

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Animal Science - Beef Cattle

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals			20%	
303	Genetic Improvement of Animals			20%	
306	Environmental Stress in Animals			20%	
307	Animal Management Systems			20%	
312	External Parasites and Pests of Animals			20%	
	Total			100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	1.6	0.0
Actual Paid	0.0	0.0	1.1	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	51766	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	25497	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct research
- Publish results
- Present data at conferences
- Collaborate with other members of multistate project

2. Brief description of the target audience

Beef producers in the tropics, greater Caribbean, Central and South America and the southern US.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Because of administrative and scientific meeting conflicts of the Director/Faculty no abstracts were presented at conferences for this activity.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Using tick burdens as a selection criteria in Senepol cattle
2	Breeding Senepol heifers at 1 year of age

Outcome #1

1. Outcome Measures

Using tick burdens as a selection criteria in Senepol cattle

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Ticks are of concern because they are a disease vector and can have a negative impact of herd productivity. They also impact the ability of producers to move animals within and off the island during sales. Current control methods consist of regular dipping or spraying with acaricides to control tick burdens on cattle which is an expense in materials and labor. If animals with natural resistance to ticks could be identified then their use in breeding programs could decrease tick burdens through genetic selection.

What has been done

This study was conducted to evaluate the relationship of tick load between multiparous Senepol cows (n = 127 observations) and their calves (n = 144 observations). Calves were born in fall 2010 and 2011 and spring 2011, 2012, 2013 and 2014. Cow tick load (clean, light, moderate and heavy) was measured at weaning. Calf BW and tick load were measured at weaning and at yearling. Average daily gain (ADG) was calculated for birth to weaning and weaning to yearling.

Results

There was no effect of calving season or cow tick load on 365-d adjusted weight of calves. There was no effect of cow tick load on calf ADG from birth to weaning. Calves of cows with light tick loads had lower ADG from weaning to yearling than calves of cows with clean, moderate or high tick loads (0.29 ± 0.02 vs. 0.49 ± 0.03 vs. 0.45 ± 0.03 vs. 0.44 ± 0.03 kg/d, respectively). Spring-born calves had greater tick loads at weaning than fall-born calves (2.3 ± 0.1 vs. 1.5 ± 0.2 , respectively) but there was no difference as yearlings. Calves of cows with high tick loads at weaning had lower yearling tick loads than calves from cows with clean, light or moderate tick loads (1.4 ± 0.3 vs. 2.1 ± 0.3 vs. 2.5 ± 0.2 vs 2.1 ± 0.3 , respectively). Cow tick load at weaning had low correlations with calf tick load at weaning ($r = 0.24$) and at yearling ($r = -0.23$). Calf tick load at weaning was not correlated with tick load at yearling ($r = -0.01$). Cow tick load does not

affect calf tick load or pre-weaning growth. Because of the low correlation of tick load between cows and calves, and within calves, it may be difficult to select for this trait in Senepol cattle very effectively.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
312	External Parasites and Pests of Animals

Outcome #2

1. Outcome Measures

Breeding Senepol heifers at 1 year of age

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Breeding heifers at a year age has been shown to increase lifetime productivity because cattle in the USVI are grass fed they tend to grow slower than in temperate areas and have later reproductive maturity. Sexual maturity of bulls and heifers is a critical component of an efficient cattle operation.

What has been done

This study was conducted to evaluate growth of Senepol bull and heifer calves from birth to a year of age using calves born in spring of 2012 (n = 11 heifers and 10 bulls) and 2013 (n = 17 heifers and 16 bulls). Hip height (HHT) and BW were measured at weaning and yearling. Pelvic area (PA) of heifers and scrotal circumference (SC) of bulls were measured at yearling. Average daily gain (ADG) was calculated from birth to weaning and weaning to yearling.

Results

Bulls had a greater 205-d adjusted weaning weight than heifers (242 ± 6 vs. 217 ± 6 kg, respectively) but there was no effect of year. Bulls had a greater ADG from birth to weaning than heifers (0.96 ± 0.03 vs. 0.83 ± 0.03 kg/d, respectively) but there was no effect of year. Weaning HHT was greater in bulls than in heifers (111.5 ± 0.7 vs. 108.3 ± 0.7 cm, respectively) and greater for calves born in 2012 than in 2013 (111.9 ± 0.8 vs. 107.8 ± 0.6 cm, respectively). Bulls had a greater 365-d adjusted yearling weight than heifers (293 ± 7 vs. 268 ± 7 kg, respectively) but there was no effect of year. Calves born in 2012 had lower ADG from weaning to yearling ($P < 0.004$) than calves born in 2013 (0.28 ± 0.02 vs. 0.37 ± 0.02 kg/d, respectively) but there was no effect of sex. Bulls had greater yearling HHT than heifers (118.8 ± 0.7 vs. 115.4 ± 0.7 cm, respectively) and calves born in 2013 had greater HHT than those born in 2012 (118.9 ± 0.6 vs. 115.2 ± 0.7 cm, respectively). Yearling SC of bulls was not different between years (24.7 ± 1.3 vs. 24.4 ± 0.9 cm, respectively). The PA of heifers was not different between years (145.5 ± 7.7 vs. 136.4 ± 5.5 cm², respectively). These data show that there are differences in the growth traits between Senepol bull and heifer calves reared under tropical conditions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes

Brief Explanation

Due to low animal numbers and limitations of the breeding program (pasture space) yearling heifers were not bred at this time.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

It may be difficult to select for tick burdens because of the low relationship of tick burdens between cows and calves. Senepol cattle growth traits through a year of age were evaluated and shown to be different between bulls and heifers. Further studies will be done to evaluate breeding potential of heifers at a year of age.

Key Items of Evaluation

Low correlation of tick between cows and calves will make it difficult to select for this trait.