



The competitiveness analysis of Brazilian pig and pork industry, and forecast of future growth

巴西猪和猪肉产业竞争力分析及未来增长预测

Dr. Uislei Orlando - uislei.orlando@genusplc.com

Global Nutrition Program Director 全球营养策划总监

PIC North America

Shanghai, 24 of October 2018

Brazil = Brasil

- ✓ Area 面积:
 - ✓ 5th world's biggest country (10% smaller than China) 世界第五大国 (比中国小10%)
 - ✓ 47,7% of South América 南美洲的47.7%
- ✓ Language语言: Portuguese 葡萄牙语
- ✓ Currency货币: Real (1 RMB = 0.55 BRL) 实数 (1元人民币 = 0.55巴西雷亚尔)
- ✓ Population人口: 210 million people 2.1亿人
- ✓ Climate气候: Tropical 热带
- ✓ Others其他:
 - ✓ From 59% to 65% - Preserved forests 从59%到65% - 保护森林
 - ✓ 84,6 millions ha – Crops 84,600万公顷 - 农作物
 - ✓ 168 millions ha – pasture 1.68亿公顷 - 牧场

BRAZILIAN LEADERSHIP IN WORLD RANKING - 2016/17

2016/17年巴西在世界排名中的领导地位



Production 产量



Exports 出口

	占全球总数% % of total global		06/07		16/17		占全球总数% % of total global		06/07		16/17	
Orange juice 橙汁	62%		1°	1°	79%		1°	1°				
Coffee 咖啡	36%		1°	1°	27%		1°	1°				
Soybean 大豆	32%		2°	2°	43%		2°	1°				
Sugar 糖	21%		1°	1°	45%		1°	1°				
Beef meat 牛肉	15%		2°	2°	18%		1°	2°				
Poultry meat 禽肉	15%		3°	2°	36%		1°	1°				
Corn 玉米	9%		3°	3°	22%		3°	2°				
Swine meat 猪肉	3%		4°	4°	10%		4°	4°				

Brazilian market and competitiveness 巴西市场和竞争力

SWOT Analysis of Brazilian Pork Production

巴西猪肉生产的SWOT分析

STRENGTHS优势:

- ✓ Production and cost 生产和成本
- ✓ Sustainability 可持续性
- ✓ Integrated system 综合系统
- ✓ Health status 健康状况

WEAKNESSES劣势:

- ✓ Infrastructure 基础设施
- ✓ Health challenges 健康挑战
- ✓ Modernizing 现代化

SWOT analysis of Swine industry
猪产业的SWOT分析

OPPORTUNITIES机会:

- ✓ Export 出口
- ✓ Technology 技术
- ✓ Management 管理

THREATS威胁:

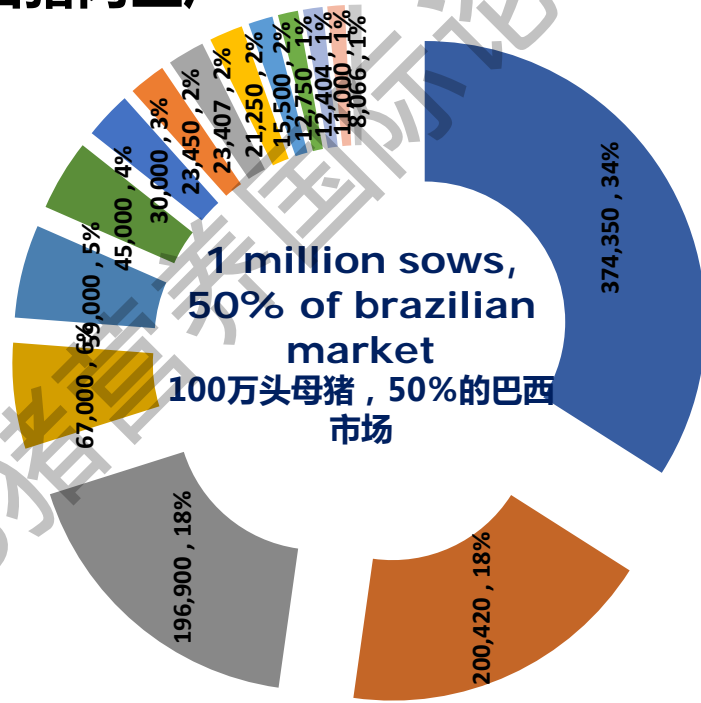
- ✓ Trade protectionism 贸易壁垒
- ✓ Consumers pattern 消费者模式

Brazilian market and competitiveness

Strengths: Brazilian Pork Production

巴西市场和竞争力优势：巴西猪肉生产

- ✓ **2.28 millions total sows**
共有2.28百万头母猪
- ✓ **1.82 millions (technified)**
1.82百万 (技术化)
- ✓ **4^o biggest producer and exporter**
第4大的生产商和出口商
- ✓ **1 million employees involved**
涉及100万名员工
- ✓ **> 40,000 Producers**
> 40,000 生产商



Brazilian market and competitiveness

Strengths: Brazilian Pork Production

巴西市场和竞争力优势：巴西猪肉生产

巴西猪肉生产

Brazilian Pork Production

自2006年 +26.7%

+26.7% since 2006

10³吨 (10³ Tonnes)



Brazilian market and competitiveness 巴西市场和竞争力

Strengths: Brazilian pork consumption 优势：巴西猪肉消费量

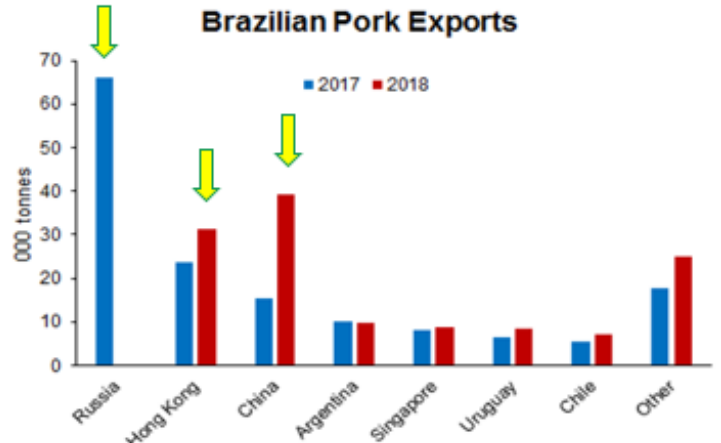
✓ **Brazilian meat consumption (2016): 巴西肉类消费量 (2016年)**

✓ **Poultry: 41.3 kg per capita; 家禽：人均41.3kg;**

✓ **Beef: 30.7 kg per capita; 牛肉：人均30.7kg;**



Brazilian Pork Exportation (10³ Tonnes)

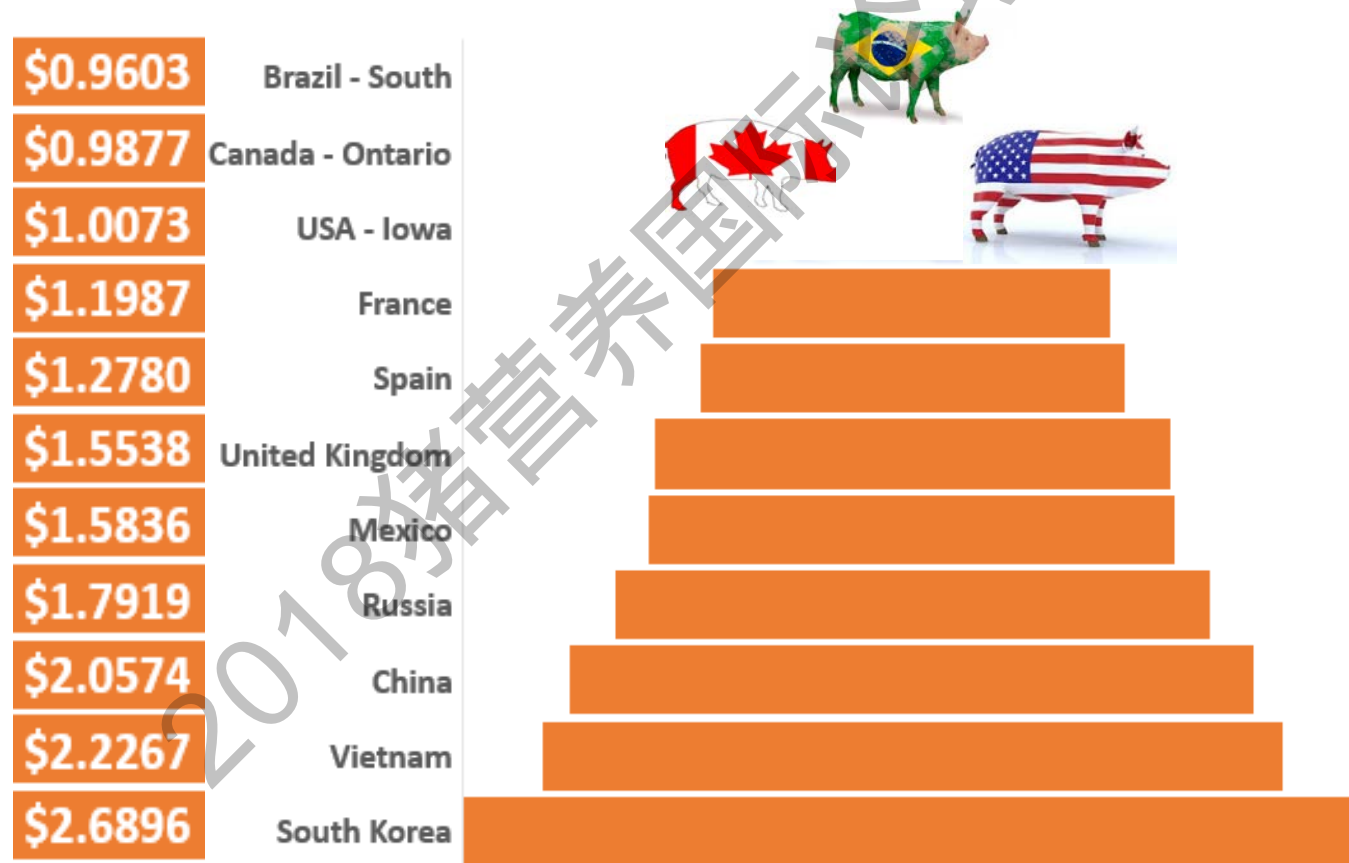


2017(*): Forecast USDA
Source: ABPA

Source: IHS Maritime & Trade - Global Trade Atlas

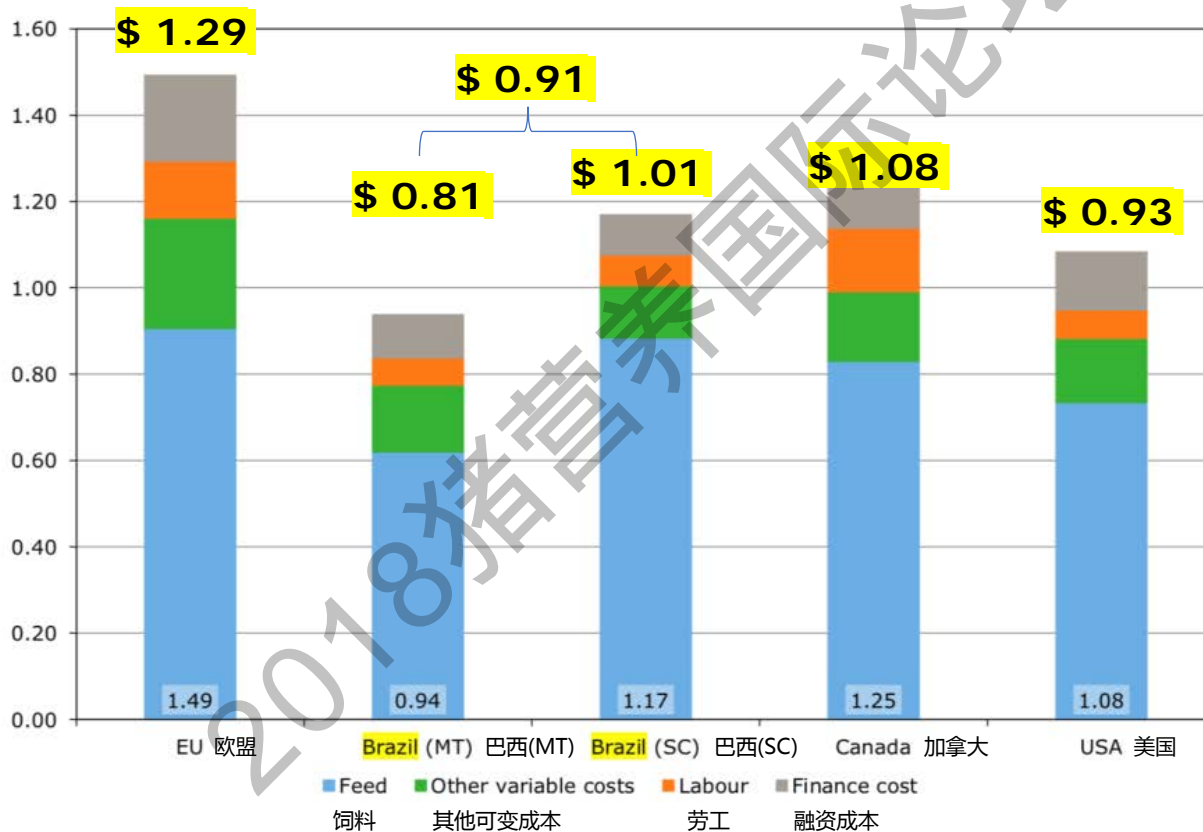
Brazilian market and competitiveness 巴西市场和竞争力

Strengths: Pig production cost (USD/kg) 优势: 猪生产成本 (USD/kg)



Brazilian market and competitiveness 巴西市场和竞争力

Production costs (€/kg hot carcass weight) 生产成本(€/kg热胴体重)



Brazilian market and competitiveness 巴西市场和竞争力

Strengths: Production costs

优势：生产成本

- ✓ 2 Harvest every year (or 3 if using a centre pivot sprinkler)

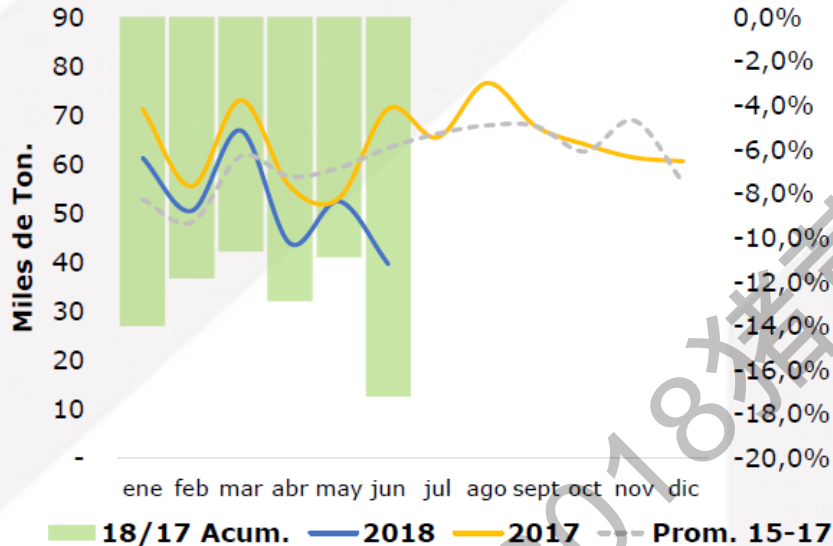
每年收成2次 (如果使用中心枢轴洒水喷头, 则为3次)



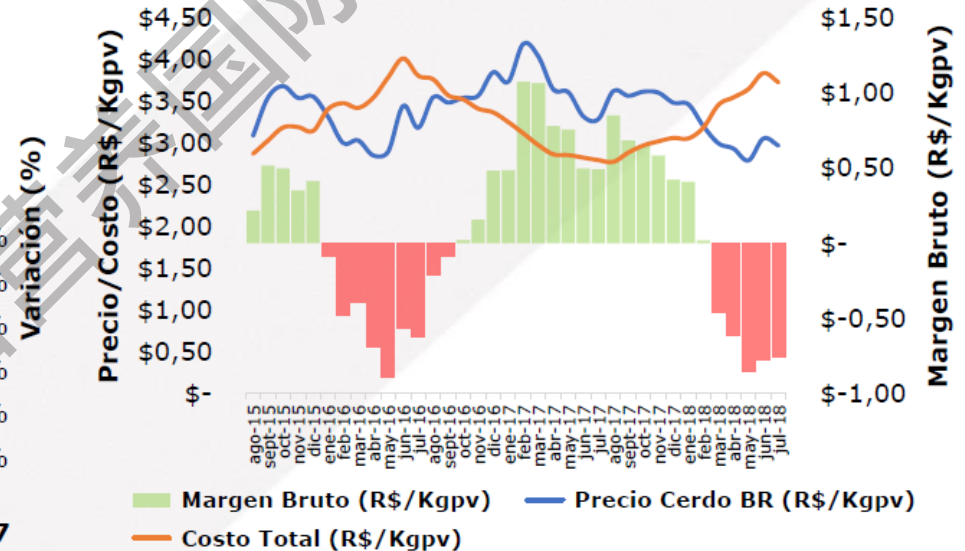
Brazilian market and competitiveness

Strengths: Profitability (BRL R\$/kg) 巴西市场和竞争力优势：
利润 (BRL R \$ / kg)

Exportation 出口



Gross margin 毛利



Brazilian market and competitiveness 巴西市场和竞争力

Strengths: Production

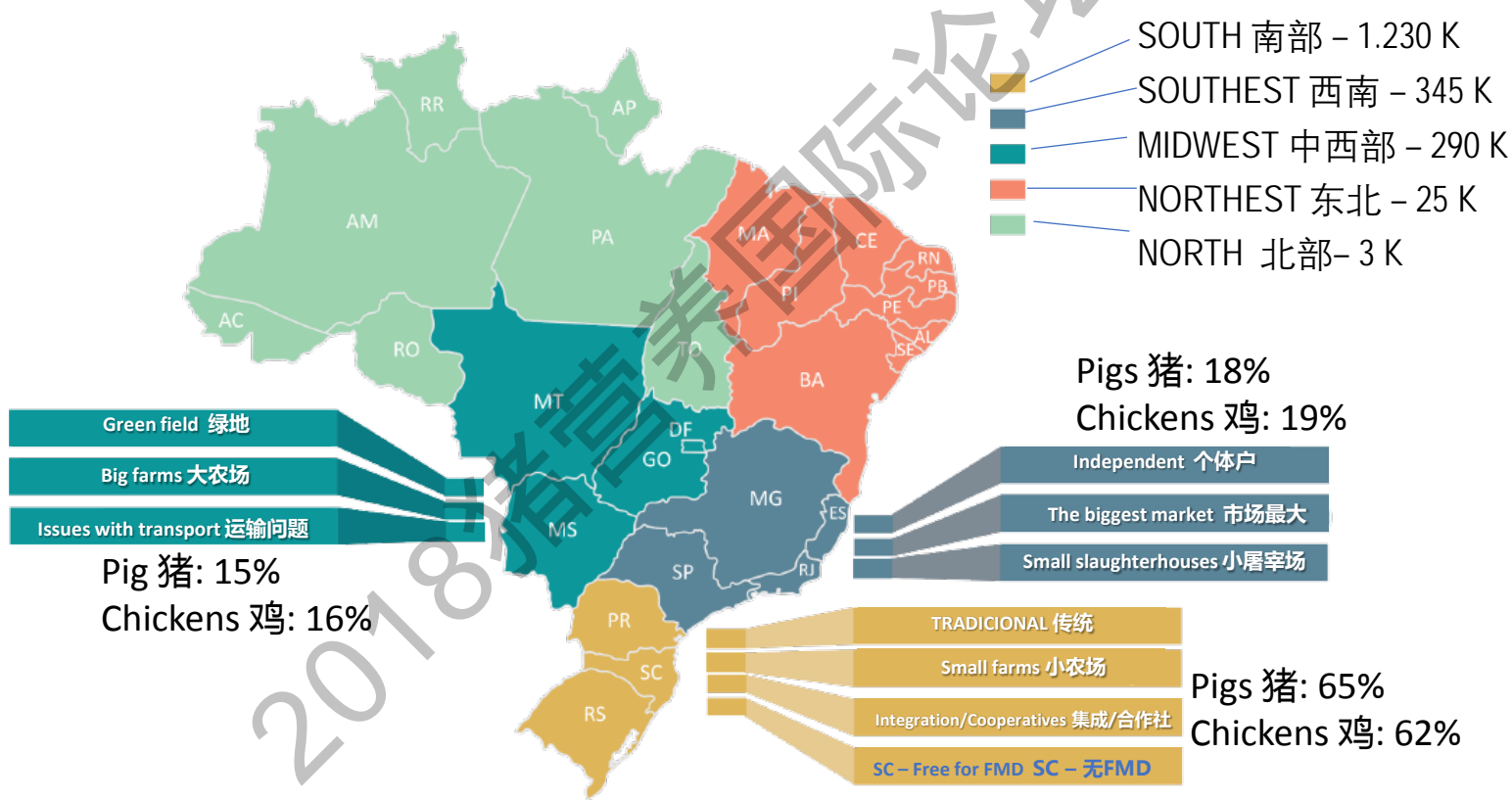
优势：产品

- GENETICS 品种:
 - PIC, DANBRED, TOPIGS NORSVIN, CHOICE GENETICS, HIPERSADIA (BRF OWN GENETIC)
PIC、丹育、托佩克种猪、CHOICE基因、HIPERSADIA (BRF 自己的基因)
- FARROWING RATE 分娩率: 88-92%
- TOTAL BORN 总产仔数: 13,50 – 14,50 / BORN ALIVE 活产: 12,50 – 13,50
- PRE-WEANING MORTALITY 断奶前死亡率: 6 – 10%
- PIGLETS WEANED/SOW/YEAR: 27,5 – 29,0 (BENCHMARK 2017– 35.33)
母猪年断奶仔猪数：27,5 – 29,0 (2017年基准 – 35.33)
- NURSERY + FINISHING MORTALITY 保育+育肥期死亡率: 4 – 5%
- ADG 日增重 (22 – 125 KG): 850 – 930 G/DAY / FCR 饲料转化率(22 – 125 KG): 2,45 – 2,55
- LIVE WEIGHT AT SLAUGHTER 屠宰活重
 - INDEPENDENT PRODUCERS (FRESH MEAT, INTERNAL MARKET): 95 – 105 KG
个体屠宰者 (新鲜肉类, 内部市场)：95 - 105 KG
 - MEAT PROCESSORS 肉类加工厂: >125 KG

Brazilian market and competitiveness 巴西市场和竞争力

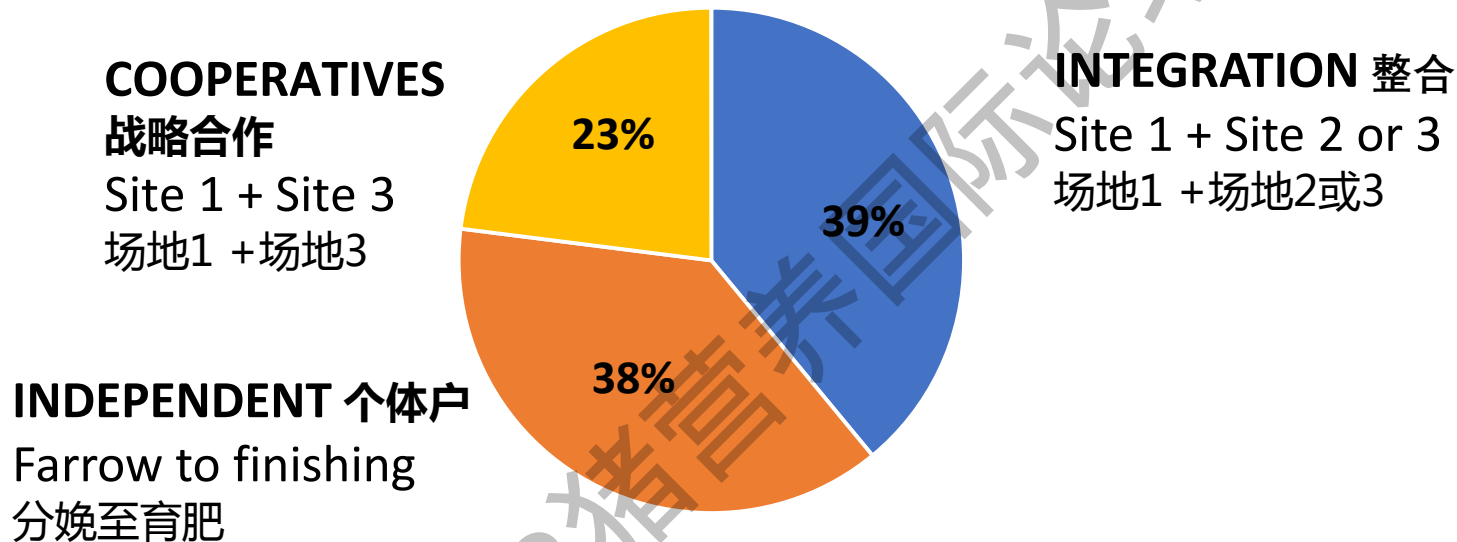
Strengths: Production 优势：产品

优势：产品



Brazilian market and competitiveness 巴西市场和竞争力

Strengths: Integrated system 优势：综合系统



Source: ABCS

Site 1 – Piglet Production 6 kg / 22-26 kg (most common)
场地1 - 仔猪养殖6kg / 22-26公斤 (最常见)

Site 2 – Nursery (uncommon)
场地2 – 保育 (不常见)

Site 3 – Finishing / Wean to Finishing (WTF is uncommon)
场地3 – 育肥/断奶到育肥 (WTF不常见)



F Complex in Rio Verde – GO, Brazil



BRF Complex in Lucas do Rio Verde – MT, Brazil

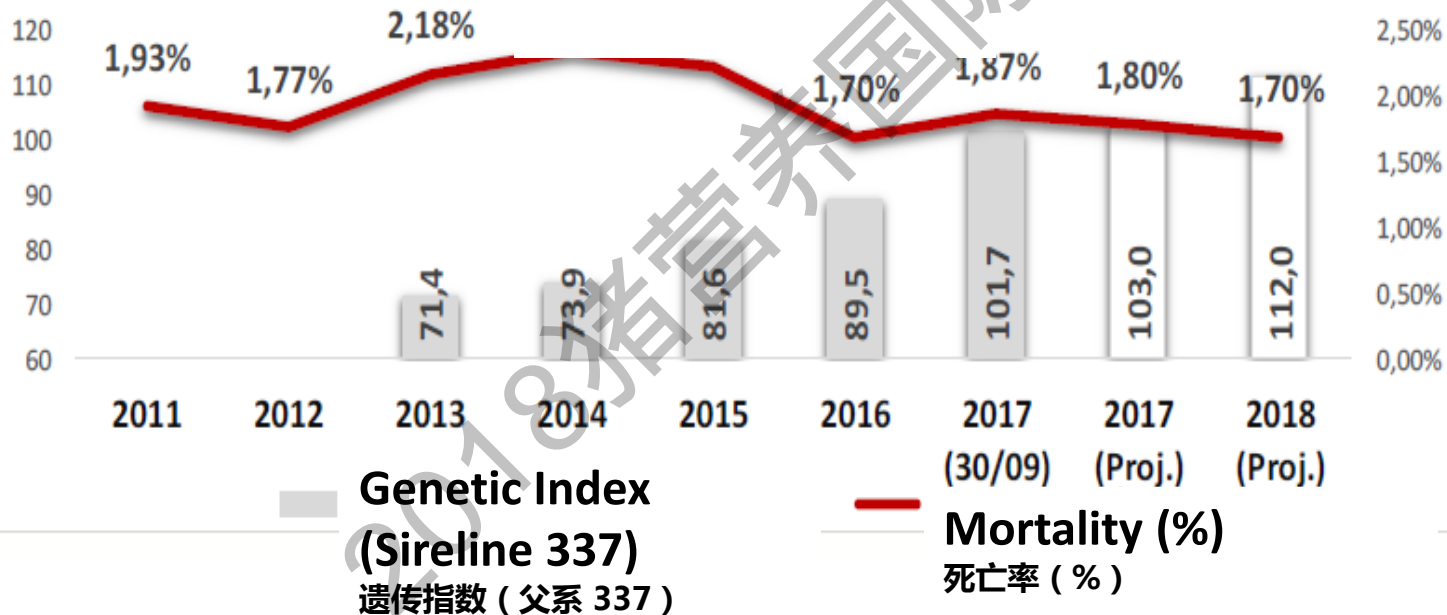
BRF综合区在巴西马托格罗索州的韦尔德河畔卢卡斯



Brazilian market and competitiveness

Strengths: Health status 巴西市场和竞争力优势：健康状况

% Mortality 死亡率% Mortality from 23 to market 从23kg到出栏期的死亡率



Brazilian market and competitiveness

Strengths: Health status 巴西市场和竞争力优势：健康状况

FREE FROM PRRS, PED AND TGE 不受PRRS、PED和TGE的影响

- HIGH REPRODUCTIVE PERFORMANCE 高繁殖性能
- LOW MORTALITY, GOOD AVERAGE DAILY GAIN AND FEED CONVERSION RATE
低死亡率、良好的日增重和饲料转换率
- PCV CONTROLLED, INFLUENZA NOT SIGNIFICANT 控制PCV，流感不严重



Brazilian market and competitiveness

Strengths: Health status 巴西市场和竞争力优势：健康状况

CSF NON-FREE ZONE 无CSF区

LAST OUTBREAK 2010 (BACKYARD PIGS) 上次爆发2010年 (散养猪)

STARTING PROCESS TO BE RECOGNISED AS CSF FREE

开始启动无CSF区认定程序

CLASSICAL SWINE FEVER

猪瘟

AROUND 99,4% OF THE
HERD IN STATES CSF FREE
(RECOGNISED BY OIE)
约99.4%的畜群非CSF疫情
(由OIE认可)

CSF FREE ZONE

LAST OUTBREAK 1998
非CSF疫区上次疫情1998

FOOT AND MOUTH DISEASE

口蹄疫

NON-FREE

ALREADY SUBMITTED TO
OIE (MAY 2018)

无疫病区

已经提交给OIE (2018年5月)

FREE WITH VACCINATION

(all light green area)

无疫病区，接种疫苗 (所有浅绿色区域)

FREE WITHOUT VACCINATION

(SANTA CATARINA STATE)

无疫病区，不接种 (圣卡塔琳娜州)

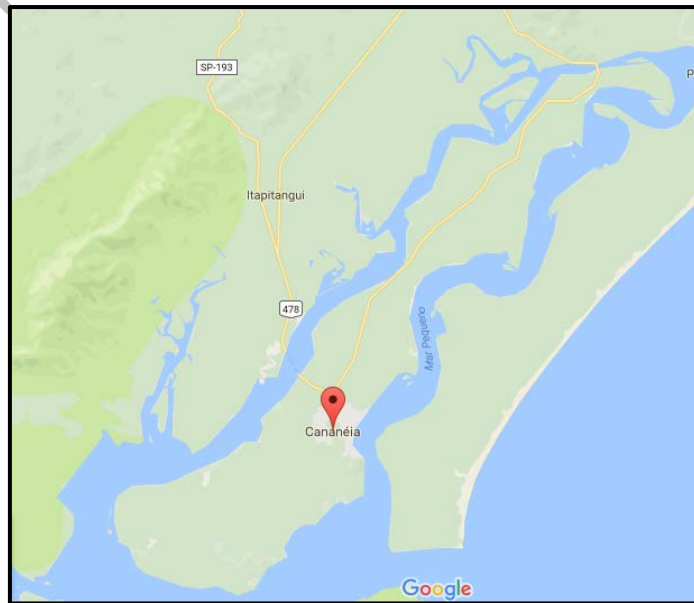
LAST VACCINATION IN 2021 → 2023 RECOGNIZED AS FREE
2021年最后一次接种疫苗 → 2023年认定为无疫病区

Brazilian market and competitiveness

Strengths: Health status 巴西市场和竞争力优势：健康状况

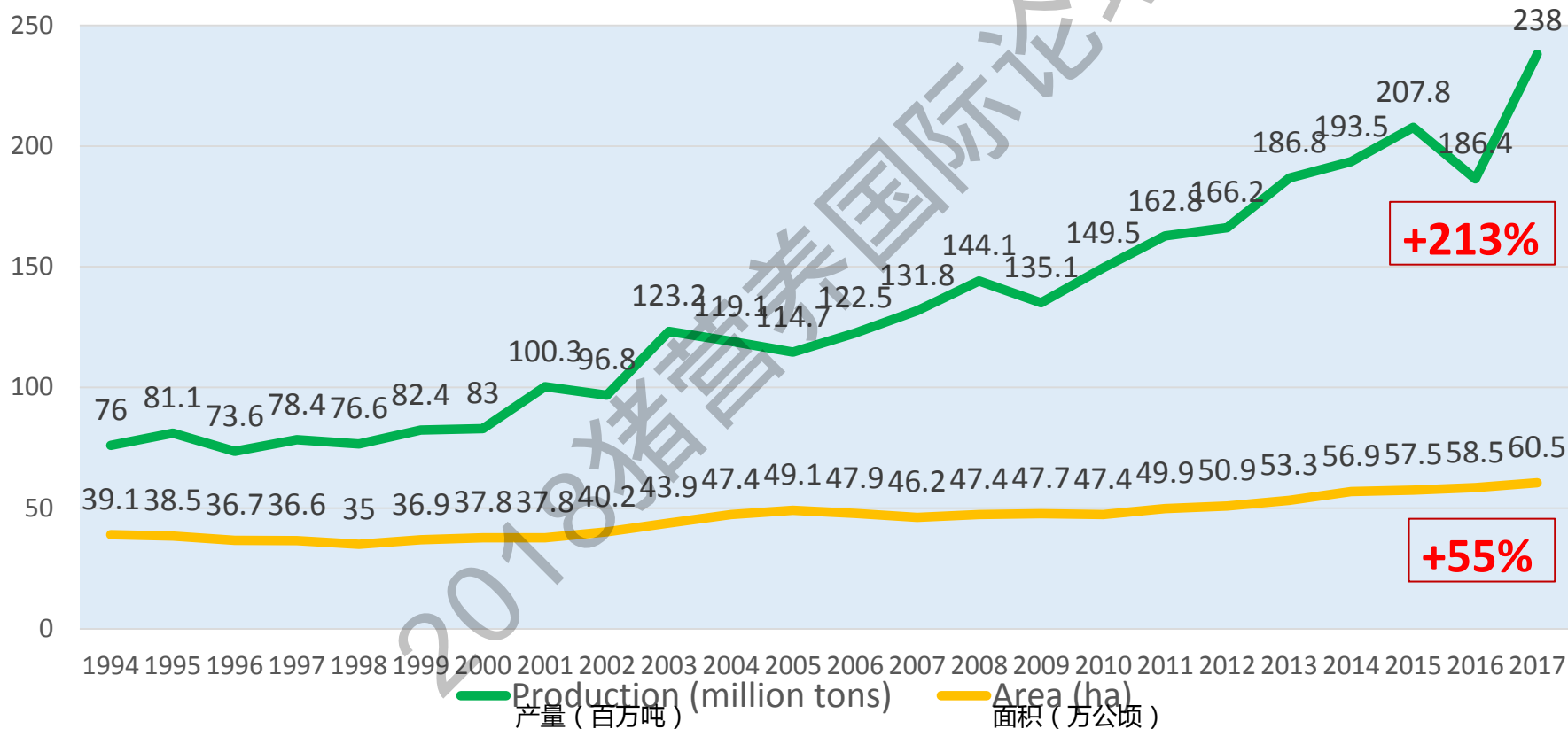
CANANEIA QUARANTINE STATION 卡纳尼亚检疫站

- ALL PIGS IMPORTED MUST PASS THROUGH THERE 所有进口的猪都必须经过那里
- ITS A ISLAND, FAR FROM PRODUCTION CENTERS 它是一个远离生产中心的岛屿



Brazilian market and competitiveness

Strengths: Sustainability 巴西市场和竞争力优势：可持续性



Brazilian market and competitiveness

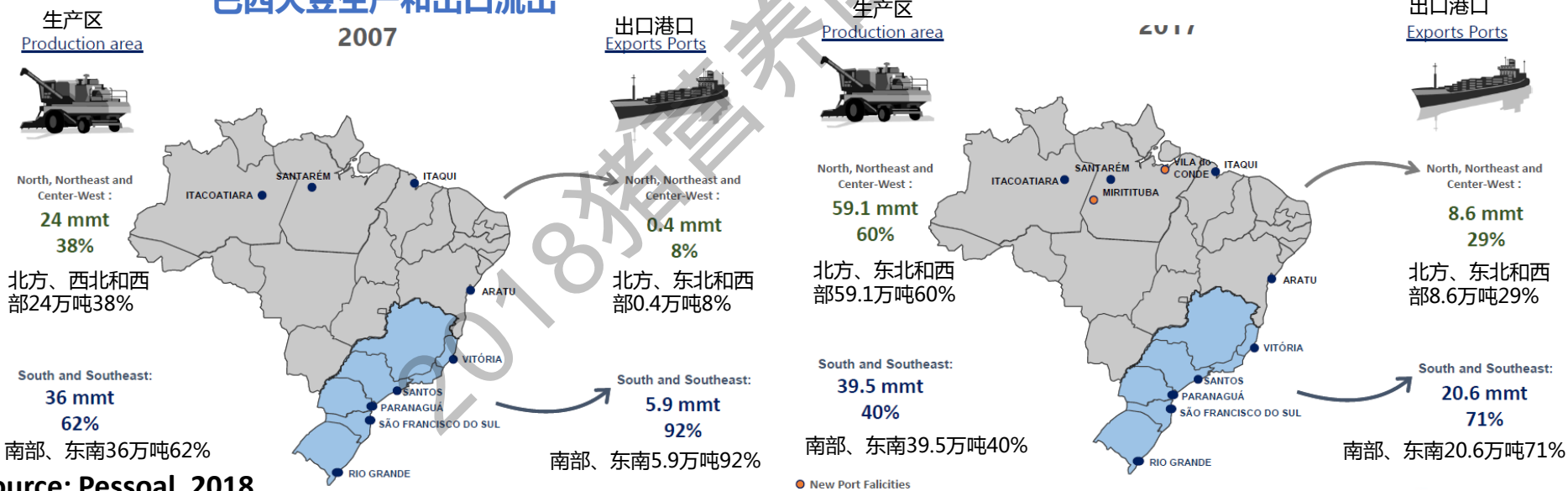
Weakness: Infrastructure 巴西市场和竞争力劣势：基础设施



Soya Cost 大豆成本

< 21% Production	生产 < 21%
> 373% Transportation	运输 > 373%
> 233% Harbor	港口 > 233%

Brazilian soya production and outflow to export 巴西大豆生产和出口流出



Source: Pessol, 2018

Brazilian market and competitiveness

Weakness: Health challenges

巴西市场和竞争力
劣势：健康挑战

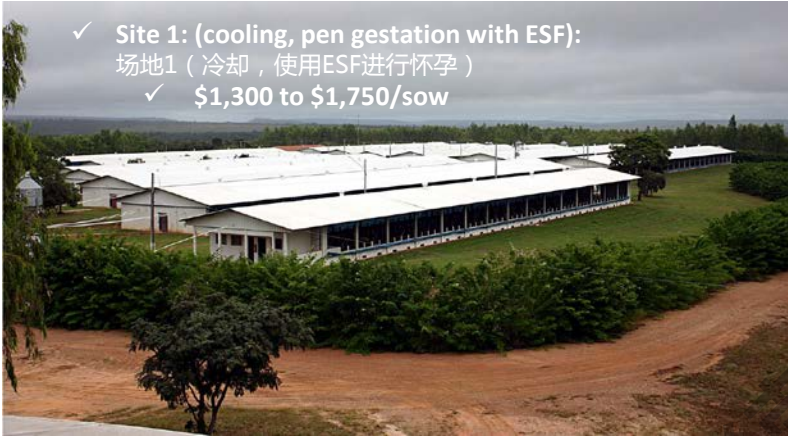


Brazilian market and competitiveness

Weakness: Modernizing

巴西市场和竞争力劣势：现代化

- ✓ Site 1: (cooling, pen gestation with ESF):
场地1 (冷却, 使用ESF进行怀孕)
- ✓ \$1,300 to \$1,750/sow









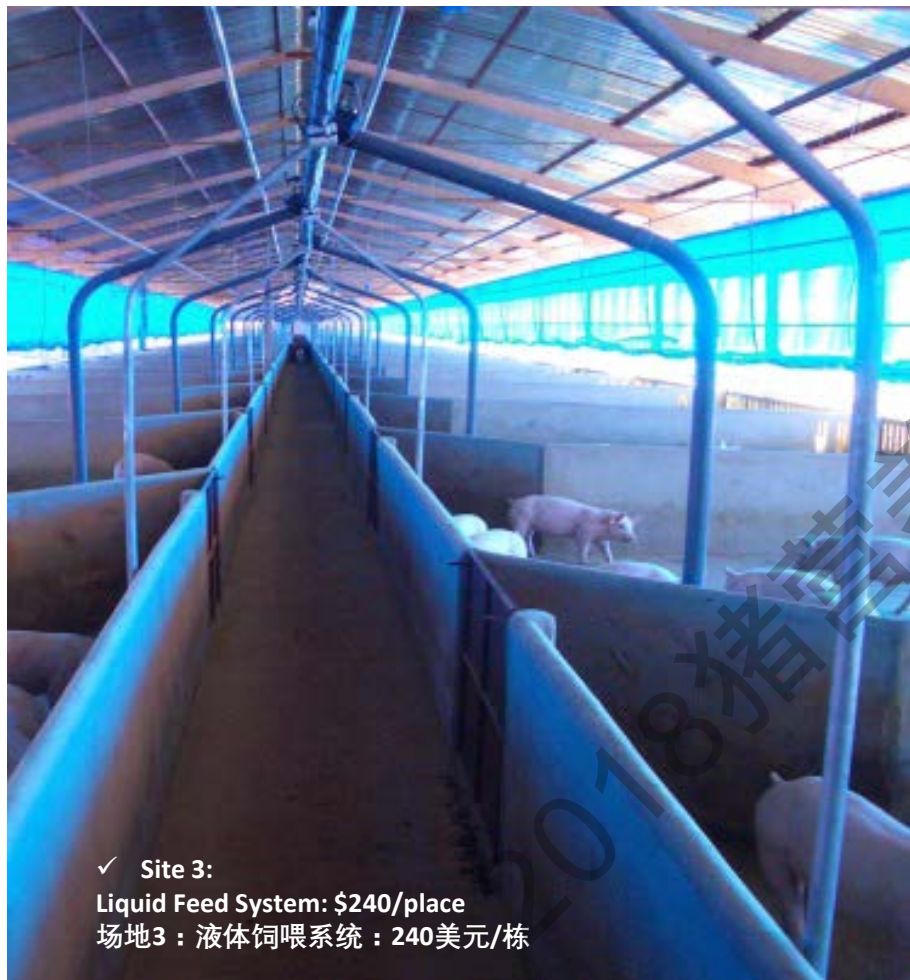
✓ Site 2:

✓ Dry Feed: \$135 to \$160/place

✓ 场地2 :

干饲料 : 135-160美元/ 栋











2018





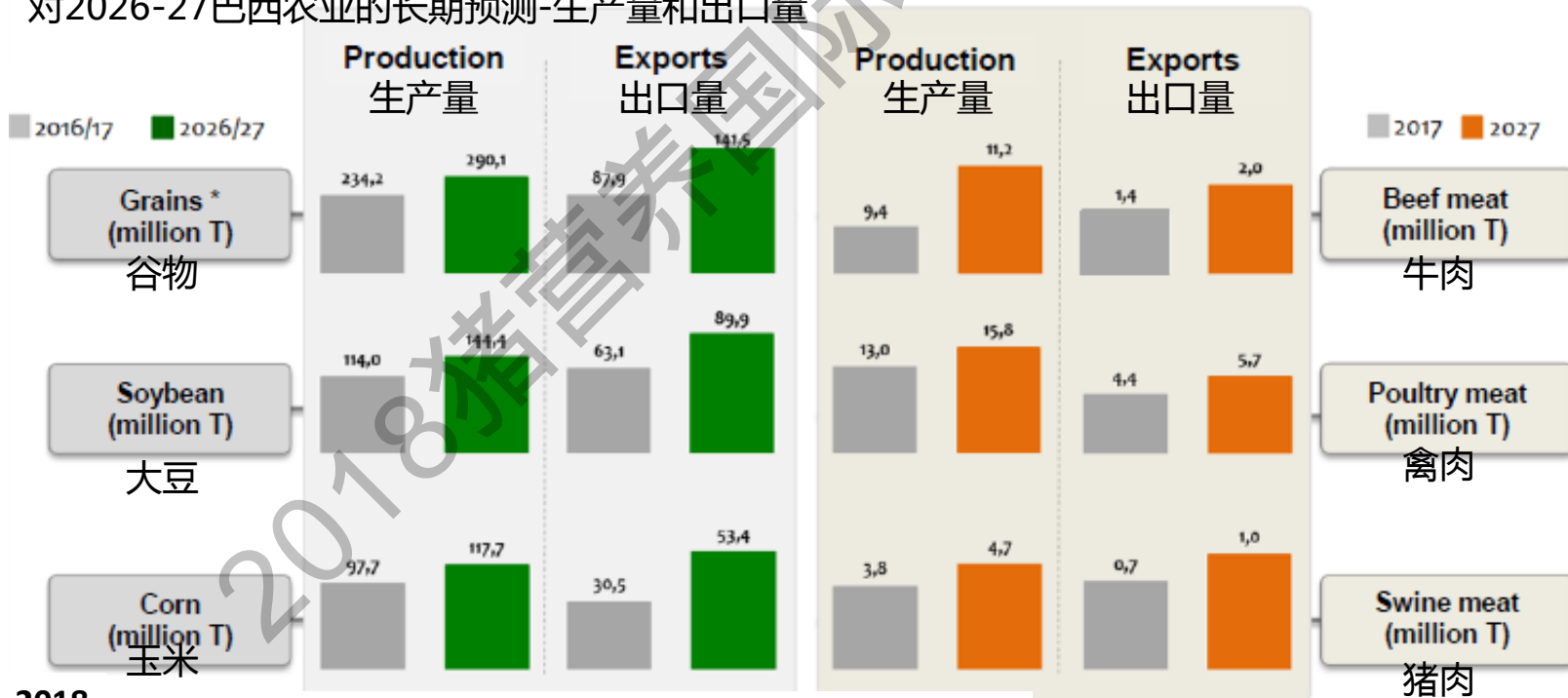
Brazilian market and competitiveness

Opportunities: Export 巴西市场和竞争力机会：出口

BRAZILIAN AGRICULTURE LONG-TERM PROJECTIONS TO 2026-27 - PRODUCTION AND EXPORTS

FGV EESP
CENTRO DE ESTUDOS
DO AGRONEGÓCIO

对2026-27巴西农业的长期预测-生产量和出口量



Source: Rodrigues, 2018

Source: Outlook FIESP 2017. *Grains: includes soybean, corn, cotton, rice, bean, wheat.

Brazilian market and competitiveness

Opportunities: Technology 巴西市场和竞争力机会：技术

Efficient Gain Post-Weaning 断奶后的有效增重



✓ Top 10% for WDA
WDA排名前10%

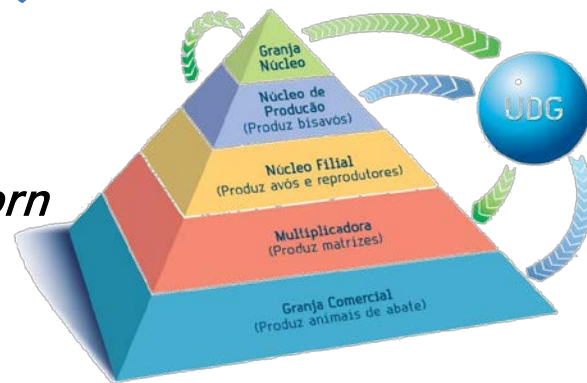
.976 kg / day .976kg/天

✓ Top 10% for FCR

FCR 排名前10% 1.63

✓ Top 10% for Total Born
总产仔排名前10%

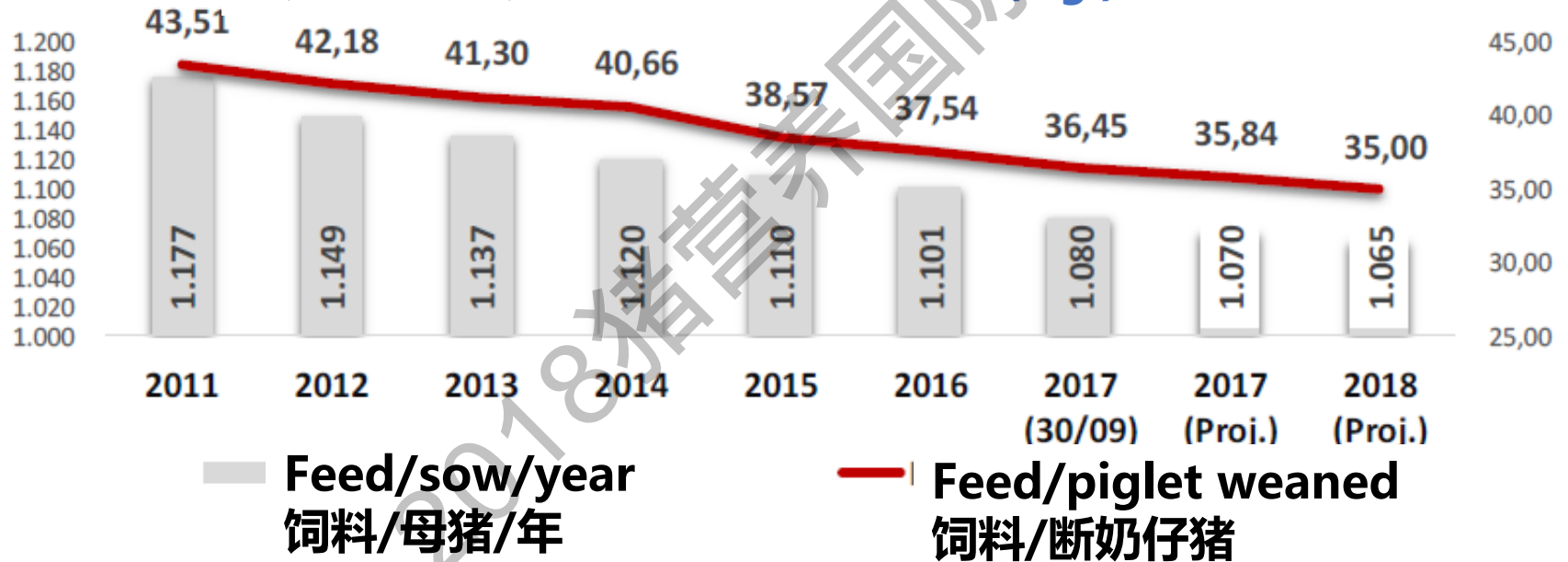
22.1 / litter窝

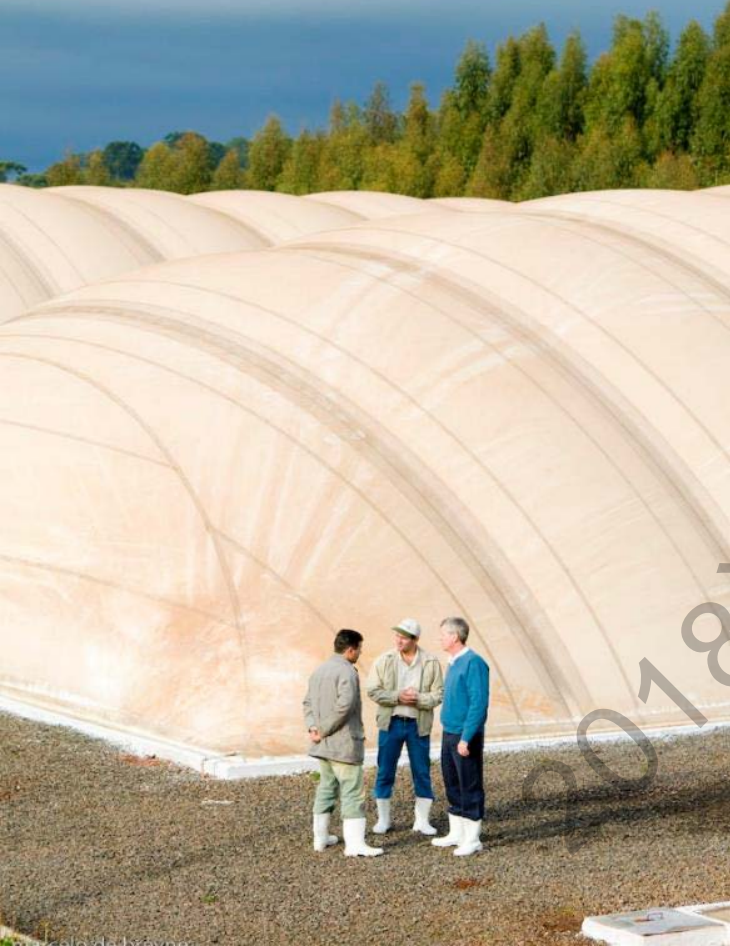


Brazilian market and competitiveness

Opportunities: Technology 巴西市场和竞争力机会：技术

Feed consumption per sow and per piglet weaned (kg)
每头母猪和每头断奶仔猪的饲料消耗量 (kg)





- ✓ Site 1: \$0.27-0.32/piglet (depreciation, labor, energy, maintenance) 场地1: \$ 0.27-0.32 /仔猪 (折旧, 人工, 能源, 维修)
- ✓ Pasture, corn, sugar cane 牧场, 玉米, 甘蔗
- ✓ It' s seen as an opportunity 这是一个机会



- ✓ Biogas – Electric energy, heat 沼气 - 电能, 热能
- ✓ Around 700 generators in operation 大约700台发电机在运行
- ✓ High investment (\$2,000 sow/farm biodigester + generator = \$250K
高投资 (2000美元母猪/农场生物消化器+发电机= 25万美元)
- ✓ Good payback – high energy costs 良好的回报 - 高能源成本

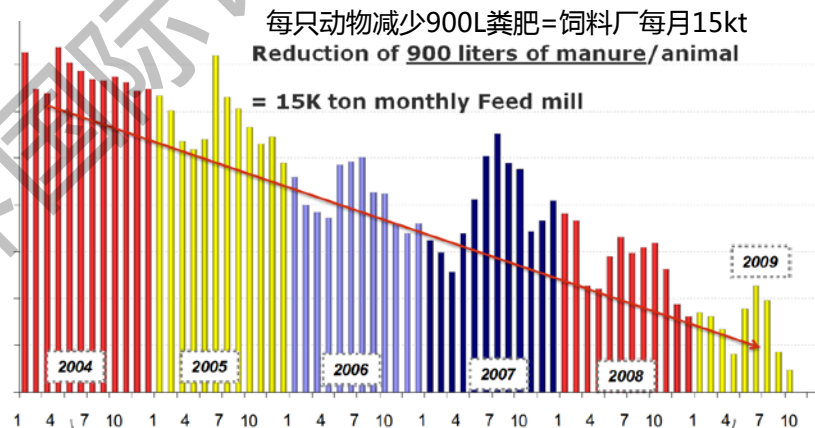
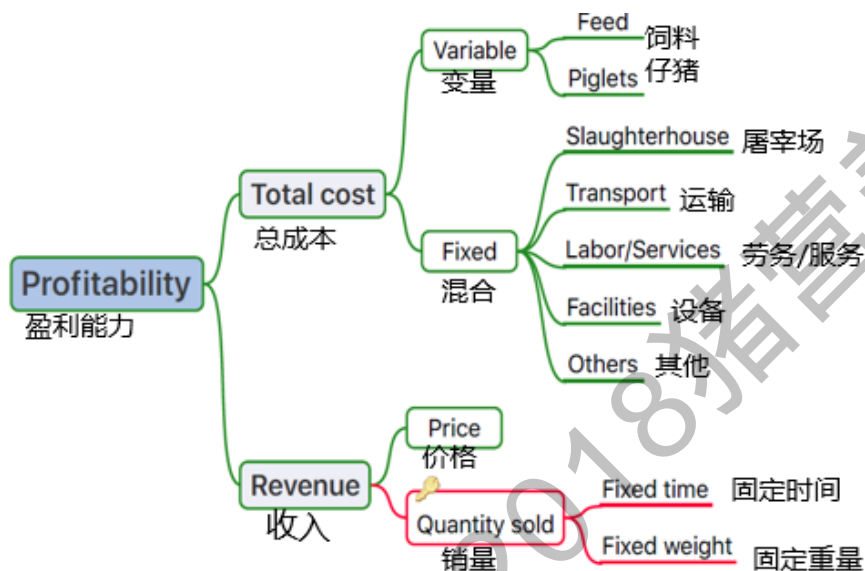


Brazilian market and competitiveness

Opportunities: Management 巴西市场和竞争力机会：管理

Using economical modeling to make the best decision

使用经济建模来做出最佳决策



Priorities, Innovations and lower investment as possible, always based in ROI

优先级，创新和尽可能低的投资，始终以投资回报率为基础

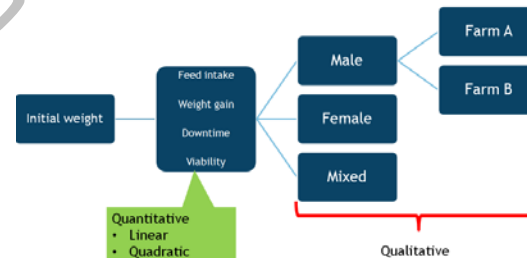
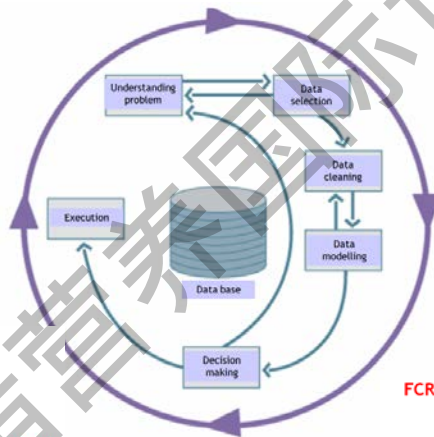
Brazilian market and competitiveness

Opportunities: Management

巴西市场和竞争力机会：管理

✓ Using statistical analyzes as tool to continuous improvement
使用统计分析作为持续改进的工具

✓ Focus in big pictures and hang fruits; 更关注整体



Health & Assurance (b%)

Feed Mill: (c%)

Genetic (z %)



Management (a%)

Nutrition (d%)

Annual Improvements (%):
 $a + b + c + d + z =$
(Target)

$$FCR = 2,70078 + (\text{effect of categorical factors}) + 0,0284943 * \text{Mort} - 0,00121238 * \text{ADFxADG}$$

Average FCR = 2,485

Savings considering a monthly 70.000 hogs slaughter(125 kg)

- ✓ Recover C class from (34%) = 0,014 US\$ 44.000/month
- ✓ Reducing piglets from 3 worse region by 50% = (0,015) US\$ 47.000/month
- ✓ Feed intake x ADG: increase in 1 std. dev = 0,024 US\$ 75.000/month
- ✓ Mortality= if reduce 0,25 std. deviation = 0,024 US\$ 38.400/month

Total = US\$ 204.400,00/month or US\$2.452.000,00/year

Brazilian market and competitiveness

Opportunities: Management 巴西市场和竞争力机会：管理

Feed to gain ratio adjusted to 125 kg market weight.
料肉比，校对为125公斤的出栏重。

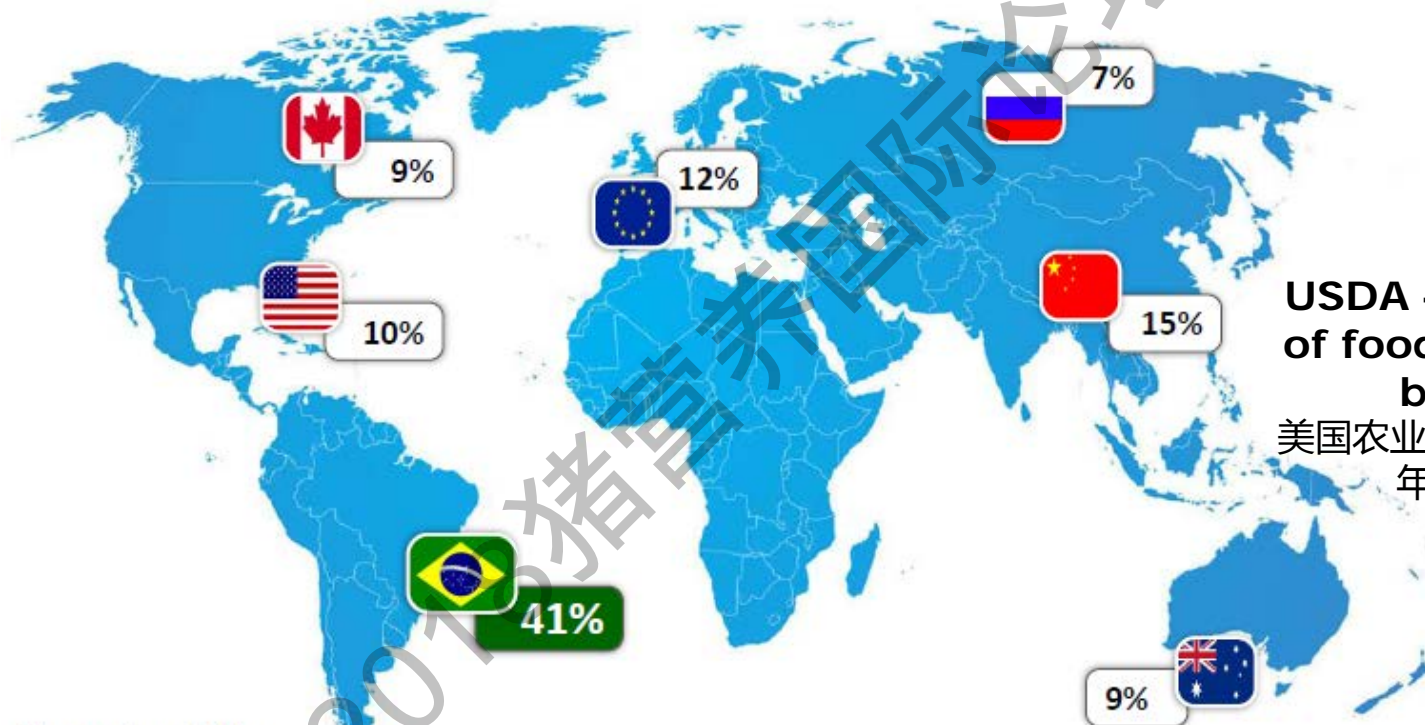


2018 Average
2018年平均值
For 3 biggest companies
三大公司
representing 650K sows
代表65万头母猪

全年改进

Brazilian market and competitiveness

Threats: Trade protectionism 巴西市场和竞争力威胁：贸易保护主义



USDA – Projection of food production by 2027
美国农业部 - 预测至2027年粮食产量

% increase in production
生产增加量

USDA projections in world food production required to meet the market demand of estimated population levels in 2026/27. **Brazil is by far the fastest growing agricultural producer, with output expected to rise by more than 40% from now to 2026/27.**

Source: U.S. Department of Agriculture, Office of the Chief Economist, World Agricultural Outlook Board. USDA Agricultural Projections to 2026. Long-term Projections Report No. OCE-2017-1. February 2017.

Brazilian market and competitiveness

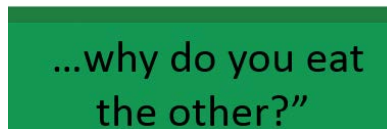
Threats: Consumers pattern

巴西市场和竞争力威胁：消费者模式

ANIMAL WELFARE

动物福利

- ✓ The main issue is pen gestation, but there's no legislation about it 主要问题是圈养妊娠母猪，但没有立法
 - ✓ BRF (2014), JBS (2015), Aurora (2015) and Frimesa (2017) announced that will adapt their farms in 12 years
- BRF (2014)、JBS (2015)、Aurora (2015) 和 Frimesa (2017) 宣布将在12年内调整其农场



- ✓ Activism is more and more frequent 行动主义越来越频繁
- ✓ The consumers are looking for more information about how the animals are raised 消费者正在寻找如何饲养动物的更多信息



养猪国际论坛













Brazilian market and competitiveness

Threats: Consumers pattern 巴西市场和竞争力威胁：消费者模式

ANIMAL WELFARE 动物福利

✓ CASTRATION 去势

- ✓ It's not allowed to slaughter entire boars 不允许屠宰整只公猪

✓ IMUNOCASTRATION 免疫去势

- ✓ Used in around 55% of the boars 用于约55%的公猪
- ✓ Average Daily Gain 0-2% 平均日增重
- ✓ Feed Conversion Rate – 5 to 8% 饲料转化率
- ✓ Piglet Mortality – 1% 仔猪死亡率
- ✓ Lean Meat + 2 to 4 Kg 瘦肉
- ✓ No impact on market access 对市场准入没有影响

✓ TRANSPORT 运输

- ✓ There's a federal legislation (fasting, everything related to the truck, etc) 有联邦立法（禁食，与卡车有关的一切等）
- ✓ Pigs severely injured must be killed at the farm (usually after a technical inspection) 受伤严重的猪必须在农场被杀死（通常在技术检查后）

✓ FARM LEVEL 农场水平

- ✓ Teeth, tails, euthanasia 牙齿，尾巴，安乐死

Brazilian market and competitiveness

Threats: Consumers pattern 巴西市场和竞争力威胁：消费者模式

ABF “Antibiotic free production” 无抗生素生产

ANTIBIOTIC USES 抗生素使用

- ✓ There' s a Federal compromise with OIE 与世界动物卫生组织妥协
- ✓ Frequent meeting between the Agriculture Ministry, Associations, H&A and feed Companies, etc 农业部，协会，H & A和饲料公司等频繁召开会议
- ✓ Some normative are already been implanted, other will arrive soon 一些规范已经植入，其他将很快到来



Brazilian market and competitiveness

Threats: Consumers pattern 巴西市场和竞争力威胁：消费者模式

Ractopamine free
不含莱克多巴胺

- ✓ 10 years ago it was present in nearly 100% of the production 10年前它出现在近100%的产量中
- ✓ Due do markets restrictions (Russia, China) the use was strongly reduced (nowadays estimated in 50%) 由于市场限制（俄罗斯，中国），使用量大幅减少（目前估计为50%）
- ✓ Normally used by the independent producers (internal Market) 通常由独立生产商使用（内部市场）
- ✓ Improve FCR from 80-120 g/kg (depends on weight at slaughter, genetic, gender, nutrition, etc) 将FCR从80提高到120克/千克（取决于屠宰重量，遗传，性别，营养等）
- ✓ Performance improvement similar to 5 year in genetic improvement 性能改善幅度与遗传改良5年的效果相当



~US\$ 170 Millions/year
~1.7亿美元/年

Summary 总结

Competitiveness on farm: Brazil is a big producer, the trick is move forward to be better producer.

Integrated system (Poultry lesson);

农场竞争力: 巴西是一个大生产国，诀窍是向更好的生产者迈进。综合系统（家禽课）

Challenges: Infrastructure, Health, Trade (opportunities?) **挑战:** 基础设施、健康，贸易（机遇？）

Genetic: Genetic companies are selecting today the animals to be raising in 3- 4 years... Why we make our projects and investments thinking about the present?

遗传: 遗传公司现在选育的是在3-4年内饲养的动物.....为什么我们做项目和投资时仅考虑现在？

Technology: There aren' t a perfect project...however building today as similar 10 years ago

技术: 没有一个完美的项目.....不过10年前的建设与今天类似。

New projects: focusing in animal welfare and also people' s friendly

新项目: 专注于动物福利和人类友好

Explore new markets: ABF, ractopamine free, improve the animal welfare requirements

探索新市场: 无抗生素，无莱克多巴胺，提高动物福利要求



Acknowledgments 致谢

✓ UFPR - Parana Federal University; 巴拉那联邦大学;



✓ ABCS – Brazilian Pork Producers Association;
巴西猪肉生产者协会



✓ Brazilian pork producers: 巴西猪肉生产商

- ✓ Seara Alimentos (JBS Foods);
- ✓ Cooperative Aurora;
- ✓ BRF;
- ✓ Alibem Alimentos.



✓ Agrocere PIC

✓ PIC 中国





Never
Stop
Improving
Nutrition.

Muito Obrigado!

Thanks

谢谢

Dr. Uislei Orlando

Global Nutrition Programs Director - PIC North
America Hendersonville, TN - USA

+1 615 416 0356 | uislei.orlando@genusplc.com

PIC