

# Release of New Varieties BJ9702 and BJ9736

**Sugar and Beyond**

**SIA Post Crop Seminar 2017**

**SIARD Library and Conference Room, Mandeville**

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Variety Development Section

# Overview

The SIARD Variety Development Programme is focused around four core assets:

- Sugar cane varieties
  - Growers
  - Manufacturers
  - Staff
- 
- We achieve our aim through inter- and intra-company collaboration, and strong partnerships with our stakeholders.

# Vision

- Our vision is:

“To be the premier provider of sugar cane varieties for the Jamaica Sugar Industry and continually provide stakeholders with a quality guarantee on the raw material necessary for multiple uses in the production of various products.”



## Sugarcane Variety Development

**New Varieties at Large! -- August 2017**

***Sugar Industry Authority Research Department (SIARD)***

We are a premier institution spearheading sugar research and development for over 50 years in Jamaica.

During this time we have produced over 50 commercial varieties; 23 of these are in active current cultivation...and we continue to deliver new ones every year!

Our hallmark is the delivery of full-service, and advice on best practices to the growers we serve.

The varieties we produce have found their way into your **table sugar, rums, electricity, ethanol, and various industrial products.**

Join us in celebrating our product line of high yielding commercial varieties adapted for growing in select areas across Jamaica.

Brand SIARD is currently investigating high fibre varieties, high sucrose varieties, and for everything in between there are multi-purpose varieties.

Yours sincerely,

The Variety Development Team

# What We Do



# Mission

- Variety Development states its mission:

“To contribute to a sustainable value-added sugar industry by increasing the rate of genetic improvement through collaborative breeding and selection to unlock the full potential of the sugar cane plant central to national food security and economic longevity of stakeholders.”

# Value Proposition

The SIA remains rooted in its commitment and drives among its many value propositions:

- To develop, through research, the full potential of the sugar cane plant
- To deliver professional services to the industry through a cadre of technical, qualified, and motivated staff
- To spearhead development which also protects the environment
- To promote the sugar cane industry as a platform for continued industrial growth, and economic & social development

# Outcomes

- Over 50 Varieties over the last 50 years
- Recently released three new varieties in 2015
- The sugar industry has utilized varieties to cumulatively earn millions of dollars annually

## Attained Commercial Yields of Variety BJ78100

<b>Region</b>	<b>tc/ha</b>	<b>% Sucrose</b>	<b>ts/ha</b>
<b>Central</b>	137.88	9.18	12.67
<b>Wet West</b>	132.05	12.08	16.27
<b>Irrigated</b>	116.44	10.02	11.62
<b>Wet East</b>	93.56	11.40	10.66
<b>Dry North Coast</b>	139.00	9.34	13.03



# New Varieties Released in 2015



## New Varieties 2016 Review

**Cane Yield increases in the order of 20% are readily achieved by today's elite varieties. The new ones have the following attributes:**

- **The variety BJ9250 has potential for good yield and is suitable for mechanical harvesting on the Irrigated Plains and for cultivation in Upper Clarendon.**
- **BJ9310 is a niche variety capable of high yield and good quality in the Wet West.**
- **BJ9428 has shown potential for good yields in the Wet West and Central Uplands**
- **BJ9764 will greatly improve productivity in the rain-fed areas with cane yield increases of up to 64%. BJ9764 was not tested in the Irrigated areas.**

## Results from Commercial Fields of New Varieties

Variety	Age (months)	tc/ha	Estate
BJ9250	18	95.12	Holland
BJ9310	13	141	Frome
BJ9428	10	128	Frome
BJ9764	14	101	Frome

# Results from Experiment of New Varieties

Performance of BJ9428					
Variety	tc/ha	% Sucrose	ts/ha	ESI	Estate
BJ9428	99.77	12.31	12.31	163	Frome, Hunters wood
BJ9428	119.22	11.27	13.64	84	Worthy Park, Bottom Pasture
BJ9428	102.51	13.43	13.65	119	Worthy Park, Bottom Pasture
BJ9428	105.91	11.65	11.99	108	Appleton, Windsor #4
BJ9428	98.89	13.64	13.51	118	New Yarmouth
BJ9428	116.35	14.05	16.27	108	Worthy Park, Pond Piece #1
BJ9428	80.24	14.09	11.29	79	Worthy Park, Pond Piece #1
BJ9428	105.04	12.58	12.99	119	Everglades, Hyde Hall
BJ9428	79.39	12.79	9.78	160	Everglades, Hyde Hall

# Results from Experiment of New Varieties

**Table 8: Performance of BJ9764**

<b>Variety</b>	<b>tc/ha</b>	<b>% Sucrose</b>	<b>ts/ha</b>	<b>ESI</b>	<b>Estate</b>
<b>BJ9764</b>	83.55	13.28	11.07	110	Everglades
<b>BJ9764</b>	139.16	13.01	18.06	155	Golden Grove
<b>BJ9764</b>	64.16	14.32	9.09	124	Frome
<b>BJ9764</b>	83.55	13.28	11.07	110	Everglades
<b>BJ9764</b>	61.68	13.39	8.26	100	Upper Clarendon
<b>BJ9764</b>	104.83	13.76	14.39	111	Upper Clarendon
<b>BJ9764</b>	110.75	12.44	13.68	96	Golden Grove
<b>BJ9764</b>	68.09	13.91	9.46	149	Golden Grove
<b>BJ9764</b>	117.27	12.7	15.32	129	Frome (Barham, Wildcane)
<b>BJ9764</b>	116.48	12.01	20.08	188	Frome (Barham, Wildcane)

## Scope

- These outcomes of new varieties sit snugly with the overarching goals of the Research Division and within the mandate of the Sugar Industry Authority.
- The scope of the Variety development Programme fulfils the yearning for an economic driver for agricultural production which, despite lowered sugar production, contributed to an improved national Gross Domestic Product by a recorded growth in agricultural production by approximately 4% during the 2015/16 Fiscal Year.

# Impact of Sugar Cane Varieties

- Local sugarcane and sugar production have not been without challenges. Price fluctuations, climate change, input costs, illicit fires, harvesting challenges, and factory operations have hit home.
- Nevertheless, sugar resides at the heart of the socio-economic fabric of Jamaica. Its integral role and contribution is felt across 32 political constituencies directly.
- By extension, it has a far greater reach nationally as it impacts other sectors of the economy not just as an accompaniment but often as a major ingredient in their product streams.
- The variety BJ7015 earned some 24 billion Jamaican dollars during the period of its use by growers

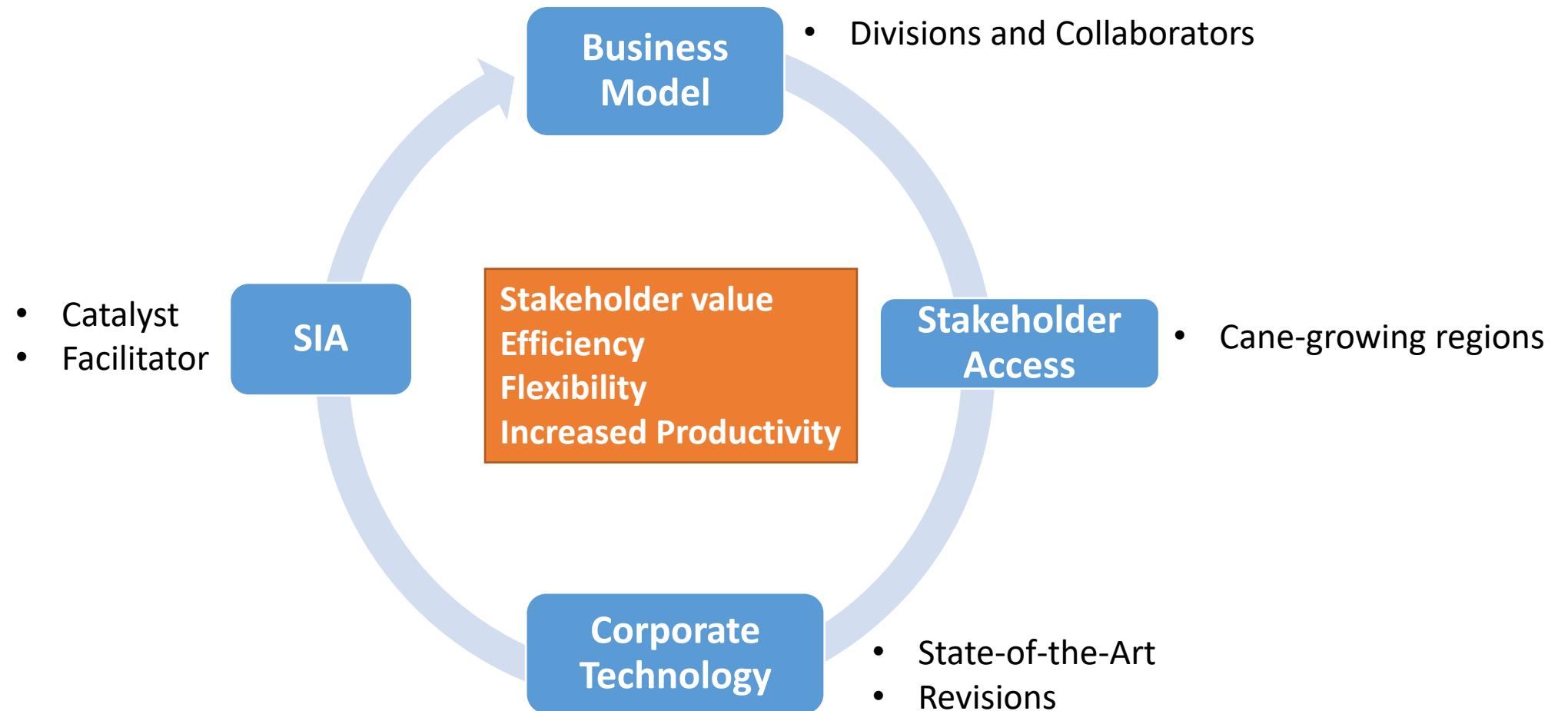


# Why are we here?

- We continually meet to update ourselves on the innovations that will cause us to improve productivity, production, and our general workflows



# Core Values



# Variety Development Process

Sugarcane Seedling Production (x 000) for the years 2010 to 2017								
Year	2010	2011	2012	2013	2014	2015	2016	2017
Seedlings	27	17	44	86	62	53	61	64
Source: Sugar Industry Authority								

- Seeds received from the West Indies Central Sugar Cane breeding Station
- Each seedling is a potential variety
- Each batch of seedlings is evaluated through a series of tests that last 12 – 15 years before a new variety is released to the Industry
- 0, 1, or a few varieties may be released each year

# SpectraCane Analyzer

## Introduction of the Technology factor

- Rapid, multiple analyses of sugarcane variety samples from experiments
- Up to 400 samples can be processed per day for:
  - Brix in cane
  - Brix in juice
  - Pol
  - Purity
  - Moisture
  - Fiber
  - Other parameters



# BJ9702: Parentage BR8709 x Polycc





# BJ9736: Parentage BJ7627 x Polycc



# Description of BJ9702



- Characterized by its medium to thick, waxy yellowish-green stalk and small to medium ovate bud with distinct bud-wings.
- The stalks are fairly erect to recumbent with young internodes becoming yellowish with age and more obvious when leaves are removed or fall off.
- The internodes are medium to long in length and conical in shape, joints are slightly zig zag and internodes cracks are infrequent and when they occur they tend to be shallow.



# Description of BJ9702



- Has a distinct auricle medium in length.
- The wax ring is well defined on the internodes and the growth ring is quite distinct varying from cream-yellow to yellowish-green.
- Root initials are pronounced on some stalks.

# Description of BJ9702



- Resistant to Smut and shows high tolerance to Orange Rust disease.
- This variety appears to perform well on clay loam and well-drained clay.



# Description of BJ9702



- Germination is usually very rapid and reliable.
- Tillering is quite rapid and profuse particularly in rain-fed areas of the central up-lands (Worthy Park area)
- Achieved upwards of 100 tonnes cane per hectare at Worthy Park.

# Commercial Performance of BJ9702

Hectares	Tonnes Cane	Tonnes Cane per Hectare	Tonnes Cane per Tonne Sugar	Jamaica Recoverable Cane Sugar	Tonnes Sugar per Hectare
3.07	311.79	101.56	8.48	11.80	11.98

Source: Worthy Park Estate, 2016/17 Crop



# Description of BJ9736



- Characterised by its erect growth and medium to large reddish brown stalks becoming reddish purple with age.
- The internodes are cylindrical, slightly zig-zag and medium to long in length. Blotches and corky patches are present on older joints.

# Description of BJ9736



- Wax ring is well defined on the internodes and the growth ring is quite distinct, varying in colour from cream-red to purple.
- The bud is inserted between the leaf scar and growth ring. It is round in shape, creamy brown, becoming slightly purplish on older internodes.



# Description of BJ9736



- The leaves are broad, of medium length, and green in colour. The leaf sheath is purplish green, becoming purple when older.
- Very short trichomes (hairs) are present low down on the leaf sheath when young, disappearing with age.

# Description of BJ9736



- Germination is usually very rapid and reliable.
- Tillering is quite rapid and profuse with early formation of large stools, particularly in the rain-fed areas.
- **Growth** is usually steady but some-what slow in the first four to five months, but catches up in the later part of the growth phase.
- Generally, it is fairly erect, but tends to lodge with yield in excess of 80 tonnes cane per hectare, mainly in rain-fed areas.

# Description of BJ9736



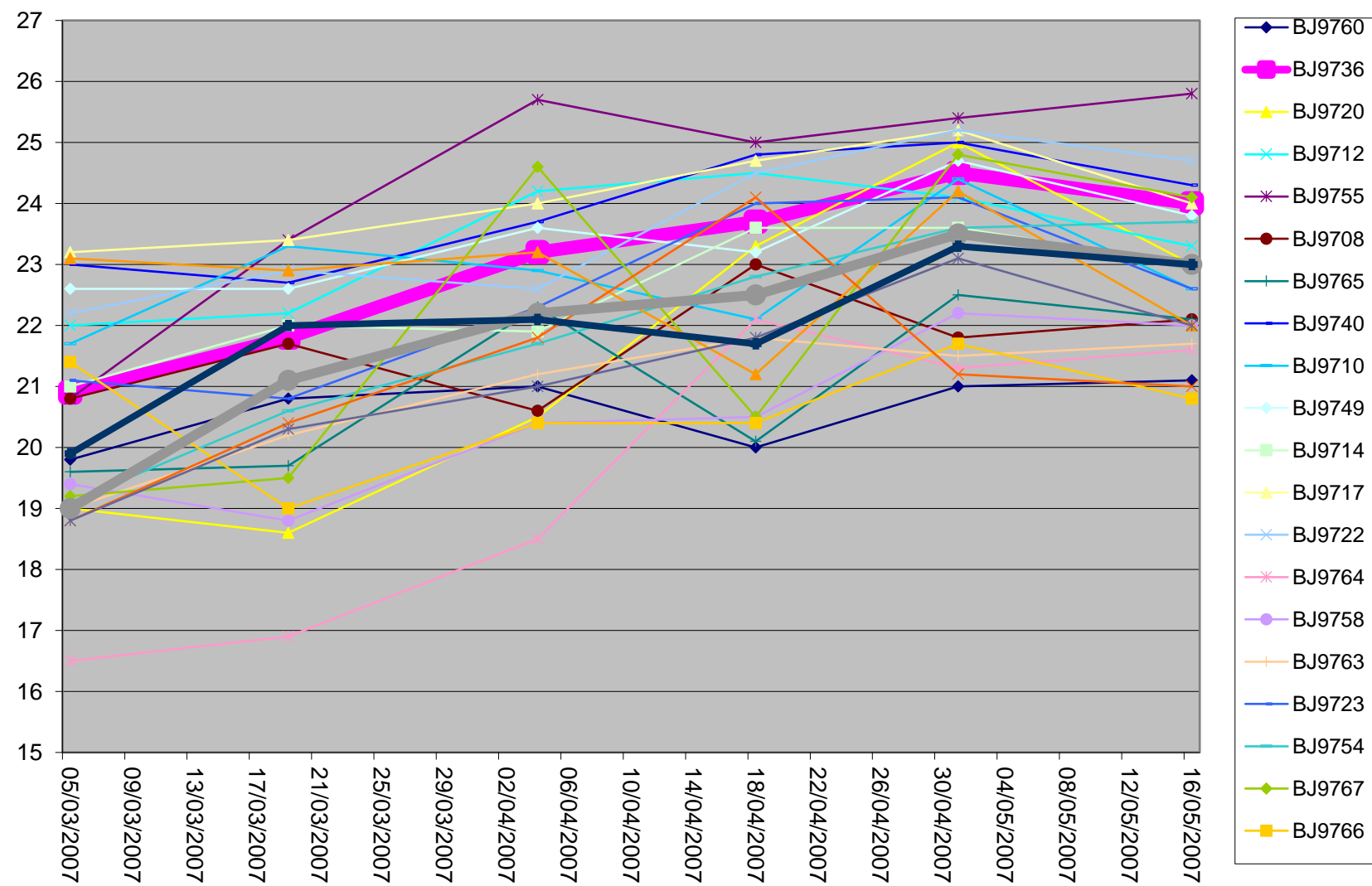
- Recommended for early to mid-season planting on clay loam and well-drained clay soils in the Wet West and Wet East.
- The juice quality is good and Ratooning ability is considered reliable.
- BJ9736 is resistant to Smut, but it appears not to be tolerant to excess stress conditions such as salinity, high weed density, and excessive moisture.



# BJ9736



BJ97 Series Ripening Curve (Top)

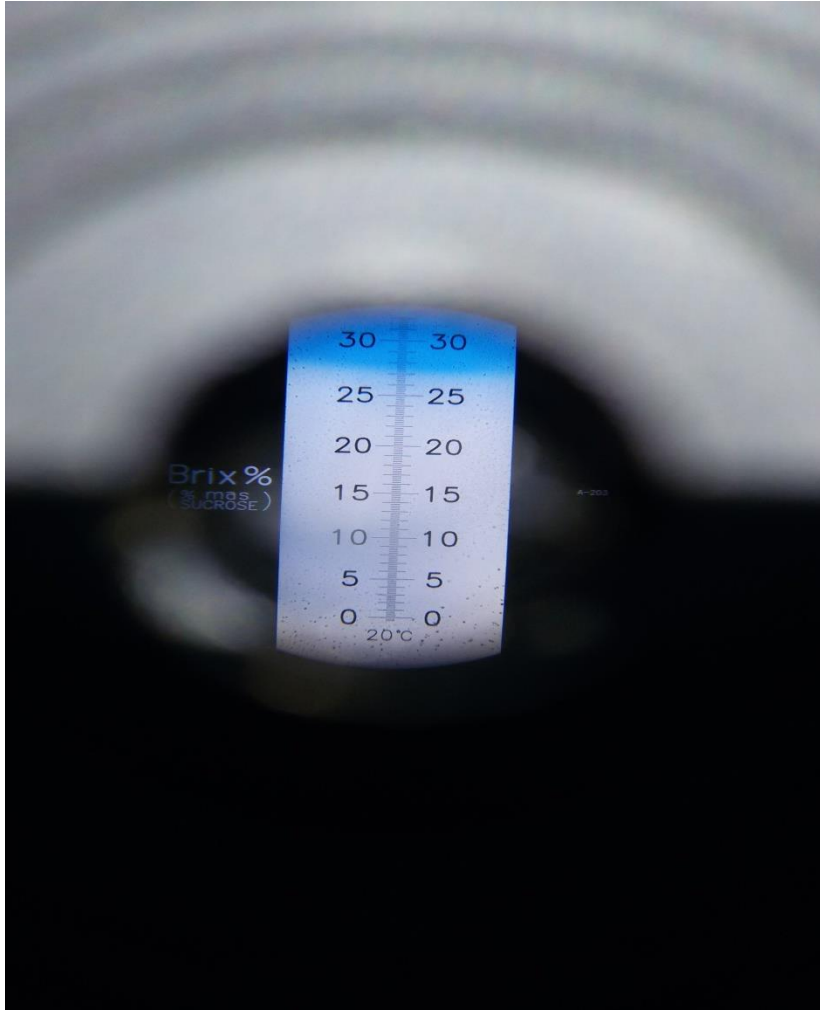




# Yield Performance of BJ9736

Variety	Cane Yield (tc/ha)	% Sucrose	Sugar Yield (ts/ha)	Economic Sugar Index
BJ9736	106.09	13.20	14.14	<b>107</b>
<b>BJ7015</b>	<b>100.60</b>	<b>13.16</b>	<b>13.25</b>	<b>100</b>
BJ7465	102.63	12.00	12.26	87
BJ9736	77.22	15.38	11.83	<b>106</b>
<b>BJ7465</b>	<b>94.62</b>	<b>13.05</b>	<b>12.19</b>	<b>100</b>
BJ9736	73.54	14.75	10.67	<b>131</b>
<b>BJ78100</b>	<b>71.35</b>	<b>11.63</b>	<b>8.88</b>	<b>100</b>
BJ7015	94.09	11.98	12.03	<b>138</b>

# BJ9736



- Impressive Brix reading of 27° on the variety BJ9736 as photographed through the lens of a hand refractometer at Frome Estate on January 05, 2017

# Acknowledgements

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Thank You!



