



# **GOVERNMENT OF GRENADA**

**MINISTRY OF AGRICULTURE, LANDS, FORESTRY AND  
FISHERIES**

**FOOD AND AGRICULTURE ORGANIZATION (FAO)**

## **LIVESTOCK GENETICS RESOURCES REPORT**

**INCOMPLETE DRAFT**

**Prepared By: Augustine David  
Livestock Officer**



# **Draft Report on the State Of The Grenada's Animal Genetic Resources**

## **GENERAL INFORMATION**

The state of Grenada is situated at the southern end of the lesser Antillean island chain approximately 68 miles South West of St Vincent and about 90 miles north of Trinidad making it the most southerly island in the windward chain.

The country is divided into seven parishes with six towns. The capital city of St George is situated in the south western part of the country.

Grenada was colonized by the Arawaks in the first century; they were disturbed by another group of Amerindian called the Caribs. The first European to colonize Grenada were 200 Frenchmen in 1650, by 1654 the French completely exterminated the Carib Indians. The country changed hands between the British and French no less the 5 times.

The island nation was granted self-government in Association with Britain in 1967 and gained political independence in 1981.

## **Location**

The country is located:

Latitude: 11 degrees 58 minutes/12 degrees 13 minutes North of the Equator

Longitude: 61 degrees 20 minutes/61 degrees 35 minutes West of Greenwich

## **Area**

The area of Grenada is 133 sq. miles or 346 sq.km and contains a total of 86,500 acres or 34,600 ha of land

## **Population**

The preliminary report of the 2001 Census indicate a total population of 102,632 persons lives in the country which are broken down in Table 1 as follows:

Table 1:Country Population

PARISH	NUMBERS
Carriacou	6,081
St Andrew	24,749
St Patrick	10,674
St Mark	3,994
St John	8,591
St George	37,057
St David	11,486
TOTAL	102,632

## **PHYSIOGRAPHICAL FEATURES**

### **Physical Features/Grenada**

Grenada's structure is of volcanic origin and somewhat mountainous. Several extinct craters can still be seen. Of significance are Grand Etang Lake, Lake Antoine and Levera Lake. The principal peak, Mt St Catherine, rises in the northern half of the island to a height of 2756 ft above sea level. Other mountains in the southern interior include South East Mountain, Mt Qua Qua, Mt Sinai and Fedon Mountain. Except for the high mountains, most of the slopes are not excessively steep. There are also several out-standing beaches.

### **Soils**

Soils of Grenada have been studied in details by Vernon et al (1959). In Grenada the dominant soil formation factors are climate and topography. Climate is the most important single factor specifically differences in total annual rainfall and in the length of the dry season.

In some areas, the rocks are geologically young, and soils formed from such rocks have not had time to mature. In other areas, recent eruptions during historic times on St Vincent have added fresh volcanic ash materials to the old soils. This addition of fresh minerals is especially important in the wetter areas characterized by strong weathering and leaching of parent materials.

According to Ternan, et al (1989), the soils of Grenada are dominated by clay loams (84.5 percent), followed by clays (11.6 percent and sandy loam (2.9). The three major types of clay loam, which between them make up 77.8 percent of the soils.

### **Rainfall**

Grenada experiences a warm tropical climate. Rainfall in Grenada averages between 1,270 mm (50in) in the coastal areas and 4,060 mm (160 in) per annum in the mountains of the interior. The length of the dry and wet seasons varies greatly depending on location, but there tends to be a dry season from about January to May and a wet season from about June to December. About 75 % of annual average rainfall occurs during the wet season

### **Temperature**

Typical of small tropical islands, the temperature of Grenada at sea level is generally rather high with little seasonal, diurnal or locational variation due to the damping or stabilizing effect of the ocean mass. Temperature records for the higher elevation averages 19 to 24 degrees C with high humidity

Table 2: Temperature recorded at pearls and point salines airport

MONTH	TEMPERATURE PEARLS AIRPORT	TEMPERATURE POINT SALINES
January	29.7	28.3
February	28.9	29.7
March	28.5	30.2
April	29.6	33.3
May	30.3	31.3
June	29.8	30.6
July	29.7	30.6
August	30.1	30.8
September	30.4	30.6
October	30.4	30.9
November	29.9	30.4
December	29.2	30.1
Annual Average	29.65	30.56

## **AGRICULTURAL SECTOR**

Grenada Agriculture is dominated by crop production especially tree crops and vegetables it is difficult to explain the sector in light of the destruction caused by Hurricane Ivan on September 2004 and Hurricane Emily on 13 July 2005 but based on the information below you will understand what the agriculture sector used to be.

Hurricane Ivan inflicted severe damage to the agriculture sector.

As a result of the high velocity winds experienced with Hurricane Ivan, extensive losses were recorded in the crop, livestock and fisheries sub sectors and in the seventy two (72) water catchments.

The principal export crop, nutmeg, which was concentrated in the eastern parishes of St. Patrick and St. Andrew, was severely damaged as well as other crops that were ready for harvesting at the time of the disaster. The nature of the damage ranged from topping to uprooting, snapping, defoliation and scorching.

The impact of the Hurricane on the nutmeg sub-sector, which affects approximately 30,720 persons either directly or indirectly, is expect to result in a denial of the industry dependents of their livelihoods, resulting in severe social and economic problems within this constituency. This situation will worsen unless steps are taken in the short run to replant and rehabilitate the production base which has declined to approximately 10 percent of the pre-disaster level.

Other negative implications of the disaster in the nutmeg industry include a reduction in production over the next five years and a concomitant reduction in foreign exchange

earnings, which will decrease to about 8 percent of Pre-Ivan level once current stocks are exhausted.

Cocoa, another major contributor to the economy, is grown on approximately 8,000 acres of land. The sub-sector employs approximately 7,500 active farmers spread throughout the parishes. According to information sourced from the Grenada Cocoa Association, production in 2004 prior to the hurricane reached 1,800,000 lbs valued at EC\$5,580,000.

The banana industry, which has some level of importance both for local consumption and export, was demolished. The 350 acres grown throughout the parishes suffered 100 percent damage.

The minor fruits which include sapodilla, papaya, passion fruit, golden apple and other were demolished. The trees were either uprooted, toppled or scorched beyond regeneration.

Citrus also suffered similar type damage to those suffered by other tree crops. Of the 120 acres planted island wide, 18.50 acres were destroyed.

The 114.5 acres of vegetables being cultivated at the time of the hurricane was completely wiped out. Tomatoes, cucurbits, brassicas, okra, sweet pepper, pigeon pigeons and corn were among the range of vegetables lost. The irrigation systems used in vegetable production was also badly damaged.

The category roots and tubers which comprise mainly sweet potato, yams, dasheen and tannia also suffered damages. Of the 282 acres planted before the disaster, 66.47 acres were affected.

Ninety one percent of the forest lands and watershed, which once supported an ecosystem where much fauna and flora benefited directly or indirectly, now lay bare and stripped of the vegetation. The 72 watersheds on the island have been devastated. A major concern remains over the level of water which the aquifers can now support and for how long. Urgent action needs to be taken in the very short run to ensure regeneration and growth of vegetation in the forest and watershed areas. This may mean introducing some fast growing species while the indigenous plants slowly emerge.

The sizes of farms are categorized as small, medium, large. The categories are as follows:

- i) Small 0-5 ac (0-2 ha)
- ii) Medium 6-10 ac (2.4-4 ha)
- iii) Large over 11 ac (4.50 ha)

## Livestock

The livestock sub-sector suffered damages to housing infrastructure of poultry and small ruminants and loss of stock of same. Losses linked to secondary effects resulting from stress and trauma were also recorded in livestock. The damage was most severe in poultry, pigs, sheep and goats.

The population of livestock in Grenada according to the 1995 census and a 2002 livestock survey are shown below.

Table 3: Livestock Population

Species	Numbers
Cattle	4,368
Sheep	13,052
Goats	7,004
Pigs	5,338
Chickens	81,688

All of the animal products produced from the above population are used for local consumption. This does not mean that Grenada is self sufficient in meat products; in fact on the contrary, there are heavy imports.

**Table .4: Estimated Production of Meat (2000-2003) - Grenada (kgs)**

Meat Type	Year			
	2000	2001	2002	2003
Beef	188,700	188,880	189,240	189,600
Lamb/Mutton	18,235	22,045	25,040	30,190
Goat	13,880	16,095	17,690	18,870
Pork	181,440	187,950	197,595	198,485
Chicken/Poultry	463,005	469,620	499,865	486,770
<b>TOTAL</b>	<b>865,260</b>	<b>884,590</b>	<b>929,430</b>	<b>923,915</b>

**Table .5: Importation of Meat Products, 2000 – 2003**

MEAT TYPES	2000		2001		2002		2003	
	CIF VALUE (EC\$)	KG						
BEEF	3,674,779	666,853	3,120,873	493,617	3,803,075	730,211	3,309,051	696,048
CHICKEN	13,896,782	4,631,751	12,715,459	4,234,150	12,814,855	4,580,859	13,411,952	6,674,612
GOAT	18,244	2,812	77,636	11,920	79,909	9,850	66,114	12,877
LAMB	324,762	75,756	329,140	50,329	296,842	22,600	434,188	44,203
TURKEY	1,699,540	724,199	1,801,250	902,190	1,693,522	705,911	1,908,380	988,943
SWINE	3,710,495	801,119	3,647,089	676,133	3,602,086	766,813	4,118,861	1,169,174

It is clear that although Grenada cannot produce this amount of meat that the consumer demands but it can surely tap into the market in a meaningful way thus providing a good source of income to the national farmers.

The cattle breeds in Grenada are from the base stock of Bos Indicus and Bos Taurus. In the 1960 There were a dairy Industry; however that collapsed in the mid 80's and is now nonexistent.

Nubian, Toggenburg, Alpine, Jamnapari,, Sannen, and more recently the South African Boer represent established goat stocks.

Sheep stocks include Barbados Black Belly, Virgin island White and the Kathadin

Pig stocks comprise the large whites, Landrace, Durocs, and Large Blacks.

In the 1980's poultry layer farms were introduced and with them came various strains of chickens, ducks and turkeys. The Plymouth Rock broilers, leghorn layers and Road Island red are the predominant commercial chickens on Grenada. The yard fowl is still present but is slowly losing its predominance. Ducks on the islands are the Peking, and Muscovy duck. Other poultry species include the goose, turkey, guinea fowl and pigeons.

During the 1980's exotic breeds of rabbits such as the New Zealand White and Red, California, Chinchilla, Dutch and the English were introduced. Not many of the pure strains exist but evidence of their genes is seen in the Creole breeds on the islands.

## 1.1 Animal Production Systems

Across Grenada, livestock production systems include meat eggs, honey and breeding.

The function of the meats, eggs, and honey and breeding activity is to offer food and nutrition, financial, cultural and educational security. Grenadians have a high consumption of animal protein and although much of it is imported, a good amount of local meat is utilized.

### *Meat Production*

The production of the various types of meat by Grenada for period 2000 through 2003 is presented in Table 6.

**Table 6: Estimated Production of Meat (2000-2003) - Grenada (kgs)**

Meat Type	Year			
	2000	2001	2002	2003
Beef	188,700	188,880	189,240	189,600
Lamb/Mutton	18,235	22,045	25,040	30,190
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<b>TOTAL</b>	<b>865,260</b>	<b>884,590</b>	<b>929,430</b>	<b>923,915</b>

The table shows a general upward trend in meat production in Grenada during the period under review. All categories of meat show increases in production over the years with the exception of poultry meat which declined by 2.6% in 2003, when compared with 2002.

Egg production enjoys a stable market, and Grenada is self sufficient in eggs, however on festival occasions e.g. carnival, Easter, Christmas etc. importation of eggs is allowed as demand increases during these periods. The brown egg is the preferred type.

Honey has become an increasingly popular commodity and Grenada is able to produce some of the best unpasteurized honey in the world.

Cross animal breeding is a way of life for many Grenadian farmers. The island has no indigenous domestic breeds of animals.

Production systems offer financial security. Many livestock producers view their animals as “living banks” and are kept in reserve for emergencies such as school fees, weddings, home building etc. One cannot overlook the cultural view of a type of production system. In many instances food animals is a way of life...a source of well being for the producer especially for the aged. His or her life has some meaning and usefulness just to attend to his or her livestock.

At many cultural functions e.g. carnival or independence it is customary to prepare the “goat water” “souse” and “cow heel soup” and this is prepared with a freshly slaughtered animal.

Production systems can be seen in the secondary schools and contribute to the educational syllabus of secondary students. Agricultural studies are offered at the primary level and many schools have sheep, poultry, goat and rabbit farms.

Production systems have the following species: cattle, sheep, goat chickens and bees. Over the years the farm producers have become more businesslike. Improved pastures, infrastructure, and an increase in animal population may be observed. A general change in types of farms is evident, change being more control and advanced practices.

## **1.2 Conservation Activities**

Animals presently engaged in conservation in Grenada are:-

- Local cattle
- Virgin Island White sheep
- Barbados Black belly sheep
- Nubian goat
- Boer goat
- Creole goat
- Large white pig
- Duroc pig
- Landrace pig.

For many years Grenada is faced with the dilemma of stray and roaming animals with no identity. This has a negative impact on livestock especially cattle, for it was this species which caused the most damage to crops and life.

Established farmers see strength to conservation activities on Grenada in dedication and good business approach. Weakness is seen in a limited gene pool where there is always the search for new genetic material, which is often so costly, that farmers struggle to relax inbreeding.

### **1.3 Description of breeds, their uses and Technologies employed.**

All breeds are utilized for food production with the exception of the equine family.

Grenada's tourism industry dictates to some extent the quality of meat consumed. Tourists demand young tender flavorful meat, and farmers have become conscious of this demand, therefore the breeds they choose to invest in will reflect this. Choices of breeds indicate rapid growth rate and a lean towards meat rather than dairy.

The effects of this is an out breeding of most Creole breeds and introduction of exotic species which often get assimilated with the Creole breeds and then are sometimes difficult to detect. Another effect can be seen as to preference in poultry. Whereas the yard fowl for centuries was the staple in poultry meat, one sees a desire for broilers of the line strains of commercial breeders.

Another effect worth looking at is the health effects. There has been a trend towards less red meat and fat so a shift towards poultry is statistically evident.

Government policies leaned towards milk importation rather than domestic production, hence farmers chose meat breeds of ruminants over dairy therefore milk production on a commercial basis is nil.

The type of technology used in breeding is cross breeding and natural breeding both being fairly active. Grenada has always utilized this method since it is most realistic and cost effective. Artificial insemination has also been utilized but not within the last decade due to many constraints, one being financial.

### **1.4 Identification of problems in conservation and utilization as per the current situation in your country.**

Land. The availability of this commodity is very limited. If farmers are going to be in a position to protect certain species then land to separate and breed specifically is a necessity.

The availability of genetic material can be another tremendous challenge. This is often expensive and environmental change can be traumatic if live animals are involved.

Labour is expensive and scarce. Infrastructure is also costly and only the enthusiast will be keen to attempt conservation activities.

Natural disasters are also problems to deal with. During the 2004 hurricane Ivan and the 2005 hurricane Emily, heavy losses were felt in the livestock industry, both in animal and infrastructure..

Disease can be another harsh reality of threat to conservation of AnGr.

## **Part 2. Analyzing changing demands on national livestock production**

### **2.1 Production and its implications for future national policies, strategies and programmes related to AnGR**

Government policies are leaning towards private sector led with government lending full support. Farmers doing animal breeding and dissemination to other farmers is encouraged. It is anticipated the government will still maintain a breeding and research station for small ruminants, pigs, rabbits and apiaries. Land is an issue which government must address. Grenada will continue to import breeding stock and offer AI when possible. Achieving all this would need greater strengthening in communication and information systems. Workshops and training programmes must also be strengthened.

### **2.2 Analyzing future demands and trends**

AnGR lost its importance in the national economy. Government never took a serious look at livestock production and its advantages. As a result of government policies, farmers lost their cohesive power and interest

The future role of AnGR is important. A plan must be identified and put in place. Farmers must regroup and start co-operating with each other. Farmers must show serious commitment to their enterprise. Strong policies must be in place.

### **2.3 Discussion of alternative strategies in the conservation use and development of AnGR.**

Development and maintenance strategy would include importation of breeding stock from time to time. As indicated previously, this relaxes in breeding and improves vigor.

Market demands influence animals we produce e.g. beef animals to yield lean meat, more emphasis on poultry industry Vs beef since there is a definite swing away from red meat, broiler chickens Vs yard fowls.

Another up and coming trend is “organic meat”. Consumers, especially the tourist are showing preference to organic meat Vs stall fed animals. The idea of a naturally reared animal for food consumption is very appealing and many of the local animals are very well adapted to this type of production system.

### **2.4 Outlining future national policy, strategy and management plans for the conservation, use and development of AnGR.**

The Government of Grenada used to be the pioneers in this venture; however efforts are taken to allow it to be private sector led, by small farmers doing their animal breeding

and disseminating to other farmers. Recognition that this exercise is best done by the enthusiast, such farmers will have to be identified and given all possible encouragement.

National programme for AnGR will include the Boer Goats and pigs at the government station and other small ruminants led by the private sector.

Activities of AnGR rely on the importation of breeders.

Information and communication systems and management tools will be strengthened, workshops will be developed and implemented and media presentations are available.

**Part 3. Reviewing the state of national capacities and assessing future capacity building requirements.**

**3.1** Livestock production is facing major challenges in Grenada .

This nation has the capacity to revive its AnGR. The government is committed to this activity; therefore AnGR will be maintained and augmented.

Data collection is poor .

Examination of Support mechanisms such as technical services human resources and legislation shows that all are in place and readily available.

## **Part 4. Identifying regional priorities for the conservation and utilization of AnGR**

It seemed only practical and prudent to approach priorities for the national conservation and utilization of AnGR and recommendations for enhanced international co-operation from a regional standpoint. This approach will bring strength and unity to enforce priority and co-operation in the field of farm animal biodiversity

### Priorities

1. Implementation of a national and regional network for AnGR
2. Characterization of AnGR (recording systems, genetic evaluation, genetic distances, etc.)
3. Breeding and conservation strategies for small populations
4. Training on the management of AnGR (valuation of AnGR)
5. Establish the Caribbean Society of Animal Production
6. Establishment of national committees to provide advise to government in the development of national policies regarding the management of AnGR
7. Inventory (census) of livestock
8. Development of nucleus farms and multiplication units to supply breeding stock, for AnGR that contribute most to food security
9. Ways to increase public awareness
10. Evaluation of imported breeding stock
11. Use of by-products from AnGR

### International Co-operation

1. Development of regional projects to look for financial and technical support
2. Implementation of a regional network for AnGR
3. Software (and training) used in animal breeding analyses
4. Linkage between ecotourism and agriculture-AnGR utilization (changing consumer preferences)
5. Regional branding of unique animal products from the region
6. Exchange of learning experiences among countries
7. Availability of AnGR for specific studies (buffalypso, Barbados Blackbelly,)