

Educated Decisions for Dairy Cattle Breeding in Pakistan

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Breeding by definition

- the mating and production of offspring by animals.
"the flooding of the rivers is a trigger for breeding to start"
- the good manners regarded as characteristic of the aristocracy and conferred by heredity.
"that's the kind of modesty you get from good breeding"

Institute for Energy and Environmental Research
For a safer, healthier environment and the democratization of science

Basics of Nuclear Physics and Fission
A basic background in nuclear physics for those who wish to start at the beginning. Some of the terms used in the text can be found in IAEA's glossary.

E. Fertile Materials
To obtain plutonium-239 and uranium-233 in amounts useful for nuclear energy production, they must be manufactured from materials that occur in relative abundance. Plutonium-239 is produced from reactions following the absorption of a neutron by uranium-238. Uranium-233 is produced by neutron absorption in thorium-232. Uranium-238 and thorium-232 are called **fertile materials**, and the production of fissionable materials from them is called **breeding**.

Animal breeding
controlled propagation of domestic animals in order to improve desirable qualities

Animal breeding, controlled propagation of domestic animals in order to improve desirable qualities. Humanity has been seeking to domesticate animals to better suit human needs for centuries. Selective breeding involves using knowledge from several branches of science. These include genetics, statistics, reproductive physiology, computer science, and molecular genetics. This article discusses the basic principles of how populations of animals can be changed by application of these principles, and a brief discussion of molecular genetics, immunogenetics, and newer reproductive techniques is included. The fundamental biological principles underlying animal breeding are discussed in the articles heredity and animal reproductive system.

Animal breeding
From Wikipedia, the free encyclopedia

This article is about breeding of animals by humans. For breeding of animals in the wild, see *Breeding in the wild*. For other uses, see *Animal breeding (disambiguation)*.

Animal breeding is a branch of animal science that addresses the evaluation (using best linear unbiased prediction and other methods) of the genetic value (estimated breeding value, EBV) of livestock. Selecting for breeding animals with superior EBV in growth rate, egg, meat, milk, or wool production, or with other desirable traits has revolutionized livestock production throughout the entire world. The scientific theory of animal breeding encompasses population genetics, quantitative genetics, statistics, and heredity molecular genetics and is based on the pioneering work of Sewall Wright, Jay Lush, and Charles Henderson.

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Chapter 1: Introduction to animal breeding

In this first chapter the history of animal breeding is presented. The importance of selection by nature and important aspects of the domestication process will be described. Mainland mammals create breeds accompanied with artificial selection 250 years ago. Nowadays, breeding of high productive farm animals, like cattle, pigs and poultry is in the hands of multinational companies which invest a lot of money in state of the art breeding programs. The breeding of sheep, goats, horses and companion animals, as well as the dog is based on individual breeder collaboration in the setting of a herd book or a breeder's association. Animal breeding is among of the engineering of animals by changing their genetic abilities for important traits. These traits are determined by the requirements and wishes from the society which might change over time. Animal breeding is highly influenced by research and developments in population-, quantitative- and molecular genetics. Sometimes, unexpected negative effects of animal breeding are observed that require adequate correction. A breeding program will be presented here as a circular activity. Each generation, the program starts with formulating the breeding goal and ends with a critical review of the results obtained in the next generation. The evaluation might lead to a reconstituting of the breeding goal for the next round of selection.

Animal breeding is aiming at the improvement of animals by changing their genetic abilities for important traits. These traits are determined by the requirements and wishes from the society which might change over time. Animal breeding is highly influenced by research and developments in population-, quantitative- and molecular genetics.

animal breeding

Definition:
The practical application of genetic analysis for the development of lines of domestic animals suited to human purposes.

The practical application of genetic analysis for the development of lines of domestic animals suited to human purposes.

Textbook animal breeding Animal breeding and genetics for BSc students

Author: Kai Oldenbroek and Liebeth van der Waag, 2014.
Centre for Genetic Resources and Animal Breeding and Genomics Group, Wageningen University and Research Centre, the Netherlands.
Groot Kranenburg

Definition
Animal breeding involves the selective breeding of domestic animals with the intention to improve desirable (and heritable) qualities in the next generation.

https://library.wur.nl/WebQuery/wurpubs/524548

Genetic improvement (animal breeding) is based on the principle that the products (milk, meat, wool, etc.) and services (e.g. transport, draught power or cultural services) provided by animals are a function of their genes and the environmental influences that they are exposed to. Improvement can be achieved by selecting genetically superior animals to be the parents of the next generation. "Genetically superior" means superior in terms of a particular set of characteristics, which usually include productivity in the environmental conditions expected in the future, but should also consider traits such as fertility, disease resistance or longevity that relate to costs of production.

Comparative study of sperm washing and sorting methods after cryopreservation. Influence on sperm and mitochondrial structure, motility and fertilization

Another sperm separation method is based on the self-propelled movement of sperm. In this technique known as migration method, the sperm motility is an essential prerequisite. The most commonly used technique is the classical swim-up migration method. This method is based in separation by using the active sperm movement from an injected sperm suspension below a medium during an incubation period, typically around one hour. In comparison to density gradient centrifugation methods, this technique provides lower recovery rates of motile spermatozoa due to the many layers of sperm in the lower levels of the pellet that may block the possibility of reaching the

EFFAB
European Forum of Farm Animal Breeders

What is Animal Breeding?
Farm animal breeding is the activity in farm animal production providing the next generation of farm animals. Animal breeding ensures a continuous improvement of farm animals, generation after generation.

A self-migration method for preparation of sperm for in-vitro fertilization

Abstract
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Crossbreeding

Definition
noun
The act or process of producing offspring by mating purebred individuals of different breeds or varieties

Supplement
Crossbreeding is defined as the process or the act of producing offspring particularly through mating two purebred individuals but come from different breeds, varieties, or even species. When it is usually done with the intent of producing offspring that would acquire desired traits of the parent lineages the process is specifically referred to as designer crossbreeding. This is commonly

Crossbreeding
Crossbreeding is the mating of two individuals with different breed makeups

Crossbreeding is one type of a larger class of mating systems called outbreeding. Outbreeding has the opposite effect of inbreeding and is defined as the mating of relatively unrelated individuals.

Objectives of Crossbreeding:

- combine all desirable characteristics of two or more breeds in one progeny type (complementarity) and
- exploit the hybrid vigor or heterosis (i.e. superiority in the performance of a crossed individual above the average performance of the two parents)

nondescript adjective

non-descript | \, nan-di-'skript |

Definition of nondescript

- belonging or appearing to belong to no particular class or kind; not easily described
// ... a nondescript mixture of styles in the worst possible taste.
— George Bernard Shaw
- lacking distinctive or interesting qualities: DULL, DRAB
// Their performance was disappointingly nondescript.

Nondescript Translation in Urdu
بمبھول، غیر معروف، ناشخص، جس کی تعریف یا خصوصیات کی تعیین دشوار ہو

Urdu Translation, Definition and Meaning of English Word Nondescript. You are seeing Nondescript translation in Urdu. You can find other words matching your search Nondescript also.

Cattle Breeding Options

- Within Breed Selection
- Breed Replacement
- Crossbreeding

I. Within breed Selection

- Performance recording and progeny testing being executed for Sahiwal breed in Punjab only (SCBS owns the breed)
- Artificial Insemination practised yet, supply of good semen not sustainable, more modern technologies (ET/IVF) awaited (LBSA regulates semen usage)
- Registered population not very big (small holders) yet, these compete with crossbreeds as well as exotics.
- Human resources to run such programs dwindling
- A Research Centre for Conservation of Indigenous Breeds available in Punjab

Sahiwal Cow Herd Book
A Herd Book
Brahmin Cattle Breeders Society Punjab
ISAB Punjab Enduring Environment Project

Sahiwal Sire Summary

Research Centre for Conservation of Indigenous Breeds
Jhang

Progeny Testing Program

Progeny Testing Program

- Calves born Stage 1
- Screening I Stage 2
- Screening II Stage 3
- Candidates Stage 4
- Proven bulls Stage 5

Planned matings (elite bulls and elite dams - good pedigree)

Purchased by ICBS (ISI) and SCBS jointly (Breed characters and growth)

Screened by a technical committee at SRU (semen donation, semen characteristics, growth)

Genetic selection using pedigree, progeny and all other information (EBV)

Selection for use in herds (avoid inbreeding etc.)

Progeny Testing Program

- Calves born Stage 1
- Dissemination Stage 2

Genetic Progress = Accuracy X Intensity X Variance / Generation Interval

Genetic Improvement

Milk Yield (litres)

1900 1920 1940 1960 1980 2000 2020

Genetics (Bull selection) and Genomics

National Centre for Livestock Genomics
(NCLBG)

1. KP Agri. Uni. Peshawar
2. Uni. Poonch Rawlakot (AIK)
3. PMAS Arid Agri. Uni. Rawalpindi
4. Uni. Agri. Faisalabad
5. Cholistan Uni. Vet. Animal Sci. Bahawalpur
6. Sindh Agri. Uni. Tandojam
7. Genome Res. Centre HEJ Res. Inst. Chemistry Uni. Karachi

Non-descript issue

- Too many, burden on the economy?
- No one owns them, can be used and misused?
- Describing these locally adapted animals – not a priority area?
- Color of the animal is the most important single feature – these fit into breed definitions?
- Crossbreds are described or undescribed – not even an issue?
- With poor farmers having no role in policy making, sector development?
- No institution responsible for taking care of them?

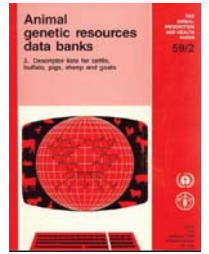
Breed

The breed concept originated in Europe during the 18th century. In the developed world, breeds are recognized as "intra-specific" groups that share certain characteristics that set them apart from other groups and there are formal organizations for each breed. In the developing world there are few formal organizations but distinct strains or breeds have developed due to a combination of traditional breeding objectives and cultural or geographic separation. Populations for which the original owners have a name should be accorded breed identity.

Ilse Kohler-Rollefson. 2004. Farm Animal Genetic Resources – Safeguarding National Assets for Food Security and Trade. GTZ. <http://www.gtz.de>

Either a sub-specific group of domestic livestock with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species, or a group for which geographical and/or cultural separation from phenotypically separate groups has led to acceptance of its separate identity.

(FAO, 2007)



<http://www.fao.org/3/ah760e/ah760e00.htm>



Texas Longhorn

Having color description to include "all the roans, brindles, speckled patterns, linebacks, grullas, reds, yellows, oranges, browns, and blacks" <http://doublehellranch.com/color.html>

"The colors were more varied than those of the rainbow. There were brindles; blues – mulberry blue, ring-streaked blue, speckled blue, grullas – so named because they had the hue of the sandhill crane, also called mouse-colored or slate duns, washed-out and Jersey creams – all hues of "yellow" browns with bay points; blacks, solid and speckled with white, brown and red; whites both clearly bright and dirty speckled; many sabinas, red and white peppered; reds of all shades except the dark richness characteristic of the Hereford, pale reds being very common; paints of many combinations. The line along the back was common, as in the mustang breed. Coarse brown hairs around the ears were characteristic. The shading and combination of colors were so various that no two were alike"

<http://www.butlertexaslonghorns.com/history/colorofcattle.html>



Feb, 2021 near Madrissa (Bahawalnagar)

Dec, 2020 near Headfard (R Khan)

March, 2021 near Chishtian (Bahawalnagar)

Jan, 2021 near FortAbbas (Bahawalnagar)



Feb, 2021 near Channan Pir (Bahawalpur)

Breed

Either a sub-specific group of domestic livestock with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species, or a group for which geographical and/or cultural separation from phenotypically separate groups has led to acceptance of its separate identity.

(FAO, 2007)

Improving the existing non-descripts

1. Have unique genetic variations and are proposed to possess "thermometer gene" that can help them withstand higher temperatures and therefore could help farmers cope with the effects of climate change in future.
2. Are more resistant to diseases such as mastitis, have better resistance against FMD and internal parasites.
3. The only option for exporting beef to gulf countries.
4. The Eid-ul Azha high-priced sacrificial animals also come from these non-descripts both as purebred or crossed with Brahman or other beef breeds.
5. The A2A2 argument

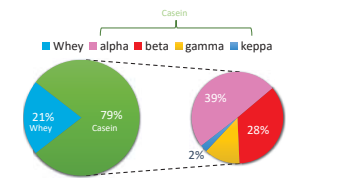


The A2A2 argument

Milk composition analysis, per 100 grams

Constituent	Unit	Cow	Goat	Sheep	Buffalo
Water	g	87.8	88.9	83.0	81.1
Protein	g	3.2	3.1	5.4	4.5
Fat	g	3.9	3.5	6.0	8.0
Lactose	g	4.8	4.4	5.1	4.9
Cholesterol	mg	14	10	11	8
Calcium	mg	120	100	170	195
Energy	kcal	66	60	95	110

Protein components of cow milk



<http://en.wikipedia.org/wiki/Milk>

Opting for Crossbreeding

- Non-descript cattle should be converted to 'descripted cattle' and indigenous breeds should be improved through performance recording (and genomics)
- Breeds such as Cholistani need new definitions according to ground reality otherwise it can be depleted easily leaving no choice for keepers
- Crossbred semen should be produced to maintain exotic level of inheritance at a desired level
- Mass level crossbreeding without sustainability options (development of new breeds) cannot be endorsed just for the sake of crossbreeding / "migration method"
- Technical capacity of Holstein farmers need to be improved so that their choices are worth the money spent
- We must produce animal geneticists otherwise imposters will continue to flourish

If We Had Options!

- Production and propagation of genomically selected Sahiwal and Cholistani bulls
- Genetic improvement of indigenous breeds using elite bulls and in-vitro fertilization technology
- Eradication of food and mouth disease from Pakistan to enhance livestock exports
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Lets take
educated decisions

Thank You