

Security: Security, also called **collateral**, is where a farmer offers a lender assets (e.g. land) that can be sold in the event of the terms of a loan (e.g. repayment schedule) not being complied with. Credit can be given on a secured or unsecured base, depending on the level of risk involved. Generally, credit that is given without need for security is short-term. Banks will typically request security to about 70% of the size of the loan. However, whereas five years ago they valued land, for security purposes, at up to €20,000 per acre, today they are more likely to do so at €7,000 to €10,000. So, farmers need to be prepared to put up more land and thereby run a greater risk if they are unable to repay the loan.

Cost: the costs associated with credit are a combination of **interest rates** and the indirect costs associated with borrowings (e.g. legal and banking fees, account preparations). Interest rates for Ireland are set by the ECB, and are currently at record low levels. Although this may make credit appear cheap at the moment, it is still important that farmers prove they have good repayment capacity. In calculating their repayment capacity it is important that farmers take into account future uncertainties, such as price movements for farm outputs.

- (b) **Calculate the loan repayment capacity of a farmer with a total annual income of €60,000 and annual family living expenses of €40,000 if the annual repayment on a €1,000 loan is €250.**

Total annual income – total family living expenses divided by repayment amount.

$$60,000 - 40,000 = 20,000 / 250 = 80 \times 1000 = \mathbf{€80,000}$$

The farmer has a capacity to repay a loan of €80,000 based on given data.

- (c) **Discuss two reasons why a farmer should create a cash-flow budget when considering a loan.**
- Cash-flow budgeting predicts the movement of cash into and out of the farm. It can be used to test financial feasibility e.g. shows the funds necessary to meet payments that arise and can be used to show how a new programme can be financed.
 - It assists the farmer in decision making as it shows future cash inflows and outflows and their sources and timing.
 - It identifies future cash shortages and helps the farmer to plan his borrowing requirements in time. Essential when applying for bank credit.
 - Comparing the Cash Flow Budget with actual figures helps the farm to keep control of its finances. This enables farm plans to be monitored over time so that deviations from the budget can be quickly discovered and corrected if they are adverse.

3. The table given shows Agricultural Output, Inputs and Income for 2011 in €m.

(a) Using the data in the table calculate items (i) to (iv):

Agricultural Output, Inputs and Income	2011 (€millions)
Gross Value of Agricultural Output	5,109
- Materials and Services	3,315
(i) Gross Agricultural Product at Market Prices	1,794
+ Direct Payments	1,860
- Levies	15
(ii) Gross Agricultural Product at Factor Cost	3,639
- Depreciation	720
(iii) Net Agricultural Product at Factor Cost	2,919
- (Wages to agricultural workers + land rental + Bank Charges)	866
(iv) Family Farm Income	2,053

(b) Discuss the role of Irish agricultural exports in helping Ireland overcome its on-going economic difficulties.

- The value of Irish agricultural exports has increase significantly (25% between 2009 and 2011 to €8.85bn), which has helped significantly in Ireland's recovery. The increase in exports has been created by increased demand overseas, increased world prices, and an increase in output.
- The agricultural sector creates more of a net inflow than other sectors due to low profit repatriation and lower imported input requirements.
- The sector is also of benefit to the economy due to its ability to create employment and distribute other benefits throughout the country and not just in isolated regions. The sector accounts for 140,000 employees, 7.7% of all those employed.
- The promotion of Irish exports abroad has also helped improve Ireland's 'green' image and thus has external benefits for tourism and other trades.
- Benefits (e.g. employment) well distributed throughout the country.

(c) Discuss how Ireland benefits from the Common Agricultural Policy (CAP) in terms of its direct budgetary effect and its effects on trade prices.

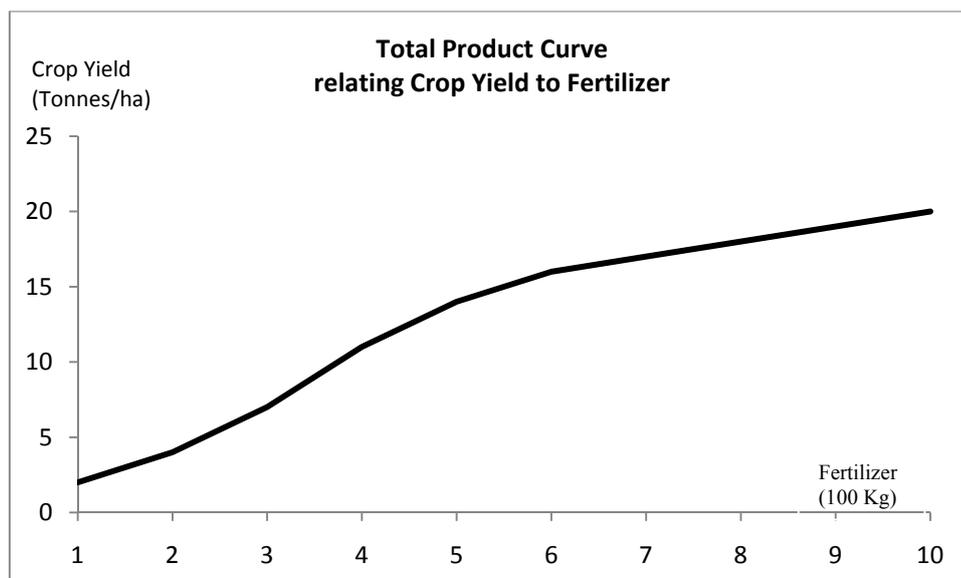
Budgetary Benefits: Since joining the EU in 1973, Ireland has experienced a **net distribution** in terms of CAP related payments. In 2011 the net budget effect of EU agricultural expenditure for Ireland was €1.04 billion. Much of this funding has been in the form of the **single farm payment**, which is extra income for farmers. 40% of total public expenditure on the agri-food sector is provided by EU Guarantee expenditure, 99% of which is the Single Farm Payment.

Trade price benefit: Due to CAP, agricultural commodity prices are generally **higher** on EU markets than on world markets. Ireland benefits from trading agricultural commodities at these higher prices. The net trade effect is estimated to have been worth €0.54 billion to Ireland in 2011.

4. The following table provides figures on changes in fertilizer use and crop yield on a potato farm.

Fertilizer (100 kg)	Total product Tonnes/ha
1	2
2	4
3	7
4	11
5	14
6	16
7	17
8	18
9	19
10	20

- (a) Using the above table construct a total product curve, placing the amount of fertilizer used on the horizontal x-axis and the crop yield on the vertical y-axis.



- (b) Referring to the total product curve you have drawn, explain the following terms:

(i) **Increasing returns:** occurs when more and more of a variable factor is added to a given quantity of a fixed factor. Initially, the increase in output generated by **each additional unit** of the variable input **increases** (i.e. becomes bigger and bigger with each addition unit of the variable input). This arises due to the division of labour and specialisation.

From between 2 tonnes/ha and 11 tonnes/ha. (or between 1 and 4 hundred kg fertilizer).
Occurs where there are greater and greater increases in the level of output for each additional unit of the variable factor (fertilizer).

(ii) Diminishing returns: Eventually a point is reached where the increase in output generated by each additional unit of variable factor diminishes (i.e. additional output becomes smaller and smaller for each additional unit of variable factor). This arises due to the limited availability of the fixed factor (e.g. lack of capital).

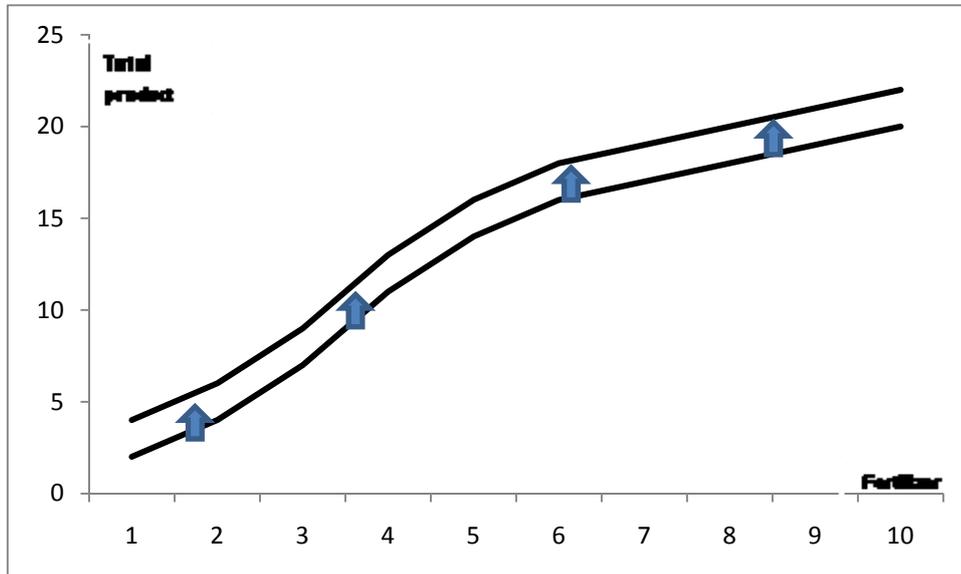
From between 11 tonnes/ha and 17 tonnes/ha. (or between 4 and 7 hundred kg fertilizer).
Occurs where there is smaller and smaller increases in the level of output for each additional unit of the variable factor (fertilizer).

(iii) Constant returns: Occurs where each additional unit of the variable input generates the same increase in output (i.e. growth in total output is constant).

From between 16 tonnes/ha and 20 tonnes/ha. (or between 6 and 10 hundred kg fertilizer).
Occurs where there is a stable proportionate change in output for each additional unit of the variable factor (fertilizer).

(c) Using the total product curve you have drawn, illustrate and explain the impact of technological progress on crop yield.

Technological progress allows farmers to produce an increased level of output for a given amount of land and other resources. Therefore, this will be reflected in a **shift in the total product curve up and to the right**. At each level of fertilizer use, it is now possible for the farmer to produce more output than was possible before the introduction of the improved technology.



5. The following table provides figures on change in real income, and changes in the quantity demanded for various products in a given year.

Increase in real money income	+ 3%
Change in the quantity demanded of fresh beef	+ 6%
Change in the quantity demanded of milk	+ 1.5%
Change in the quantity demanded of frozen beef burgers	- 1.8%

- (a) Explain the term income elasticity of demand (YED) for food.

Income elasticity of demand: the relationship/degree of responsiveness between changes in consumer income and the quantity of a good or service demanded. It indicates the percentage change in the quantity demanded of food that will result from a 1% change in consumer income.

- (b) Calculate the YED for each of the above products (fresh beef, milk and frozen beef burgers).

Fresh Beef: $YED = 6 / 3 = 2.0$

Milk: $YED = 1.5 / 3 = 0.5$

Frozen beef burgers: $YED = -1.8 / 3 = -0.6$

- (c) Explain what the YED you calculated tells us about the nature of each product.

Fresh beef is income elastic and can be described as a luxury good. The YED is greater than 1 and positive. Consumers buy 2% **extra** fresh beef for every 1% increase in their income.

Milk is income inelastic and can be described as a necessary good. The YED is less than 1 and positive. Consumers buy **only** 0.5% **extra** milk for every 1% increase in their income.

Frozen Beef Burgers are income inelastic and can be described as an inferior good. The YED is less than 1 and negative. Consumers buy 0.6% **less** frozen beef burgers for every 1% increase in their income.

- (d) The YED for food in general declines as real incomes rise. Explain why this is the case.

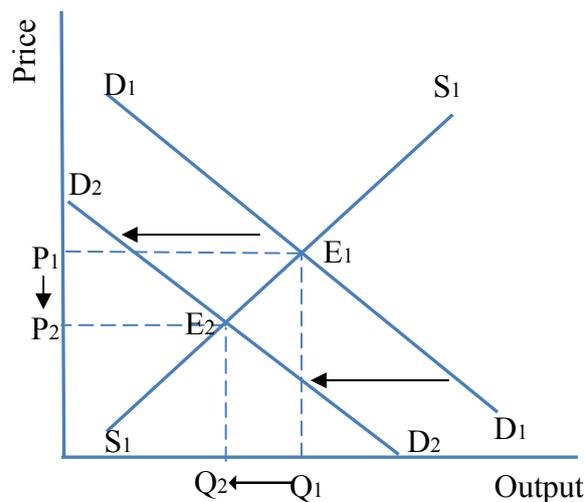
As countries experience increasing levels of real income they move from a state of being underdeveloped (i.e. undernourished) to being more developed. This means that **the proportion of peoples' incomes that are spent on food decreases as the country experiences rising real incomes**. Therefore the YED for food decreases as real incomes rise. This relationship is referred to in Engel's Law.

6. “The international outlook for food availability and prices is underpinned by the need for global food production to increase by 70% to meet expected population demands by 2050.”
(DAFM Annual Review and Outlook 2011/12).

The given diagram represents the world market for food, with D_1D_1 representing global demand and S_1S_1 representing global supply.

(a) Copy the given diagram into your answer book.

- (i) Using the diagram you have just drawn, illustrate and discuss the impact of a reduction in the amount of food wasted by consumers on world food prices and quantity.



Reducing the levels of food waste will lead to a **reduction in the overall demand for food**. In developed countries, often between 40 and 50 per cent of food is wasted (e.g. US and UK) largely due to households throwing out unused food.

The reduction in demand causes a **movement along the supply curve (E_1 to E_2)**, to the **new point of equilibrium (E_2)**, thereby resulting in a **decrease in the equilibrium price (P_1 to P_2)**.

The overall impact is a **decrease in world food prices and quantity**.

- (ii) Outline two costs to society of food wastage.

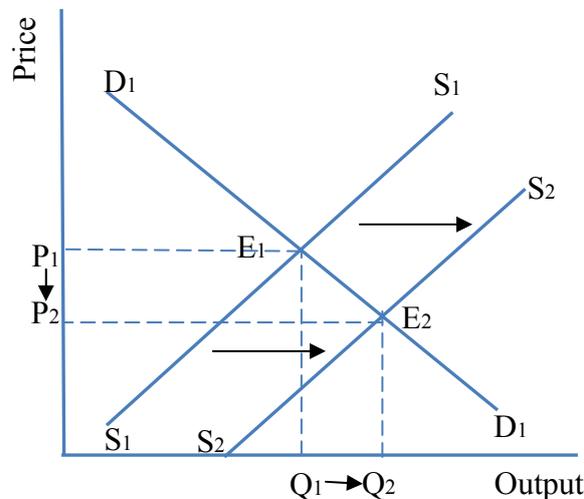
- Damage to the environment
- Wasting of dwindling natural resources
- Contributes to rising food costs in developing countries
- Increased use of landfills.

(iii) Discuss two ways in which governments could reduce the amount of food wasted by consumers.

- Better information for consumers to raise awareness/change public mind-set on waste
- Raising awareness among restaurants and other business of the savings that can be made through less waste
- More accurate data to enable monitoring
- Work with businesses to reduce waste (e.g. encouraging businesses to cooperate with one another to reduce waste) or consider regulation
- Investment in research on food preservation/storage.
- Better management of the supply chain to ensure food is not lost moving from one stage to another
- Review unnecessarily strict sell-by dates
- Discourage demand for cosmetically perfect food/retailers exacting standards on physical appearances.

(b) Copy the given diagram into your answer book again.

(i) Using the diagram you have drawn, illustrate and discuss the impact of better management of water supply on world food prices and quantity.



The more effective management of resources used in agriculture e.g. water, will enable existing land to be farmed more intensively and currently unused land to be brought into production. This would reduce farm costs, thereby **increasing the supply** of food (S_1S_1 to S_2S_2 above).

This increase in supply causes a **movement along the demand curve (E_1 to E_2)**, to the **new point of equilibrium (E_2)**, thereby resulting in a **reduced equilibrium price (P_2)**.

The overall impact is a **decrease in world food prices and increase in quantity**.

(ii) Discuss two ways in which governments could improve the management of water supply.

- Better storage of water during wet season or floods (e.g. reservoirs, dams)
- Investment in the development of better irrigation systems (less loss due to leakage and drain away)
- Investment in the development of drought resistant crops
- Collection of more data to allow better management of water
- Managing urban use of water and reducing the degree to which urban waste contaminates fresh water
- Water is often under-priced (due to subsidies) and thereby users have less incentive to reduce usage. Imposing water charges will discourage farms wasting water, which is a scarce resource.

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