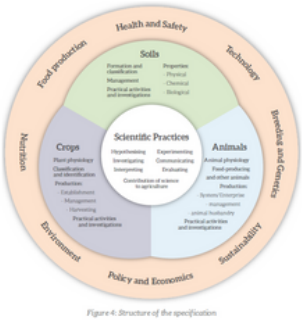
Oide
Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí
Supporting the Professional Learning of School Leaders and Teachers

Dr Laura Boyle
Principal Research Officer
Teagasc, Moorepark

"The Interrelationship between Animal Welfare and the Cross Cutting Themes of Leaving Certificate Agricultural Science"



Leaving Certificate Agricultural Science

Webinar Resource Booklet

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Keywords for this Webinar

Keyword	Definition
Acre	Unit of land measurement used in British Imperial system. One acre is equal to 0.4047 Hectares (Ha)
Antimicrobial resistance (AMR)	Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites no longer respond to antimicrobial medicines. As a result of drug resistance, antibiotics and other antimicrobial medicines become ineffective and infections become difficult or impossible to treat, increasing the risk of disease spread, severe illness, disability and death. AMR is a natural process that happens over time through genetic changes in pathogens. Its emergence and spread is accelerated by human activity, mainly the misuse and overuse of antimicrobials to treat, prevent or control infections in humans, animals and plants.
Animal welfare	Animal welfare refers to the well-being of non-human animals, encompassing their physical and mental health. It involves ensuring animals are healthy, comfortable, well-nourished, safe, and able to express natural behaviors.
Artificial Intelligence (AI)	Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems.
CAP Policy	The Common Agricultural Policy (CAP) is the EU's agricultural policy, established in 1962 to ensure a stable supply of affordable, safe, and high-quality food. It involves agricultural subsidies and other programs designed to support farmers, ensure a fair standard of living, and manage agricultural markets. The latest CAP reform, which applies from 2023, emphasises results and performance, aiming for a sustainable future for European farmers and providing more targeted support to smaller farms. It also allows for greater flexibility for EU countries to adapt measures to local conditions.
Consumers	In economics, a consumer is an individual who buys goods or services for personal use, rather than for resale or business purposes.

Keywords for this Webinar

Keyword	Definition
Enrichment	Enrichment in agriculture can refer to enhancing the environment for animals to improve their well-being and productivity, Animal enrichment focuses on providing opportunities for natural behaviors and positive experiences.
Five Freedoms of Animal Welfare	The Five Freedoms of animal welfare, as adopted by the Farm Animal Welfare Council (FAWAC) and other organisations in Ireland, are: **freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury and disease, freedom to express normal behavior, and freedom from fear and distress**
Hectare	Unit of area in the metric system equal to 100 acres, or 10,000 square metres, and the equivalent of 2.471 acres in the British Imperial System
Iceberg indicators	Iceberg indicators in animal welfare are signs that may suggest underlying welfare problems, even if the immediate cause is not apparent.
Indoor System	Indoor Farming, as opposed to pasture-based farming, is when a animal is kept inside a shelter with all the tools and amenities they need.
Key Performance Indicators	Key performance indicators (KPIs) are targets that help you measure progress against your most strategic objectives.
Opportunistic foragers	a type of foraging in which an animal feeds on a wide variety of prey and is able to adapt to whatever food becomes available
Pathogenic	The term pathogen is used to describe an infectious microorganism or agent, such as a virus, bacterium, protozoan, prion, viroid, or fungus.

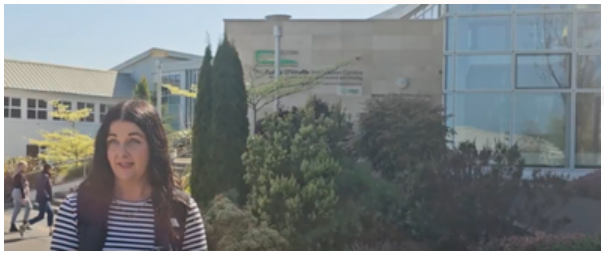
Keywords for this Webinar

Keyword	Definition
Prophylaxis	**treatment given or action taken to prevent disease**
PSE	Pale, soft, exudative meat, or PSE meat, describes a carcass quality condition known to occur in pork, beef, and poultry. It is characterised by an abnormal color, consistency, and water holding capacity, making the meat dry and unattractive to consumers. The condition is believed to be caused by abnormal muscle metabolism following slaughter, due to an altered rate of glycolysis and a low pH within the muscle fibres
Stress	Animal stress, like human stress, is a response to a perceived threat or challenge that disrupts their internal balance. It can manifest in various ways, including behavioral changes, physiological responses, and even weakened immune systems. Recognising the signs of stress in animals is crucial for their well-being and can help prevent long-term health issues.
Single trait selection	Single-trait selection focuses on improving a single specific characteristic in a population, like increasing milk production in dairy cows. This approach, while efficient for improving a specific trait, can have unintended consequences if other important traits are negatively impacted, or if there are correlated traits that are also affected.

Video 1 : Introduction Animal Welfare with Dr Laura Boyle

Video 2 : Nutrition, Sustainability, Technology

Video 3 : Policy & Economics, Genetics



Video 1 : Introduction Animal Welfare with Dr Laura Boyle

Video 1 – Introduction

Section A: Before Watching

1. What do you think the term "**animal welfare**" means in a farming context?

2. List 2 reasons why researching animal welfare might be important for both farmers and animals.

Section B: While Watching – Comprehension & Recall

Answer these questions as you listen to Dr. Boyle speak.

3. What is Dr. Laura Boyle's job title and where does she work?

4. Name one **animal behaviour** she mentions that can indicate poor welfare.

5. What tools or methods does Dr. Boyle mention for **measuring pig welfare**?

6. Dr. Boyle says most tail biting occurs:
   ☐ At night
   ☐ During feeding
   ☐ In summer months
   ☐ During overcrowding

7. What is the main goal of Dr. Boyle's research?
   a) To increase profits for farmers
   b) To promote pig breeding for export
   c) To improve pig welfare through science
   d) To replace pig farming with technology

Video 1 : Introduction Animal Welfare with Dr Laura Boyle

Section C: Thinking Deeper

8. What did you learn about the link between the animal's local **environment** and pig behaviour?

_____

_____

_____

9. How does Dr. Boyle explain the **benefits** of improving animal welfare for farmers?

_____

_____

_____

Section D: Key Terms Match-Up

Match each term to its correct explanation from the video:

Term	Explanation Letter
a) Tail biting	A. When pigs are not given enough stimulation or space
b) Welfare indicators	B. Actions used to assess how well pigs are coping
c) Environmental stress	C. A damaging behaviour often caused by poor conditions

Section E: After Watching – Reflection

10. What is one thing you found **interesting or surprising** about pig welfare research?

_____

_____

_____

11. If you were a farmer, what **change** might you consider making after seeing this video?

_____

_____

_____

Sample answers answers for Video worksheets

Sample answers to worksheet for Video 1

Section A: Before Watching

1. **Student-generated** – Example: *Animal welfare means keeping animals healthy, safe, and stress-free.*
2. **Student-generated** – Example: *It helps pigs live better lives and helps farmers reduce disease or injury.*

Section B: While Watching

3. **Dr. Laura Boyle** is a research officer at **Teagasc, Moorepark**, and specialises in pig welfare.
4. **Tail biting** is mentioned as a sign of poor welfare.
5. She mentions using **welfare indicators, observation, research trials**, and **collaboration with farmers.**

6. Multiple Choice: ✅ During feeding
7. Multiple Choice: ✅ c) To improve pig welfare through science

Section C: Thinking Deeper

8. **Example:** Poor environments (like overcrowding or lack of enrichment) can cause pigs to become stressed and behave aggressively, like tail biting.
9. **Example:** Better pig welfare can lead to healthier pigs, less injury, and better productivity for farmers.

Section D: Key Terms Match-Up

Term	Explanation Letter
a) Tail biting	C
b) Welfare indicators	B
c) Environmental stress	A

Section E: After Watching – Reflection

10. **Student-generated** – Example: *I didn't realise how small changes in the environment can reduce tail biting.*
11. **Student-generated** – Example: *I would give pigs more space or add toys/enrichment materials.*

Video 2 : Nutrition, Sustainability, Technology

Video 2 – Nutrition, Sustainability and Technology

Section A: Multiple Choice

1. What is the most critical stage where poor animal welfare affects meat quality?
   A) Birth
   B) Growth phase
   C) Transport and slaughter
   D) During feeding

2. What meat issue arises in pigs due to stress before slaughter?
   A) Red, juicy meat
   B) PSE (Pale, Soft, Exudative) meat
   C) Fatty marbling
   D) Sweet-smelling meat

3. What is one potential benefit of high animal welfare mentioned in the video?
   A) Faster weight gain only
   B) Increased need for antibiotics
   C) Improved resilience to disease
   D) Guaranteed higher market price

Section B: True or False

4. ___ Organic meat always tastes better than conventional meat.
5. ___ All meat in Ireland is now strictly monitored for antibiotic residue.
6. ___ Antimicrobial resistance is caused by traces of antibiotics left in meat.

Section C: Fill in the Blanks

7. Pigs under stress before slaughter can produce _____ meat, which looks unappetizing.
8. A significant concern related to antibiotics in farming is the development of _____ resistance.
9. Providing play areas for piglets improved their _____ response when challenged with disease.

Section D: Short Answer

10. How does poor animal welfare during transport affect meat quality in beef and pigs?

_____
_____
_____

11. What is antimicrobial resistance and why is it a concern for both animals and humans?

_____
_____
_____

Video 2 : Nutrition, Sustainability, Technology

Section E: Critical Thinking / Discussion

12. The video argues that animal welfare can be considered a form of "preventative medicine." Explain what this means using an example.

13. How might technology both help and hinder efforts to improve animal welfare on farms?

14. What tensions exist between the use of farm technology and society's preference for traditional farming models?

Sample answers answers for Video worksheets

Suggested Answers

Section A: Multiple Choice

1. **C) Transport and slaughter**
2. **B) PSE (Pale, Soft, Exudative) meat**
3. **C) Improved resilience to disease**

Section B: True or False

4. **False** – While some perceive organic meat as tastier, scientific results are mixed.
5. **True** – The video notes strict monitoring and withdrawal periods in Ireland.
6. **False** – Resistance arises from overuse of antibiotics in animals, not from residues in meat.

Section C: Fill in the Blanks

7. **PSE (Pale, Soft, Exudative)**
8. **antimicrobial**
9. **immune**

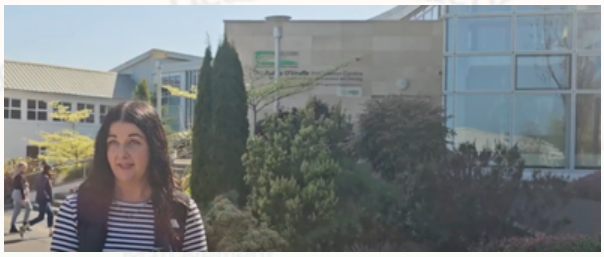
Section D: Short Answer

10. **Stress during transport causes physiological changes in animals that lead to poor meat quality. Pigs may develop PSE meat, while cattle may develop dark, firm, dry (DFD) meat.**
11. **Antimicrobial resistance occurs when bacteria become immune to antibiotics due to overuse. This means treatments for infections in both animals and humans can become less effective.**

Section E: Critical Thinking / Discussion

12. **Just like healthy humans need fewer medications, animals raised with good welfare (e.g., space, cleanliness, stimulation) are more resilient to disease and less likely to need antibiotics. Example: piglets with play areas showed stronger immune responses.**
13. **Technology (e.g., sensors, behaviour monitoring) can help detect illness early. However, it may also encourage large, indoor intensive systems that move away from natural animal behaviours.**
14. **Society values small, traditional family farms for ethical and environmental reasons. Yet high-tech farming often means larger operations, fewer farmers, and more intensive systems that may conflict with public expectations.**

Video 3 : Policy, Economics, Genetics



Video 3 – Policy Economics, Genetics

Section A: Multiple Choice (Choose the best answer)

1. What is the main aim of agricultural policy in Ireland?
    - A) To reduce the number of farms
    - B) To increase food imports
    - C) To support sustainable food production
    - D) To eliminate subsidies
2. Which CAP (Common Agricultural Policy) reform is mentioned in the video?
    - A) 2003 Single Farm Payment
    - B) 2023 Eco-Schemes
    - C) Brexit Impact Assessment
    - D) Agenda 2000

Section B: True or False

3. ___ The CAP provides income support to farmers through direct payments.
4. ___ Economic factors have no influence on genetic selection in livestock.
5. ___ Breeding decisions can impact both profitability and sustainability.

Section C: Fill in the Blanks

6. The video mentions that _____ traits are increasingly important in modern breeding programs.
7. The term used to describe the return from investment in farming is called _____.
8. One major environmental concern discussed in relation to agriculture is _____.

Section D: Short Answer

9. Why is genetic improvement considered a long-term investment for a farm?

_____
_____
_____

10. How do government policies influence decisions made on Irish farms?

_____
_____
_____

Video 3 : Policy, Economics, Genetics

Section E: Think and Discuss (Higher-Order)

11. Evaluate the impact of economic incentives on environmentally-friendly farming practices.

_____
_____
_____
_____
_____
_____

12. Imagine you're advising a beef farmer. How would you explain the role of genetics in improving both productivity and sustainability?

Introduction:_____
_____
_____
_____

Role of Genetics in Improving Productivity:

_____
_____
_____
_____
_____

Role of Genetics in Improving Sustainability (Environmental / Social / Economic):

_____
_____
_____
_____
_____

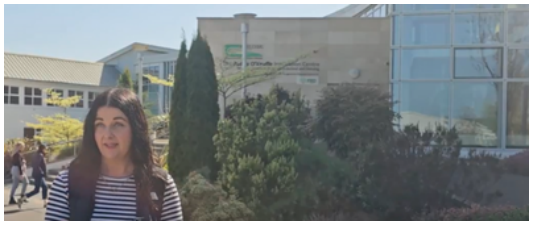
Extension Activity

Research one of the following and write a short summary:

- The role of Teagasc in Irish agricultural development
- One recent CAP reform and its effect on young farmers
- How genomics is being used in dairy breeding

Sample answers answers for Video worksheets

Suggested Answers: Policy, Economics, and Genetics in Agriculture



Section A: Multiple Choice

1. **C) To support sustainable food production**
2. **B) 2023 Eco-Schemes**

Section B: True or False

3. **True** – The CAP includes direct payments to support farm incomes.
4. **False** – Economic considerations are a major driver in genetic selection decisions.
5. **True** – Breeding can affect traits that influence both profitability (e.g. growth rate) and sustainability (e.g. feed efficiency, methane output).

Section C: Fill in the Blanks

6. **Environmental** (or **sustainability**) traits are increasingly important.
7. **Profitability** (or **return on investment**, **gross margin** could also be acceptable).
8. **Greenhouse gas emissions** (also acceptable: **climate change**, **biodiversity loss**, depending on phrasing in the video).

Section D: Short Answer

9. **Genetic improvement is a long-term investment because it can take several years for improved traits to be seen in a herd or crop. However, once established, these traits can enhance productivity, disease resistance, and efficiency over generations.**
10. **Government policies, such as CAP reforms or environmental schemes, can affect how farmers manage their land, what they produce, and the types of technologies (e.g. genetics) they invest in. Financial incentives or restrictions play a key role in decision-making.**

Section E: Think and Discuss (Higher-Order)

11. **Economic incentives like eco-scheme payments or carbon credits encourage farmers to adopt more sustainable practices. However, if the financial rewards are not high enough or the rules are too complex, uptake may be limited. Aligning profitability with sustainability is key to long-term success.**
12. **Genetics can improve traits like feed conversion, fertility, and disease resistance. For example, choosing sires with high EBI (Economic Breeding Index) values can increase milk output while reducing methane emissions per litre produced. This helps the farmer remain productive while reducing environmental impact.**

The OneWelPig Project

Using a 'One Welfare' framework to develop alternative high welfare pig production systems

Our vision is the development of pig production systems that provide an environment that satisfies the animals' physical and behavioural needs. Thus as well as investigating strategies to raise welfare standards in indoor pig production, we aim to determine the viability of pig rearing enterprises that are an alternative to, or improve upon, typical commercial systems here in Ireland. As well as assessing pig welfare, we will observe the pigs' behaviour to understand how they affect the soil, flora and fauna in their environment, and assess the satisfaction of the personnel who work with pigs in the various systems. Ideally, we will identify financially viable systems that contribute to the regeneration of the local physical and social environment. The project will also help farmers identify viable means of income diversification, with potential to capitalise on premium prices for high welfare pig-meat; the project will thus help to capitalise on the potential good animal welfare has to build resilience into food production chains. Ultimately, our research will provide the knowledge for individual producers to improve pig welfare, and potentially a portion of the industry to transition to higher welfare systems.

Duration: 4 years
Twitter: #OneWelPig
Contact: laura.boyle@teagasc.ie or keelin.odriscoll@teagasc.ie
This project is funded by the Irish Department of Agriculture, Food and the Marine's Competitive Research Funding Programme (2021R600).

https://www.teagasc.ie/media/website/animals/pigs/OneWelPig-October-2024-Newsletter.pdf

https://www.teagasc.ie/media/website/animals/pigs/OneWelPig-December-2024-Newsletter.pdf

AMR Resources for Animal Welfare

"10 things to know about … "

Worksheet 1: Focus: Knowledge, Understanding

Section A: Multiple Choice (Choose the correct answer)

1. Why are antibiotics added to animal feed?
   a) To make animals grow faster
   b) To treat humans
   c) To prevent animals from getting sick
   d) To colour the meat

2. What makes piglets more vulnerable to disease after weaning?
   a) Lack of food
   b) Stress from changes in their environment
   c) Sleeping too much
   d) None of the above

Section B: True or False

3. Antibiotics are only used to treat animals when they are sick.
4. Farmers can reduce the use of antibiotics by improving animal welfare.

Section C: Fill in the Blanks

5. The overuse of antibiotics can lead to _____ resistance.
6. Stress can weaken an animal's _____ system.

Extension Question (Short Answer)

7. What are two things Eugene Sheehan changed on his farm to reduce antibiotic use?

AMR Resources for Animal Welfare
"10 things to know about … "

Worksheet 1: Answers & Suggested answers

Section A: Multiple Choice

1. **c)** To prevent animals from getting sick
2. **b)** Stress from changes in their environment

Section B: True or False

3. **False** – Antibiotics are also used to prevent disease, not just to treat sick animals.
4. **True** – Improved animal welfare can reduce stress and the need for antibiotics.

Section C: Fill in the Blanks

5. **antimicrobial**
6. **immune**

Extension Question

7. **Suggested Answer:** Eugene Sheehan improved the pigs' diet and ensured they had clean, spacious housing with enrichment toys.

AMR Resources for Animal Welfare

"10 things to know about … "

Worksheet 2: Focus: Understanding, Application, Analysis

Section A: Match the Term to its Definition

Term	Definition
Antibiotic resistance	a) Stress caused by major changes in routine
Enrichment	b) Making changes to improve the well-being of animals
Weaning	c) When bacteria stop responding to antibiotics
One Health	d) A concept connecting human, animal, and environmental health

Section B: Short Answer Questions

1. Describe two causes of stress for pigs at the time of weaning.
2. Why is it important that only sick animals are treated with antibiotics rather than all animals?

Section C: Data Interpretation

Use the chart below (antibiotic use vs. animal health)

Data Table for Worksheet 2, Section C

Antibiotic Use vs. Animal Health on Pig Farms

Farm Type	Average Antibiotic Use (mg/kg)	Health Issues Reported (per 100 pigs)	Notes on Animal Welfare
Conventional (High Use)	200	25	Minimal enrichment, high stocking density
Transitional (Medium Use)	100	15	Improved diet, better ventilation
Welfare-Focused (Low Use)	20	5	Enriched housing, low stress, use of vaccines

1. Which farm type uses the most antibiotics?
2. What pattern can you see between antibiotic use and the number of health issues?
3. How does animal welfare appear to influence health outcomes?
4. What trend do you notice when antibiotic use is reduced and welfare is improved?
5. What might this suggest about the relationship between animal stress and disease?

Extension Task

5. Write a paragraph explaining why "antibiotic-free pork" might be appealing to consumers.

AMR Resources for Animal Welfare
"10 things to know about … "

Worksheet 2: Answers & Suggested Answers

Section A: Match the Term to its Definition

Term	Definition
Antibiotic resistance	c) When bacteria stop responding to antibiotics
Enrichment	b) Making changes to improve the well-being of animals
Weaning	a) Stress caused by major changes in routine
One Health	d) A concept connecting human, animal, and environmental health

Section B: Short Answer Questions

1. Piglets experience stress due to separation from their mother, a change in diet from milk to solid food, and mixing with unfamiliar piglets.
2. only sick animals helps prevent the development of antibiotic-resistant bacteria and reduces unnecessary antibiotic use.

Section C: Data Interpretation

1. Which farm type uses the most antibiotics?
   Answer: The Conventional farm type uses the most antibiotics, with an average of 200 mg/kg.
2. What pattern can you see between antibiotic use and the number of health issues?
   Answer: As antibiotic use decreases, the number of health issues also decreases. Farms with lower antibiotic use report fewer health problems among pigs, suggesting a link between reduced antibiotic use and improved animal health.
3. How does animal welfare appear to influence health outcomes?
   Answer: Improved animal welfare—such as enriched housing, low stress environments, and better nutrition—appears to lead to better health outcomes. Pigs on welfare-focused farms experience fewer health issues even with less reliance on antibiotics.
4. What trend do you notice when antibiotic use is reduced and welfare is improved?
   Answer: As antibiotic use decreases and welfare improves, the number of health issues reported per 100 pigs also decreases. This suggests a strong link between good welfare practices and better pig health, reducing the need for antibiotics.
5. What might this suggest about the relationship between animal stress and disease?
   Answer: It suggests that reducing stress (through better housing, nutrition, and enrichment) improves the pigs' immune systems and makes them less likely to become sick. This lowers the need for preventative antibiotics and supports healthier herds overall.

Extension Task

5. Suggested Answer: Consumers may prefer antibiotic-free pork because it indicates better animal welfare practices and reduces the risk of antibiotic-resistant bacteria entering the food chain.

AMR Resources for Animal Welfare
"10 things to know about … "

Worksheet 3: Focus: Analysis, Evaluation, Creation

Section A: Long-Answer / Critical Thinking

1. Explain how improved animal welfare practices can reduce the need for antibiotics on farms.
2. Discuss the concept of "One Health" and how it relates to the issue of antibiotic resistance.
3. Evaluate the challenges farmers face in transitioning to reduced antibiotic use.

Section B: Case Study Evaluation

Using Eugene Sheehan's farm example:

4. List the steps he took to reduce antibiotic use.
5. Analyse how these steps helped him reduce antibiotic use while maintaining productivity.

Section C: Creative Task

6. Design a poster or infographic for other farmers that promotes antibiotic reduction strategies. Include:

- Benefits of reducing antibiotics
- Practical steps for change
- A slogan or key message

Worksheet 3: Suggested Answers

Section A: Long-Answer / Critical Thinking

1. **Suggested Answer**: Improved animal welfare practices, such as better housing conditions, proper nutrition, and enrichment, reduce stress in animals. Lower stress levels enhance the immune system, decreasing the likelihood of disease and the need for antibiotics.
2. **Suggested Answer**: The "One Health" concept recognizes the interconnectedness of human, animal, and environmental health. Antibiotic resistance can transfer between animals and humans, so reducing antibiotic use in agriculture is essential to protect public health.
3. **Suggested Answer**: Challenges include financial constraints, the need for farmer education, and the initial investment required for improving housing and welfare conditions.

Section B: Case Study Evaluation

4. **Suggested Answer**: Eugene Sheehan improved pig nutrition, enhanced housing conditions, reduced stocking density, provided enrichment toys, and used vaccines instead of antibiotics.
5. **Suggested Answer**: These steps reduced stress and disease incidence among pigs, leading to a decreased need for antibiotics while maintaining farm productivity.

Section C: Creative Task

6. **Suggested Answer**: Students should create a poster highlighting the benefits of reducing antibiotic use, such as improved animal health and reduced antibiotic resistance, and practical steps like better hygiene, proper nutrition, and vaccination programs.

AMR Resources for Animal Welfare
"10 things to know about … "

Bonus Worksheet: Group or Class Discussion Prompts

Use these for class debates or group work:

- Should the use of antibiotics in agriculture be banned entirely? Why or why not?
- What responsibilities do consumers have in the fight against antibiotic resistance?

Media Article - Agriland
Farmer Phil - Enrichment

Watch: Farmer Phil's calves jump for joy with space hoppers

Farmer and internet sensation, Philip Stewart, aka 'Farmer Phil', has introduced space hoppers as a source of calf enrichment on his farm

Agriland.ie / May 3

Classroom Resources for Animal Welfare

Sample follow along resource provided

Media Article
TResearch Summer 2022

Sample Numeracy and Data analysis skills worksheet provided

Sample Follow Along resource for Looking After Dairy Cows Video

Dairy Farming & Cow Welfare: Video Worksheet – Please edit to suit local context

Video Link: https://youtu.be/FodFmEuOVaY

Instructions: Watch the video and answer the questions as you go.

1. Remembering (Knowledge Recall)

A. Multiple Choice (Circle the correct answer):

1. How many dairy cows are there in Ireland?
   a) 1.2 million b) 1.5 million c) 2 million d) 900,000

2. How much milk does the average cow produce per year?
   a) 4,000 litres b) 5,500 litres c) 6,200 litres d) 3,500 litres

B. Fill in the blanks:

1. A cow is an adult female that has had at least one _____.

2. Cows are _____ animals, meaning they experience emotions and are aware of their surroundings.

2. Understanding (Explain Concepts)

Short Answer:

1. Why do cows need to give birth annually to continue producing milk?

2. List three ways farmers ensure their cows are healthy and happy.

Matching (Draw lines to connect):

Cow Behaviour	Description
Chewing the cud	A sign of good digestion
Grooming	Cleaning themselves or others
Exploring	Being curious about their surroundings

3. Applying (Use Knowledge in a New Context)

Scenario-Based Question:

Imagine you are a dairy farmer. It's early winter, and the grass is running low.

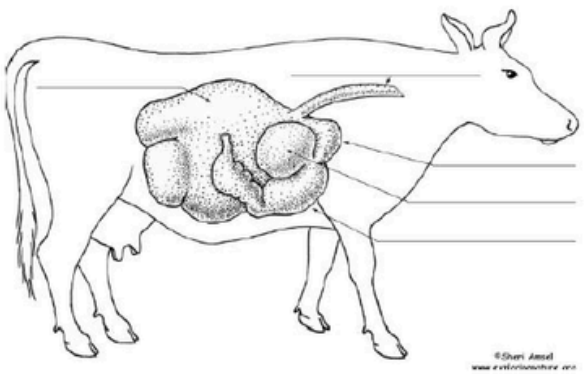
- What would you feed your cows?

- What else would you check to ensure your cows stay healthy?

4. Analysing (Break Down Information)

Diagram Activity:

Label this diagram of a cow's four-chambered stomach and describe what happens in each part.



Data Interpretation:

The average dairy farm in Ireland has 90 cows.

- If each cow drinks about 100L of water per day, how much water does the whole herd drink per day?

5. Evaluating (Make Judgments)

Opinion Question (Justify Your Answer):

"Cows should be kept indoors all year to protect them from bad weather."

- Do you agree or disagree? Why?

Checklist Review:
Tick the items that help ensure good cow welfare:
[ ] Clean cubicles with soft bedding
[ ] Limited access to water
[ ] Daily health checks
[ ] Overcrowded housing
[ ] Balanced nutrition plans

6. Creating (Make Something New)

Design Task:

Create a weekly 'Cow Welfare Checklist' for a new trainee farmer. Include at least five daily or weekly tasks.

Optional Extension:

Design a poster titled 'Happy Cows, Healthy Milk' for your Ag Science classroom. Use facts from the video and include images or drawings.

🎨 Poster Rubric: "Happy Cows, Healthy Milk" (5 marks total)

Criteria	Excellent (1 mark)	Partial (0.5 mark)	Needs Work (0 mark)
Accurate Information	Includes 3+ correct facts from the video	Includes 1–2 correct facts	No accurate facts shown
Clear Message / Slogan	Clear, relevant, and engaging title or slogan	Slogan present but unclear or weak	No slogan or message
Visual Design	Creative layout with colour, drawings or images	Some design effort shown	Very plain or no visuals used
Organisation / Layout	Easy to read, well-spaced and structured	Minor layout issues	Disorganised or cluttered
Effort & Creativity	Obvious care and original ideas shown	Average effort or reused ideas	Minimal effort shown

Suggested answers for Looking After Dairy Cows Activity

Marking Scheme & Suggested Answers

1. Remembering (Knowledge Recall)

A. Multiple Choice:

1. b) 1.5 million

2. b) 5,500 litres

B. Fill in the blanks:

1. calf

2. sentient

2. Understanding (Explain Concepts)

Short Answer:

1. Cows must give birth to produce milk because milk production is part of the cow's biological response to feeding its young.

2. Examples: Checking cows daily, providing balanced nutrition, giving clean water and comfortable housing.

Matching:

Chewing the cud → A sign of good digestion

Grooming → Cleaning themselves or others

Exploring → Being curious about their surroundings

3. Applying (Use Knowledge in a New Context)

Scenario-Based Answer:

- Feed cows silage and dry feed.

- Check water supply, shelter, space to lie down, and watch for signs of illness or discomfort.

4. Analysing (Break Down Information)

Diagram Activity: Rumen, Reticulum, Omasum, Abomasum (with functions).

Data Interpretation: 90 cows × 100L = 9,000 litres per day.

5. Evaluating (Make Judgments)

Opinion Question: Sample answer – Disagree, cows benefit from grazing outdoors but need winter shelter.

Checklist Review:

✓ Clean cubicles with soft bedding

✗ Limited access to water

✓ Daily health checks

✗ Overcrowded housing

✓ Balanced nutrition plans

6. Creating (Make Something New)

Checklist: Examples – Check water, clean housing, monitor behaviour, provide feed, check for illness.

Sample Numeracy Worksheet for T-Research Media Article

Worksheet: Public Perception of Animal Welfare in Ireland

Disclaimer - Please edit as needed for local context.

Objective: Develop numeracy and data analysis skills using real-world data on public perceptions of animal welfare.

Instructions: Refer to the bar chart in the article "A Public View of Animal Welfare" from Teagasc's TResearch Summer 2022 publication. Answer the following questions based on the data presented.

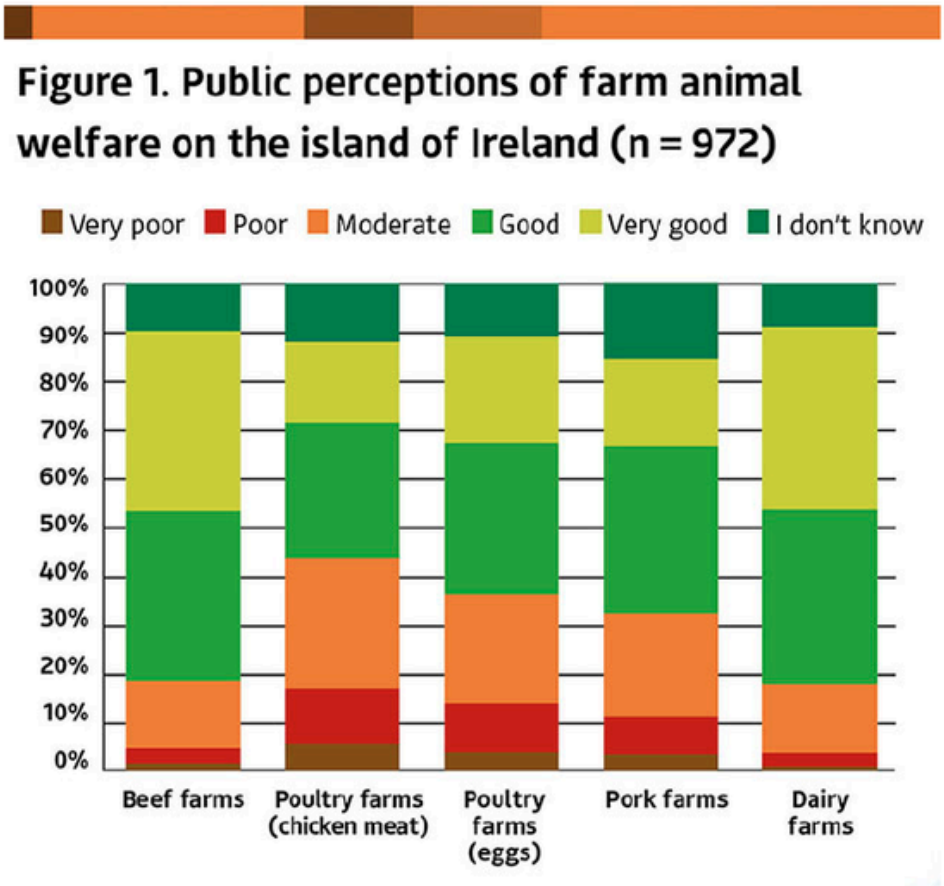


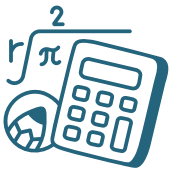
Figure 1. Public perceptions of farm animal welfare on the island of Ireland (n = 972)

Section A: Data Interpretation

1. Bar Chart Analysis:
   a. List the four farming sectors presented in the bar chart.
   b. Which sector has the highest percentage of respondents perceiving animal welfare as "Good"?
   c. Which sector has the lowest percentage of "Good" perceptions?
2. Percentage Calculations:
   a. Calculate the difference in "Good" perception percentages between the dairy and poultry sectors.
   b. If 1,000 people were surveyed, estimate how many perceive animal welfare in the beef sector as "Good".

Section B: Critical Thinking

3. Trend Analysis:
   a. Discuss possible reasons why the poultry sector has lower "Good" perception ratings compared to the dairy sector.
   b. How might visibility of farming practices influence public perception of animal welfare?
4. Data Representation:
   a. Suggest another way to visually represent this data besides a bar chart.
   b. Explain how your chosen method could provide additional insights.



Sample Numeracy Worksheet for T-Research Media Article

Section C: Application

5. Survey Design:
   a. Design a simple survey question to assess public perception of animal welfare in the pig farming sector.
   b. Propose a method for distributing this survey to gather diverse responses.

Note: This worksheet is intended to be used in conjunction with the bar chart from the specified Teagasc article.

Suggested Answers: Public Perception of Animal Welfare Worksheet

Section A: Data Interpretation

- 1. Bar Chart Analysis:
- a. The four sectors are: Dairy, Beef, Pig, and Poultry.
- b. Dairy sector has the highest percentage of 'Good' perceptions.
- c. Poultry sector has the lowest percentage of 'Good' perceptions.
- 2. Percentage Calculations:
- a. Assuming Dairy = 70% and Poultry = 40%, the difference is 30%.
- b. If Beef = 60%, then 60% of 1,000 = 600 people perceive welfare as 'Good' in beef farming.

Section B: Critical Thinking

- 3. Trend Analysis:
- a. Poultry farms often have indoor housing, less visibility, and higher stocking densities, which may be viewed negatively.
- b. Sectors that are more visible to the public, such as dairy farms with grazing cows, may be perceived more positively.
- 4. Data Representation:
- a. A pie chart or stacked bar chart.
- b. A pie chart shows proportional comparisons at a glance, while stacked bars can compare positive vs. negative perceptions.

Section C: Application

- 5. Survey Design:
- a. Example question: 'How would you rate animal welfare in pig farming? (Very Good / Good / Fair / Poor / Don't Know)'
- b. Distribute via social media, agricultural shows, schools, or local community centres for a wider demographic reach.

Notes

Oide

Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí

Supporting the Professional Learning of School Leaders and Teachers