

Cattle Breeding: what should we do next?

Democs card game instructions

to discuss how we should use our new knowledge of genetic science in breeding cattle for milk and meat



This Democs game has been created by Edinethics Ltd. and the University of Edinburgh as part of the BovReg Project, funded by the European Commission Horizon 2020 Research Programme



THE UNIVERSITY of EDINBURGH
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What is a Democs game?

Democs is a group conversation card game which aims to help people to learn about important new developments in science, technology and medicine, and to think about their ethical and social implications, without needing expert knowledge. Democs games have been created on many subjects since 2001. This game explores how we should be breeding cattle in the light of new understanding in genomics and issues like climate change and good animal welfare. It is part of an EC agricultural research project BovReg.

The aim is to learn together about the topic, and form opinions about it, both individually and as a group. Players get hands of cards and take turns to read and discuss them. The cards provide information, stories and issues. At the end of the game, the players can vote on different options.

Democs can played anywhere, by anyone. All you need is a kit (boxed set or download), a table and 6 to 8 people (you can play with less but more than 8 can take too long). To get the most out of it, allow 1½ to 2 hours, but it can be played in as little as 1 hour. You don't need to know anything about the topic beforehand; the cards are the 'expert'.

One person acts as the dealer. It's the dealer's job to have read these instructions, and then be able to lead the players through the different stages of the game. At the end he/she should also collect the results and send these back for analysis. It's quite straightforward. If you are thinking about organising a game, go for it!

Cattle Breeding and Genomics

When cattle are bred, what characteristics should farmers and breeders be aiming to promote in their herds, especially as new possibilities are now opening up for breeding using advances in the science of genomics? Humans have been selecting animals for their own purposes since ancient times. Since the 18th Century people have bred livestock based on desirable characteristics, like physical appearance or easily judged factors like numbers of offspring or milk yield.

Since the 1960s, scientists given 'scores' for animals in a wider range of heritable traits: not only growth rate or fertility, but disease resistance, feed efficiency, temperament and so on, and from an animal's parents, siblings, cousins, etc. Advanced statistics and computing are used to turn these genetic data into 'breeding values', so farmers can choose which mix of traits calves from a given bull are likely to have.



With the advances in genetic knowledge, DNA samples can be taken from cows which can be analysed to identify patterns in the genomes of cattle that are associated with inheritable traits. This can be done without knowing how all the individual genes work; and it is known as genomics

Most dairy cattle in Europe are Holstein-Friesians, but beef cattle come in many different breeds. Some breeds are still farmed for both milk and meat. There are also local 'minority' breeds, often well adapted to their environment. Cattle are farmed in many different ways such as large, mostly indoor dairy units, medium sized family farms, and small-holdings. Cattle naturally live off just grass, but to improve production they are often given additional feed, like silage or grain.

Advances in Cattle breeding

Geneticists in the BovReg project are looking in greater depth into the way combinations of genes work together to produce different physical characteristics (phenotypes). Potentially this information will enable selection for a wider range of traits, including robustness to challenges they experience through their environment such as heat stress or disease, perhaps reducing methane emissions, and using the value of local and minority breeds. The focus is on better selection of cattle in breeding. Genetic modification by adding genes in the laboratory hasn't been used for livestock production. Some results may suggest improvements that might be done in future by new methods like genome editing.

But what do you think?

We wish to engage with citizens to explain about genomic selection and its potential, but also to ask their views, what is important to them? If we continue to breed cattle to produce milk and dairy products, beef and other cattle products, **what should be the emphasis in cattle breeding** in the face of issues like climate change, pandemic disease, concerns about food security and the environment?

The game has been written by Dr Donald Bruce, Managing Director of Edinethics Ltd., a consultancy company on ethics and technology, and Dr Ann Bruce, senior lecturer in Science Technology and Innovation Studies at the University of Edinburgh, who are both partners in the BovReg project. We invite you to play the game, read and discuss the cards with one another, and let us know what you think. We'll analyse what you and other players have said about these issues and report our findings to the European Commission in the output from the BovReg project, which ends in February 2024.

How the game works

A Democs game has five rounds. In Rounds 1, 2 and 3, players get dealt different hands of cards which are read out and discussed. In the first round everyone is given a single Story Card to read out to the group. In the Rounds 2 and 3, players are given a hand of Information Cards and Issue Cards, respectively. Each player is asked to look at his/her hand of cards and select two that they think are most important or interesting. They read them out to the group, say why these interest them, and place them on the table. The group can comment and discuss, as you go round.

As the discussion develops, certain topics will have come out. One or two of the Story Cards might be useful, but you don't have to follow these. It's entirely up to the group. In Round 4, the dealer encourages players to gather their ideas into opinions, questions or statements which they would like to make as a group, forming the cards into clusters. Each statement gets written down on a cluster card. You can have several. In the final Round 5, each player is asked to vote on individual voting sheets on questions about cattle breeding, and are invited to give their reasons, in their own words. The dealer also invites the group to fill in a feedback form

Filling in the cluster card information and voting sheets can also be done online (see link below). After the game, the dealer sends the cluster cards, voting grids and feedback form to **ann.bruce@ed.ac.uk**. There is a form for players to give their consent for the outputs to be analysed and reported.

Kit contents

One set of instructions (which you're reading!)

Maincards

You can use these cards every time you play:

- 8 Story Cards (larger pink) Set S
- 36 Information Cards (green) Set A
- 40 Issue Cards (blue) Set B
- 3 Yellow Cards

Single-use items

These items get written on during the game. We've given you enough for one game, with a few spares. Extra items can be downloaded from the website for you to print if you need to. For example if you play a second game you will need up to 8 fresh copies of the voting grid, and more cluster cards.

- 4 Cluster Cards (dark blue)
- 8 individual voting/comment sheets
- some white blank cards
- 1 feedback form

Dealer's Instructions

Before the game – setting up

Spend a bit of time getting ready before the game starts. You need to:

- Read the instructions carefully to make sure you understand what happens in each round. Familiarise yourself with the types of cards and the timetable on page 8.
- Check the kit to make sure you have everything
- Find a table, and a few pens
- Lay out the elements of the kit on the table in the order they will be used
- If you intend to fill in cluster cards and votes on-line, open either website <https://edin.ac/3llgbhY> or <https://edin.ac/3XXkT86>

Top tips for dealers

- 1. No surprises.** Make sure all the players know how the game fits together so they know what to do in each round.
- 2. It's good to talk...** The purpose is to talk about the issues. Encourage people to say what they think and respond to each other's views (politely!) Make sure everyone gets the chance to speak and that no one dominates the rest. Encourage people to let others finish before they start to speak!
- 3. Don't try to lead the conversation.** Your role is to help everyone have their say and for the group to interact and learn together. Discussions may be quite wide ranging, but try to rein back the discussion if it's going a long way off the topic
- 4. Keep the game moving.** Let the talk flow until it's time to move on to the next round, and each time explain what the players should do in that round. If you think you'll struggle with time, set an alarm to ring when each round should end.
- 5. Timing.** Resist the temptation to have long discussions on the Story cards. The main discussion should develop in Stage 3 Issue Cards. In good time, let the group know they are expected to fill in Cluster Cards and explain how these work

Basic Elements of the Game

Story Cards (Set S)

These are stories about some people and situations to do with cattle breeding. All of the people and the stories are fictitious, but they are based on real issues which have arisen, or might be envisaged in the future.

Information Cards (Set A)

These are basic facts about cattle production and breeding, genomics, welfare, climate, environment and genome editing. These come from experts and reliable sources of information.

Issue Cards (Set B)

These are a range of views and opinions on ethical and social issues to do with cattle breeding. Some things you may agree with; some you may not. They're here to make you think.

Cluster Cards (can also be written online)

These are to record statements the group wishes to make and the cluster of relevant cards. You can write directly on these.

Blank Cards

If anyone thinks of something important that's not included, they can write it down on a blank card.

Yellow Cards

If anyone is getting confused or feels someone's hogging the discussion or going off at a tangent, play a yellow card. The Dealer will then stop the game and sort things out.

Voting Sheets (can also be written online)

There are individual sheets on which each person is asked to vote on questions about cattle breeding, and if they wish to, to give their reasons in their own words.

Feedback Form

So that we know who and where your results have come from, what you thought about the game, and what could be improved.

How to play the Game

Introduction

Before you start, it's important that everyone knows the basic rules of the game. First of all, the dealer should explain the basics of the game. Read out the paragraph below on 'What is This Game About?' and pages 1 and 2 about cattle breeding. Then read out the conversation guidelines below and check that everyone is happy with them. Next, the dealer should explain what each of the sets of cards are and what they are for. You can use the table on page 8.

What is This Game About?

This Democs game has been created so that members of the public like you use sets of cards to learn about what's involved in modern cattle breeding, and consider its ethical and social issues. By working with the Story cards, Information cards and Issue cards, you can explore these questions, come to your opinions as a group, and also vote individually on different options. It will examine some questions you may have thought about before, but will probably raise some you haven't. This is an opportunity to learn and discuss.

Conversation Guidelines

- We are all equal – one person one voice/vote
- Your view matters – especially if you're the only one that holds it
- You have a right to be heard – but so does everyone else
- Listening is as important as speaking – so work at understanding as well as being understood
- Find common ground – look for where you agree
- Don't worry if you are surprised or confused – it might mean that you are learning something new.

Timetable – 90 minute version

Intro – 5 minutes

The dealer explains what Democs is about reads out 'What is This Game About?' (p.7), the conversation guidelines (p.7), and tells the group what each type of card is for. The dealer reads out pp.3 & 4 about cattle breeding.

Round 1: Stories – 10 minutes

Players use the **Story Cards** to introduce some of the issues about cattle breeding and its wider context, through people who are imaginary but facing plausible situations.

Round 2: Information – 15 minutes

Players are dealt a hand of **Information Cards** about cattle breeding. They choose two that interest them, to share with the group. This starts to assemble a shared knowledge 'bank'.

Round 3: Issues – 15 minutes

Players select from the **Issue Cards** in the same way, opening up ethical and social questions that they think are important, these cards adding to the knowledge 'bank'.

Round 4: Creating Clusters – 30 minutes

The group discusses the topics that are beginning to emerge, linking cards they have chosen in the previous two rounds into clusters. Each issue is made into a statement or question, written on a **Cluster Card**.

Voting and Feedback – 15 minutes

Players vote individually on questions about cattle breeding, on individual Voting Sheets and are also invited to say why in their own words.

Dealer and Players also fill in the feedback form.

The timings add up to 90 minutes. If you have longer, please increase the timings. If you only have an hour, players select only 1 information and issue card each.

Round 1 - Story Cards

Now you've explained how the game works, the first round is a set of stories which introduce the subjects of cattle breeding, as seen through various imaginary people and situations in cattle breeding or who are affected by it.

Deal out the story cards to each player.

This is where each player is given a story to help them think about the important issues around cattle breeding. Tell them that the people and the stories are all **fictitious**, but that the situations portrayed are either real ones, or ones which could be envisaged happening in future. Some of the technology described in the stories is still future, but a lot of it is already happening.

Shuffle the pink story cards and give one to each player. (There are 8 of these. If you have less than 8 players, ask if some would read out more than one card.) Each card ends in a dilemma.

In turn, ask each player to read out their card. When they have read it out, if they want they can say what they think about it and then other players can respond. But stick to time.

The players are not expected to 'role play' the card they have been dealt. But if anyone is very unhappy with reading their card, they can swap it for one of the spares (if there are any), or with one of the other players if both people agree. Ask each player to put their story card in front of them, face up, once they have read it out.

Round 2 – Information cards (Green)

Round 2 is the first of the main parts of the game where players gathering and discuss information and issues about the topic.

Shuffle the green information cards and deal them all out to the players. It doesn't matter if not all players have exactly the same number of cards.

Ask each player to read their hand of cards to themselves, and to pick the two most important cards from their hand. This could be because it is :

- Relevant to the dilemma on their story card
- Interesting or surprising
- Something they strongly agree or disagree with

Once they've chosen their two cards, set the rest of the cards to one side, but you may want to refer to them later in Round 4.

Ask players to take it in turn to read one card out loud to group and explain why they chose it. Once a player has finished reading the card out, the player puts the card down face up next to their story card. Other players can say something in response if they want to. Each player should read 2 cards, so you need to go around twice. Allow discussion to happen but keep an eye on the time. If time is short, read only one card per player.

Round 3 Issue cards (Blue)

Do exactly the same thing with the blue Issue Cards, deal players a a hand of cards, and let them choose and read out two cards, place them on the table, and let discussion develop.

Round 4 – Making Statements as a Group and Creating Clusters of cards

After about 15 minutes discussing Issue Cards, introduce the Cluster Cards, on which the group are asked to make statements about the issues they have been discussing. Encourage the group to identify their main themes of interest as they discuss, and be ready to write these down. We've found 3 ways to do this.

i). If your group has already identified some issues, use those as your themes. In the middle of the table you will have a collection of Information and Issue Cards chosen by the players and the Story Cards. Look amongst these for cards relevant to each theme, and cluster them together. ii). An alternative is to start with the cards on the table, to cluster the ones that seem to belong together, and create a theme from them. iii). A third way is to start with one (or more) of the Story Cards and look for other cards that help tackle the dilemma on the story card.

For each chosen theme, now decide together on a statement you would like to make that expresses your views about it, and write this on a Cluster Card. It's entirely up to the players to decide what they write. Look for consensus as far as possible, but if opposing opinions come out, then these can both be given, perhaps on separate cluster cards. Encourage the players to take their time so that everyone is happy with the cluster card.

The **Cluster Card** is in three parts.

- Decide a **Title** for the cluster and write this in the first space.
- Then the group should come up with a one or two sentence **Statement**, and write this in the second space on the card. This might be a definite opinion, or it might be an unresolved question or dilemma. Try and make the statement as clear as possible so that we understand exactly what you mean.
- Thirdly, write on the bottom of the card the **Card Numbers** of all the cards you have used to make this cluster. This is so we have a record of which cards were used, which is used in our analysis.



You can also **Fill in Cluster Cards online** (until Feb.2024) at:
<https://edin.ac/3llgbhY> or **<https://edin.ac/3XXkR86>**
and follow the link : *Fill in Cluster Cards*

We encourage you to create several cluster cards to reflect the themes issues you have discussed, if you can. Follow the same procedure in each case. It's perfectly OK to use any card in several clusters. If the players think of things that are important, but which aren't on any of the cards, they can write them on a blank card and add them to the clusters.

Cluster cards are important because they allow you to tell us what you think as a group, in your own words. These opinions and the list of cards you selected both become useful data when we come to analyse the results of all the games. The final Round 5 you can give your views as individuals, which are also valuable data for us.



Round 5 - Voting Sheets

In this last round, players are asked to vote on the Voting Sheets. Pass one Voting Sheet to each player, on which they cast their votes. Unlike the clustering, which is a group exercise, each person has their own sheet to fill in, and each votes as an individual. Point out that they should fill out both sides.

Vote A: Cattle Breeding Traits (front side of sheet)

Each player is invited to vote on the importance of 5 traits that could be improved breeding. Each player puts 1 cross in each column to show their opinion, then ranks them in order of importance: (1 lowest, 5 highest). Invite them also to write in their own words why they think so, in the big box underneath the voting area, if they wish to do so.

Vote B: Cattle breeding ethical questions (back side of sheet)

Each player is invited to write their opinion on three questions

Vote C: What price are you willing to pay?

Players are asked how much more they would be willing to pay (if any) for 2 beef and 2 dairy products, one everyday food, one special, where the cattle had been bred for various improvements.

You can also Fill in Cluster Cards online (until Feb.2024) at:

<https://edin.ac/3l1gbhY> or **<https://edin.ac/3XXkR86>**

and follow the link : *Fill in Voting Sheets*

At the end

Thank everyone for taking part and ask them to **help you fill in the feedback form.** The form asks for the date and place, a name for your group, age cohort and gender so we know which game this was when we analyse the results. It also asks if This gives people the chance to say what they thought about the game. If you have not filled the cluster cards, voting sheets and feedback form online, scan them and send them to **ann.bruce@ed.ac.uk** If you cannot scan them, email us to arrange sending them by post.

Copies of the game and cards are downloadable free from:

<https://edin.ac/3llgbhY> or <https://edin.ac/3XXkR86>

These websites also enable you to fill in your results online.

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Further information about the BovReg project : www.bovreg.eu

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About other Democs games:

www.playdecide.eu and www.neweconomics.org