

INSIDE THIS ISSUE:

- Report: Goats in Colombia
- Report: Situation of Goats in the Czech Republic
- Scaling-Up Successful Practices on Sustainable Pro-Poor Small Ruminant Development
- Report: Goats in Uruguay
- World Bank -- World Development Report 2015: Mind, Society, and Behavior
- Status of genetic diversity of U. S. dairy goat breeds
- Proceedings of the First Asia Dairy Goat Conference, April 2012
- Phenotypic Characterization and Strategies for Genetic Improvement of WAD Goats under Backyard Systems
- Supporting livelihoods and building resilience through peste des petits ruminants (PPR) and small ruminant diseases control



IGA Newsletter

December 2014



Report: Goats in Colombia

Written by Venus Appel, IGA Country Representative, Colombia

The first goats to come to Colombia arrived with Spanish conquerors in the XVI century. The Spanish entered through the north Atlantic coast bringing with them goat breeds such as Granadina, Malagueña, Serrana, and Andaluza. After more than 400 years of adaptation, a creole breed in the northern region, called the “cabra santandereana” has evolved. In the state of Santander, goats inhabit altitudes between 550 and 1800 meters above sea level, where vegetation consists mainly of small shrubbery, stubble, cactus and the ambient temperature falls between

Continued on Page 2



Creole goat - Santandereana

Report: Situation of Goats in the Czech Republic

Written by Zuzana Sztankoova, IGA Country Representative, Czech Republic

In the Czech Republic, goat breeding is focused mainly on milk production and its subsequent processing on dairy products (cheese, yogurt, and kefir) by the breeders. Although, goat breeding has a rich history and tradition in the Czech Republic, at present, goat breeding is little enlarged in the Czech Republic (Table 1).

Table 1. Total numbers of goats and female in the Czech Republic by period from 1999 to 2014.

Year	Total number	Of which female
1999 ¹	33 900	29 142
2000 ¹	31 988	27 989
2001 ²	14 306	24 764
2002 ²	13 574	12 181
2003 ²	12 779	7 998
2004 ²	11 912	8 012
2005 ²	12 623	8 256
2006 ²	14 402	8 771
2007 ²	16 222	9 292
2008 ²	16 627	10 401
2009 ²	16 674	11 065
2010 ²	21 709	13 609
2011 ²	23 263	14 028
2012 ²	23 620	15 030
2013 ²	24 042	15 063
2014 ²	24 348	15 301

¹ number of animals to 1. 3. a given year

² number of animals to 1. 4. a given year; From 1. 4. 2004, " hobby activity of population" – animals are not included into statistics

Total number of goat has increasing trend by each year and we postulate, that total number of goat will increase in the future as well as

Continued on Page 10

Report: Goats in Colombia *(Continued from Page 1)*

16 and 24 degrees centigrade with an arid semi-desert climate. Currently, this creole goat is in the process of being registered as a pure breed. The majority of the goat population in the country is still located in the North. A report from the ICA (Colombian Institute of Agriculture) in 2013 showed that there are 1,114,874 goats in Colombia, with 79% in the state of La Guajira. In La Guajira, goats are mainly owned by the Wayúu indigenous people. For the Wayúu, goats have been an important part of their tradition for more than 400 years, as a food source and an indicator of social status.

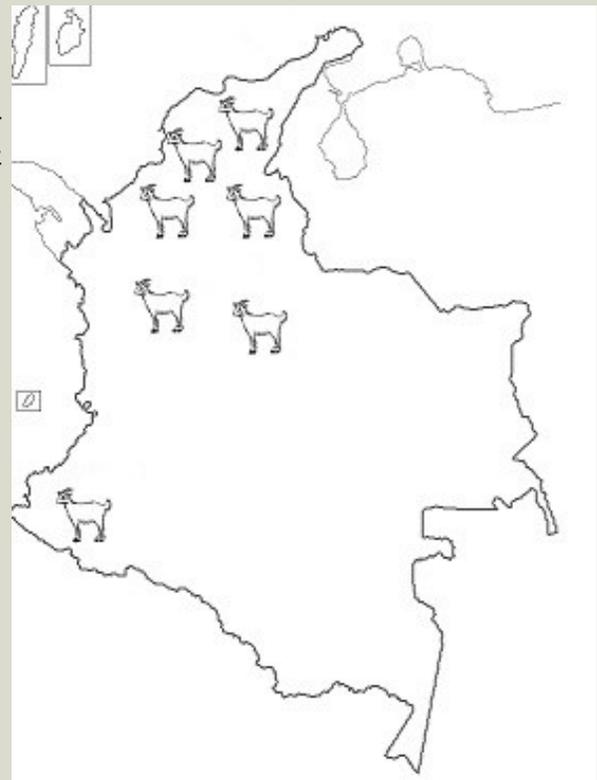
The goat production industry is relatively young in Colombia, when compared to others like the cattle industry. Specialized goat breeds started to be imported to Colombia in the 1980's from the United States and Europe. ANCO (the national association of goat and sheep producers) currently recognizes the following goat breeds in the country: Alpine, Anglo-nubian, Saanen, Toggenburg, Boer and La Mancha. In general, most goat farms are small and goat products are used for the household or small scale commercialization. The market for goat products is weak except in the North of the country. States in which the goat industry is growing include: La Guajira, Magdalena, Atlántico, Bolivar, Sucre, Santander, Norte de Santander, Cesar, Cundinamarca, Boyacá, and in more recent years Nariño, Putumayo and Antioquia.

Colombians recognize goat milk for its medicinal and nutritional qualities and consume it occasionally. Meanwhile, goat meat is mainly consumed in the Atlantic coast where it is a culturally important gastronomy product. There is a lack of formal milk collection systems and slaughterhouses for goats in the country. Goat producers lack adequate information about effective sanitary and productive management techniques. However, various universities have started research and training programs for goat producers.

The Colombian government established a national plan to strengthen the sheep and goat sector in 2007. At present the Ministry of Agriculture and Rural Development has announced its interest and support for the sheep and goat sector because there is great potential for exportation and as a mean to tackle malnutrition in the population. However, there is still insufficient information about goat production systems, consumption of goat products, imports, exports, prices and others.

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Main goat locations in Colombia

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ICA. Censos 2013. <http://www.ica.gov.co/Areas/Pecuaria/Servicios/Epidemiologia-Veterinaria/Censos-2013.aspx>

Fundación Alpina. Experiencia fortalecimiento cadena ovino caprina con comunidad Wayúu para la seguridad alimentaria y nutricional-La Guajira

Scaling-Up Successful Practices on Sustainable Pro-Poor Small Ruminant Development

A study undertaken by IGA and financed by the IFAD

Executive Summary

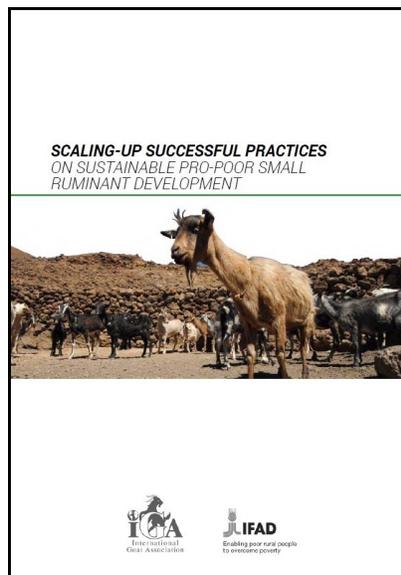
Goat raising is considered by many governments, developing agencies, non-governmental organizations (NGOs) and research centers an effective pathway out of poverty for smallholder farmers in developing countries and many projects have been implemented to develop the sector. After decades of investment projects, there are now evidences that goats could be instrumental in improving the livelihood of the rural poor, mainly because goat production systems are based on the utilization of natural resources, local knowledge and require limited financial investments.

Smallholder producers, particularly women and youth, are currently facing some urgent challenges and global changes, goats can help them build a sustainable future (e.g. food security, increasing demand for high quality protein, climate change, etc.). Goat development represents a valuable low inputs solution contributing to the achievement of the Millennium Development Goals (MDG). Unfortunately, references to good practices and lessons learned in scaling up successful projects are still very scarce and many projects experienced unsuccessful results.

In this study, a comparative analysis of several significant cases worldwide has been undertaken to identify successful factors and practices leading to sustainable pro-poor small rumi-

nant development projects, including dairy, meat and fiber commodities.

A number of case studies have been prepared by using the “Knowledge Harvesting” methodology, exchanges and interactions with sector’s experts and stakeholders involved in the several projects, the context of each case and the actors system have been described as well as the main production systems. For each case study, strong and weak internal points, external opportunities or threats (SWOT



analysis) have been identified and discussed during a workshop organized in the context of the International Conference on Goats held in Las Palmas de Gran Canaria (Spain) in September 2012.

In a dedicated section of this study, a detailed description of “how to design” projects for goat development has been presented. Different scenarios have been analyzed giving specific recommendations building on good

practices and lessons learnt, to respond to different social and economic situations; emphasis is given to appropriate methodologies for monitoring and evaluating the proposed models.

In order to respond to the growing demand from governments, developing agencies, NGOs, etc. to design Goat Value Chain development projects, the study includes a Goat Value Chain Toolkit which has been prepared on the basis of field experiences to support operationally the project leaders. The importance of designing business planning has been recognized and a cost-benefits analysis has been prepared for each case study from FAO Investment Center.

The authors are confident that the study provides insightful steps and tools for project designers and implementers, which will allow the design of more targeted, inclusive, gender balanced, economically viable, sustainable projects by minimizing risks of failures.

This study revealed that wherever goat production is a viable opportunity, investing in this sector could be very profitable even with minimum but targeted interventions and many rural households could realistically get out of poverty. In fact, with well-designed and monitored projects, the economic analysis has shown that an investment return of more than 40 % would not be rare.

[**Download the full paper**](#)

Report: Goats in Uruguay

Written by Hugo Asti (IGA Country Representative, Uruguay), Gabriel Palou, and Aurora Ferreira

Dear members of International Goat Association,

First of all, we want to thank you for the opportunity to send a summary of goat breeding in Uruguay and our activity in this field. As you know, Uruguay belongs to MERCOSUR, an economic, custom, political and social project which also includes Argentina, Brazil, Paraguay, Venezuela, and attended also by Chile and Bolivia. In this region the total number of goats is about 20,000,000 with only 10,000 belonging to Uruguay.

Most breeders began with poor or no knowledge in small family farms of no more of 20 ha. in the early 1980s, with few animals, mostly saanen, anglo-nubian, pardo-alpines. As a family enterprise they have little or no profit, and the milk was sold raw with no sanitary control by authori-



ties; the same with goat meat. Some developed small cheese factories. In 1992, the producers started to organize their work and they founded the Uruguayan Goat Breeders Association. Since then, there has been a slow but constant increase, both in breeders and brands of cheese, with the aim of bring new products to the market. At the same time began the teaching activities and courses to improve quality and innocuity of milk and cheese, from parlor to factory. There has been a constant increase since

2002 in all fields related with breeding plans, sanitary status, genetics, feeding reserves, market strategies, technology, parlor installation and animal care.

In Caprino Alto, we began our project in 2004, with a 10 ha. farm and 65 nubian goats. Our main goal and vision was to create an integral chain or system of management starting at the parlor and finishing at the client. This appeared to be a huge enterprise since we had such a small budget.

We love goats, and sometimes this was the only thought that kept us working hard with our families. This idea also implies the selling programs and distribution. It took 3 years to reach the supermarkets and gourmets little markets. As you know, some people think that goat milk and cheese has a hard and ugly flavor. Nothing is further from reality. It depends mostly on the milk quality and technique of processing milk and cheese making process. We have worked since 2007 in checking the

Continued on Page 5



Report: Goats in Uruguay *(Continued from Page 4)*

preferences in organoleptic properties of cheese. This means smell, visual aspect, packing, flavor, palatability, final mouth taste. We conclude that Uruguayan consumers prefer a smooth smell, and smooth flavor. Not too acid and easy to eat. It depends also of what kind of cheese being made. It is not the same if you use genetic rennet and ferments or natural, also if it is powder or liquid. Another factor and no less important is the quality of milk, which must be premium. We process our milk and buy from others farmers with very tight controls in temperature, density and acidity. Also, we send samples to be cultured of each milk received. In the beginning, production was 2,000 L a month, in the last 3 years it raises to 15,000 L. The market is growing so well and we are very convinced that is going to keep in this way.

Another important principle is to have a business plan under permanent analysis, which requires teamwork and permanent study of reality and trends with innovation always in mind. At present we manage the only Uruguayan factory to process and



make thermal treatment of goat milk and since 2012 we began to sell fresh milk. Starting with just 50 L a week, we now process about 600 L. The budget is an important factor, since our investing power is low. Nevertheless, we are optimistic that sales will increase, and will bring economic stability and further profit.

We learned many important concepts in the last IGA meeting in Canarias, and another point is the exchange generation. In Uruguay, the migration

to the cities also is a big problem to solve. We work together with governing agencies to bring better conditions and economic profit to producers in an effort to keep farmers on their land, unfortunately much more work is needed.

This is our first report and we will keep in touch with IGA members and goat farmers. Looking forward to see you soon, receive a big hug from Uruguay.



World Bank -- World Development Report 2015: Mind, Society, and Behavior

The World Development Report 2015: Mind, Society and Behavior holds new insights on how people make decisions; it provides a framework to help development practitioners and governments apply these insights to development policy.

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Status of genetic diversity of U. S. dairy goat breeds

Written by C. S. Wilson, B. Krehbiel, and H. D. Blackburn

Genetic diversity underpins the livestock breeders' ability to improve the production potential of their livestock. Therefore, it is important to periodically assess genetic diversity within a breed. Such an analysis was conducted on U.S. dairy goat breeds and this article is an overview of that work. In March 2014, pedigree files were obtained from the American Dairy Goat Association (ADGA) in order to conduct a genetic diversity evaluation using pedigree information and assess how well the bucks in the National Animal Germplasm Program (NAGP) gene bank represent various goat breeds. NAGP is part of the U.S. Department of Agriculture. The primary function of the gene bank is to serve as a strategic reserve of genetic diversity for the livestock industry to use, particularly in the event of a local or national crisis such as rebuilding breeds after an epidemic. Additional material is in the gene bank for use by breeders and researchers for DNA analysis or reintroduction of genetics that are no longer commercially available. The NAGP gene bank currently includes more than 22,700 animals and 778,000 units of germplasm and various tissues. Of this collection, 409 animals

(9,657 units) are goats. Within the goat collection, 146 animals (1,900 units) are from dairy breeds and, within that, 73 animals (1,542 units) have semen stored.

Pedigree Evaluation

With pedigree information, various measures of genetic relatedness and diversity can be computed. For example, the genetic relationship between a parent and offspring is 0.5 since half of the offspring's genes came from each parent. Full siblings also have half of their genes in common by descent and a relationship coefficient of 0.5, while half siblings have a relationship coefficient of 0.25.

While these computations are basic, full pedigrees with many generations result in complex relationship values best computed by software programs designed to do so. Knowing the pedigree of animals also allows us to compute the inbreeding coefficient for each animal. How this average inbreeding level changes per unit of time for the breed is referred to as the rate of inbreeding (ΔF).

Since each breed has its own unique start date, which impacts inbreeding levels over time, comparing breeds based on birth year lacks usefulness. Therefore, animals were assigned a generation number so breeds could

be compared on the same basis.

Founder animals are defined as having both parents unknown and were assigned to generation zero. Then, subsequent generations were calculated as:

$$g = 1/2 (g_s + g_d) + 1,$$

where g_s is the generation number of the sire and g_d is the generation number of the dam.

Effective population size (N_e) is defined as the number of individuals that would generate the current rate of inbreeding in a randomly mated population. While there are several ways to compute effective population size, we selected and used the following formula:

$$N_e = 1/(2\Delta F)$$

Generation intervals (GI) were computed by regressing generation number on birth year.

Pedigree Analysis Results

Breed specific results are available on the NAGP website at: <http://ars.usda.gov/Main/docs.htm?docid=23140>. Between breed results are summarized here. Table 1 shows the inbreeding statistics for each

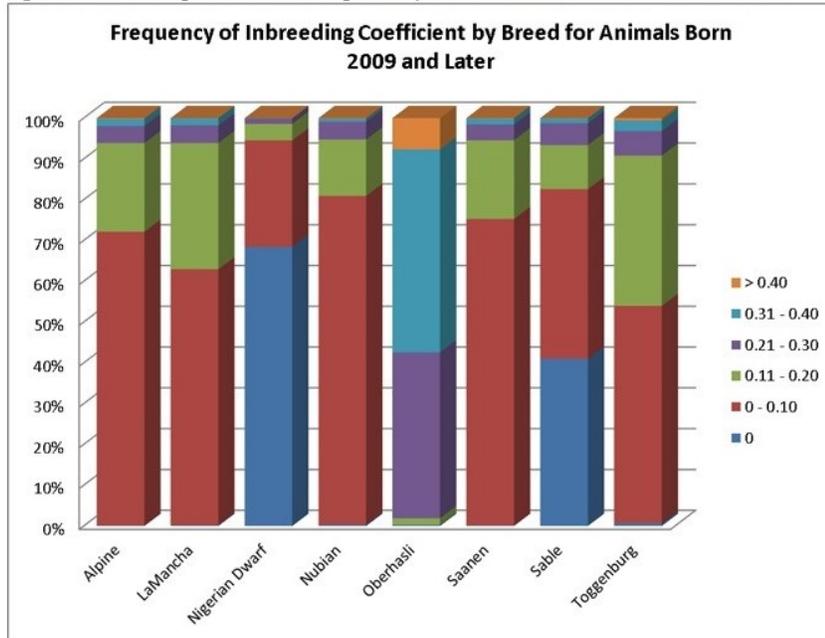
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Table 1. Inbreeding statistics for ADGA breeds, animals born 2009 or later

	Alpine	La Mancha	Nigerian Dwarf	Nubian	Oberhasli	Saanen	Sable	Toggenburg
Mean inbreeding (F)	0.090	0.103	0.017	0.058	0.313	0.084	0.049	0.115
F range	0 – 0.52	0 – 0.49	0 – 0.40	0 – 0.57	0 – 0.64	0 – 0.46	0 – 0.42	0 – 0.57

Status of genetic diversity of U. S. dairy goat breeds (Continued from Page 7)

Figure 2. Inbreeding coefficient categories by breed for animals born 2009 and later



is a large difference across the breeds, with Nigerian Dwarf having the most non-inbred animals and Oberhasli having the highest percentage of highly inbred animals. There are very few lowly related animals that can be used to reduce the inbreeding level within the Oberhasli breed. Using a buck to doe ratio close to 1.0 is a strategy that can be used to widen the genetic base and keep inbreeding levels lower than allowing a few males to dominate the breed. Nigerian Dwarfs have a shallower pedigree than the other dairy goat breeds. Computationally, inbreeding has not had much time to accumulate, leading to low inbreeding levels for this breed. The inbreeding levels are probably higher in reality since inbreeding was accumulating as the breed was established rather than as the herdbook was established. Molecular analysis to better establish a baseline inbreeding

level would be particularly useful for this breed. Because Sable has an open herdbook with the ability to use unrelated Saanens, breeders can easily introduce unrelated genetics to manage inbreeding levels.

Implications for Breeders and NAGP

Inbreeding can be part of a mating plan to establish or maintain characteristics of interest within a line, for example. Alternatively, and far more prevalent, is incidental inbreeding that happens over time when lowly related animals are mated and inbreeding slowly accumulates until all animals have some level of inbreeding. In the case of planned linebreeding, inbreeding can be used to fix (make homozygous) alleles for a trait, leading to a more uniform phenotype. All inbreeding, whether intentional or incidental, leads to more homozygosity and, eventually, a potential loss of lower frequency alleles

and thereby a loss of genetic diversity. The increase in homozygosity with inbreeding can also bring out deleterious recessives that were previously hidden in a population; this is known as inbreeding depression and can lead to reduced performance. Purging deleterious recessives is part of establishing an inbred line. While a uniform phenotype is desirable to the breeder and consumer, it also limits the ability to respond to market changes if the formerly undesirable alleles become preferred.

Breeders can use pedigree analysis and inbreeding calculations as tools to plan matings and predict inbreeding for their herd for future generations. One such tool is available on the ADGA website at: <http://www.adgagenetics.org/Default.aspx>. This excellent tool allows breeders to select a potential buck and doe for mating to see the inbreeding coefficient, pedigree, and Estimated Transmitting Ability of the offspring.

Developing a genetically diverse collection of dairy goat semen requires access to dairy goats for collection and/or semen contributions of previously collected bucks. Because artificial insemination is not as commercially established as with the dairy cattle industry, greater effort is required on the part of NAGP to obtain the samples needed for the gene bank. Figure 3 shows the status of dairy breed collections in the NAGP gene bank as a percent of the targeted germplasm and number of bucks collected.

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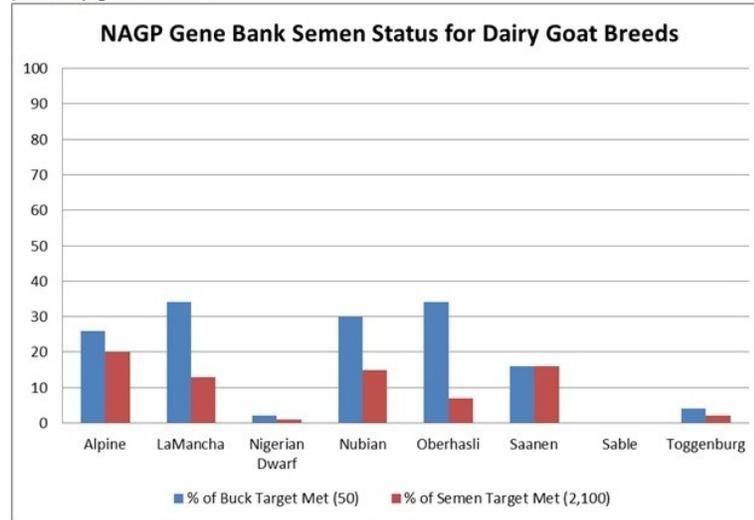
Status of genetic diversity of U. S. dairy goat breeds (Continued from Page 8)

The NAGP dairy goat collection is short of the targets for capturing genetic diversity across breeds, but this can be quickly reversed. Expansion of the dairy goat collection is necessary to develop a reserve of genetic diversity for worst case scenarios. We therefore wish to encourage breeders to work with us in identify existing cryopreserved semen or from bucks that may be collected in the near future to add to the gene bank. Information about NAGP can be obtained at: http://www.ars.usda.gov/main/site_main.htm?modecode=30-12-05-00. Donations can be arranged by contacting Carrie Wilson at carrie.wilson@ars.usda.gov.

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Figure 3. NAGP gene bank current semen status for target of 50 bucks and 2,100 units of semen per dairy goat breed



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Proceedings of the First Asia Dairy Goat Conference, April 2012



The goat was the first animal to be domesticated by humankind. The global goat population currently stands at 921 million, of which over 90% are found in developing countries. Asia is home to about 60% of the total world goat population and has the largest goat breed share of 26%. Goats play a vital socio-economic role in Asian agriculture, particularly for resource-poor people living in harsh environments. Non-cattle milk accounts for approximately 15% of the total milk consumption by humans worldwide. Asia contributes approximately 59% to world goat milk production and Asia's demand for animal products, fueled by increasing populations and growing disposable incomes, is increasing at a high rate.

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Report: Situation of Goats in the Czech Republic (Continued from Page 1)

number of female registered into breeding and into dairy performance.

Based on information from Czech statistic office, Table 2 report total number of goat, total number of female and female first time matted in period 2007 to 2014. Number of total female has increasing trends in flock, and number of female first - matted has stable equilibrium.

In the past, goat breeding had small scale character - most of the farms keep less than 10 goats - with prevailing single-purpose performance orientation to milk production. At present time, goat breeding starts to become

Table 2. Total number of goat, total number of female, and number of female first - matted in period 2007 to 2014.

Year	Total number	Total number of female	Female first - matted
2007 ¹	16 222	9 292	1391
2008 ¹	16 627	10 401	1522
2009 ¹	16 674	11 065	1320
2010 ¹	21 709	13 609	2 073
2011 ¹	23 263	14 028	2 138
2012 ¹	23 620	15 030	3 433
2013 ¹	24 042	15 063	2 864
2014 ¹	24 348	15 301	2 384

¹ number of animals to 1. 4. a given year

The WSH breed was developed between 1900 and 1930, mainly in Moravian regions, through the crossbreeding of local goats with Saanen bucks imported from Switzerland to improve milk production. The WSH is classified

which then produce their own replacements. Commercial herds are mainly stall-fed, with year-round housing and little or no grazing.

The BSH is classified in the Chamois group. From the period of about 1900 to 1960, coloured local goats of North Bohemia were improved through crossbreeding with German (Harz) and Swiss (brown Alpine) bucks. Commercial herds are smaller in BSH (15-70 dams) and use mainly seasonal grazing. At present, only natural mating is used, either by individual mating or by allotting bucks to a group of dams. Inbreeding is avoided for at least 3 generations.

Further goat breeds were imported to the Czech Republic in followed years: Anglo-Nubian (1988), Angora (1991) Cashmere (1992) and these have been included into milk performance re-

Table 3. Goat - breeding farms in the Czech Republic in 2014 (all farms and animals).

Number of goat in one farm	Farms (n)	%
1 to 10pc	5664	88.4
11 to 50	644	10.1
51 to 100	66	1.0
101 to 200	26	0.4
up 200	6	0.1
Total	6 406	100

mass production character. Today, there are 26 dairy farms over 100 animals and 6 dairy farms over 200 animals in the Czech Republic (Table 3).

The White short-haired (WSH) and Brown short-haired (BSH) goat is Czech national breed kept mainly for cheese and milk production. They are characterized by high milk yield, good fertility, and early maturity. The breeds were developed as separate populations starting from a common base of local rustic-type goats. In 1997, both breeds were enrolled as "potentially endangered" in the National Program for Conservation of Genetic Resources.

as being part of the Saanen group. About 30% of the purebred population is kept in individual households (1-3 dams), with performance recorded and selection applied according to the breeding objective of the breeders' association. These dams are mothers of breeding sires sold to large commercial dairy herds (50-500 dams),

Table 4. Number of buck registered into breeding by breed and year.

Breed	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
White shorthaired goat	160	182	156	190	146	90	81	76	82	97	118	77	90	104
Brown shorthaired goat	61	74	86	99	90	53	58	55	62	67	65	61	82	60
Boer	9	7	5	5	10	21	15	25	27	30	29	24	35	35
Anglo - Nubian	0	0	1	1	3	5	9	9	14	10	25	19	32	34
Dutch Dwarf goat												7	5	7
Valis Blackneck												2	1	0
Saanen												1	1	0
Total	230	263	248	295	249	169	163	165	185	214	237	190	246	240

Report: Situation of Goats in the Czech Republic (Continued from Page 10)

cording since 2001, 2202 and 2001, respectively (www.schok.cz). Table 4 displaying number of buck registered into breeding by breed and year.

It is expected, that total number of animals (goat and sire) will increase further due to the growing consumer interest in goat milk product (cheese, yogurt, kefir).

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Phenotypic Characterization and Strategies for Genetic Improvement of WAD Goats under Backyard Systems

Abstract

West African Dwarf (WAD) goats represent one of the predominant small ruminant breeds raised by resource-limited households in southern Nigeria as well as in the humid west and central Africa. This breed of goats is renowned for its adaptation to hot and humid environments, high fertility and prolificacy under backyard systems where they are raised almost with zero investment. On account of its contributions to household income and food security in southern Nigeria, there is the need for a detailed phenotypic and genetic characterization as well as the design of breeding strategies for its conservation through sustainable utilization. A critical challenge, however, is that there are no national breeding policies in most of the countries where WAD goats are raised.

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Phenotypic Characterization and Strategies for Genetic Improvement of WAD Goats under Backyard Systems

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Abstract

West African Dwarf (WAD) goats represent one of the predominant small ruminant breeds raised by resource-limited households in southern Nigeria as well as in the humid west and central Africa. This breed of goats is renowned for its adaptation to hot and humid environments, high fertility and prolificacy under backyard systems where they are raised almost with zero investment. On account of its contributions to household income and food security in southern Nigeria, there is the need for a detailed phenotypic and genetic characterization as well as the design of breeding strategies for its conservation through sustainable utilization. A critical challenge, however, is that there are no national breeding policies in most of the countries where WAD goats are raised. The objectives of this paper are to review literature reports on trait level information and estimates of genetic parameters for some economic characters of WAD goats and to discuss a potential breeding scheme for its conservation through sustainable utilization. The presentation shows that WAD goats represent a highly diverse population with particular relevance to qualitative and performance-related traits, reflecting the role of traditional institutions in the maintenance of animal diversity in local populations. A greater improvement programme involving dispersed open nucleus breeding scheme was discussed. The scheme involves backyard WAD goat units in villages as base populations and dispersed community managed schemes that produce a population of bucks only as nucleus units. Central issues such as the definition of breeding goals by farmers, as well as communal project ownership, are emphasized. The ultimate goal of the breeding programme is to create opportunities for community-based management of WAD goat genetic resources for the benefit of backyard goat farmers in the region.

Keywords

WAD Goats, Characterization, Trait Level Information, Genetic Improvement, Commercial Breeding

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<http://dx.doi.org/10.1016/j.ajpas.2014.09.001>

Supporting livelihoods and building resilience through peste des petits ruminants (PPR) and small ruminant diseases control

This present document is intended to share the Food and Agriculture Organization of the United Nations' (FAO's) position on PPR and small ruminant disease control and to outline the preliminary steps necessary for initiating regional approaches and later global initiatives while identifying appropriate partnerships to drive and implement the required activities.

Year of publication: 2013

Document Type: Book

Pages: 24

Job Number: AQ236

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Division: Animal Production and Health Division

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