



奶肉杂交成功的关键点

Keys to Success

Beef x Dairy Market

艾伦 PEAK肉牛总监
Allen Moczygemba
PEAK Beef Director



个人简介 Personal Introduction

- Grew up on a commercial cow/calf operation in south Texas which was established in 1854 and remains a viable family enterprise. 成长于南德克萨斯州牛场
- Entire career in agribusiness; primarily in the livestock sector. 整个职业生涯从事农业尤其是畜牧业工作
- Experience across the segments of the beef industry.
- Worked for market leaders and a technology start-up.
- Previous experience includes:工作经历
 - Chief Executive Officer (American Angus Association) 美国安格斯协会执行总裁
 - Vice President, Marketing (Advanced Animal Diagnostics)
 - Marketing Director, Beef Segment (PAH/Zoetis)
 - Senior Vice President (Farm Journal)



ANGUS
THE BUSINESS BREED

AAD Information that counts.
Advanced Animal Diagnostics

zoetis

Pfizer Animal Health

FARM JOURNAL

PEXX

理解奶肉杂交牛的影响

Understanding the impact of the Beef x Dairy feeder calf



"I've been in customer feedyards and have seen firsthand the quality of the Beef x Dairy crosses; you can't tell them apart from the native yearlings...The ones that aren't 'cheaters' will bring a premium every time." 我能够接触到育肥场最真实的奶肉杂交牛情况，根本很难将杂交牛与本场肉牛区分开来，这不是欺骗，奶肉杂交能带来很好的效益。



CattleFax
THE DECIDING
FACTOR

Randy Blach
Chief Executive Officer



概要Presentation Outline

- I. 理解肉牛育种值Understanding EPD's/Index
- II. 肉牛产业主要驱动力Beef Industry Key Drivers
- III. 奶肉杂交利益链Beef x Dairy Value Chain
- IV. 成功关键点Keys to Success



从零开始Zero in on the Traits that Matter!

SHIFT



SHIFT YOUR GENETIC FOCUS.
UTILIZE GENEX BEEF ON DAIRY.

- › 易产性Calving Ease
- › 生长性Growth
 - › 断奶重Weaning Weight (WW)
 - › 周岁重Yearling Weight (YW)
- › 增重和体型的平衡Balance of optimal growth and frame size
- › 肉牛指数Beef Value (\$B)
- › 胴体表现Carcass performance

系谱解读

To focus on the traits that matter, it's important to understand the implications of the numbers on a pedigree



CAM Home Town A066 Reg: AAA +*19974624 Cow

Birth Date: 08/22/2020 Tattoo: A066
 Parentage: SNP Genomic: Angus GS
 Parents Qualified
 Breeder: 1161928 - C A M Ranches, Arnoldsville GA
 Owner(s): 1161928 - C A M Ranches, Arnoldsville GA

ANGUS THE BUSINESS BREED logo

G A R Ashland AAA +*18217198 [RDF]
 Chair Rock Ambush 1018 AAA +*16934264

G A R Home Town AAA +*19266718 [RDF]
 Chair Rock Sure Fire 6095 AAA +*17328461 [RDF]
 AAA +*18644754
 Chair Rock Progress 3005 AAA +*17589100
 A A R Ten X 7008 S A AAA #*15719841

G A R 100X AAA +*17774305 [RDF]
 G A R 5050 New Design A91 AAA *16533134

CAM 100X A7004 AAA +*19023441
 G A R Prophet AAA #+*16295688 [RDF]
 AAA 17730673
 G A R Complete A17 AAA +17123479
 # Pathfinder + Embryo Transplant * Parents Qualified

EPD Percentiles As of 11/15/2021

Production				Maternal											
CED	BW	WW	YW	RADG	DMI	YH	SC	HP	CEM	Milk	MKH	MW	MH	\$EN	
Acc %	Acc %	Acc %	Acc %	Acc %	Acc %	Acc %	Acc %	Acc %	Acc %	Acc %	MKD	Acc %	Acc %	%	
Prog	Prog	Prog	Prog	Prog	Prog	Prog	Prog	Daus	Daus	%		Prog	Prog		
+13	+1.4	+81	+157	+.39	+1.75	+1.0	+1.11	+10.4	+14	+28		+147	+1.2	-60	
.34	.50	.42	.36	.30	.30	.44	.41	.20	.27	.28		.35	.38		
10%	55%	4%	1%	1%	95%	10%	30%	70%	4%	30%		1%	3%	95%	

Click here to show/hide Management EPD Section

Management			
Doc	Claw	Angle	PAP
Acc %	Acc %	Acc %	Acc %
Prog	Prog	Prog	Prog
+23	+.63	+.54	+.29
.33	.24	.25	.23
25%	95%	75%	30%

Carcass				\$Values							
CW	Marb	RE	Fat	Carc Grp	Usnd Grp	\$M	\$W	\$F	\$G	\$B	\$C
Acc %	Acc %	Acc %	Acc %	Prog	Prog	%	%	%	%	%	%
Prog	Prog	Prog	Prog								
+74	+1.79	+1.09	-.051			+33	+77	+132	+112	+243	+348
.40	.37	.37	.33								
4%	1%	3%	2%			95%	15%	1%	1%	1%	1%



关键指标 Key Definitions: EPD, \$ Value Index (\$Value), Accuracy (ACC), Percent Rank (%)

- 估计后代遗传偏差 Expected Progeny Difference (EPD)
 - The prediction of how future progeny of each animal are expected to perform relative to the progeny of other animals listed in the database.
 - EPDs are expressed in units of measure for the trait, plus or minus.
估计后代性状与其它公牛后台性状的差异
- 经济指数 \$Value Index (\$Value)
 - An economic selection index allows multiple change in several different traits at once pertaining to a specific breeding objective.
 - The \$Value is an estimate of how future progeny of each sire are expected to perform, on average, compared to progeny of other sires if the sires were randomly mated to cows and if calves were exposed to the same environment.
 - 多项性状指数赋予经济加权值后得到的经济指数
- 准确性 Accuracy (ACC)
 - The reliability that can be placed on the EPD. An accuracy of close to 1.0 indicates higher reliability. Accuracy is impacted by the number of progeny and ancestral records included in the analysis.
- 百分比排名 Percent Rank
 - Indicates the percent rank (Top) in the herd.

CAM Home Town A066		Reg: AAA +*19974624		Cow	
Birth Date: 08/22/2020 Tattoo: A066					
Parentage: SNP Genomic: Angus GS					
Parents Qualified					
Breeder: 1161928 - C A M Ranches, Arnoldsville GA					
Owner(s): 1161928 - C A M Ranches, Arnoldsville GA					
G A R Home Town					
CAM 100X A7004					
EPD Percentiles					
CED	BW	WW	YW	Production	
Acc	Acc	Acc	Acc	Acc	Acc
%	%	%	%	%	%
Prog	Prog	Prog	Prog	Prog	Prog
+13	-50	+81	+157	+39	+39
.34	.50	.77	.36	.30	.30
10%	55%	4%	1%	1%	1%

\$Values					
\$M	\$W	\$F	\$G	\$B	\$C
%	%	%	%	%	%
+33	+77	+132	+112	+243	+348
95%	15%	1%	1%	1%	1%



易产性和出生重

It all starts with Calving Ease (CED) and Birth Weight (BW)

- 易产性Calving Ease
 - Reported as the difference in percentage of unassisted births when a bull is mated to a heifer for her first calf.与配青年牛首次产犊顺产比例
 - A higher number is more favorable for calving ease.
- 出生重Birth Weight
 - Reported in pounds of calf at birth.
 - Inversely correlated to calving ease.
 - As one goes up the other generally goes down.
 - A lower value is more favorable for calving ease.单位是磅，越低易产性越好



断奶重和周岁重能指示生长速度和产肉量

Both Weaning Weight and Yearling Weight are indicators of growth and beef production

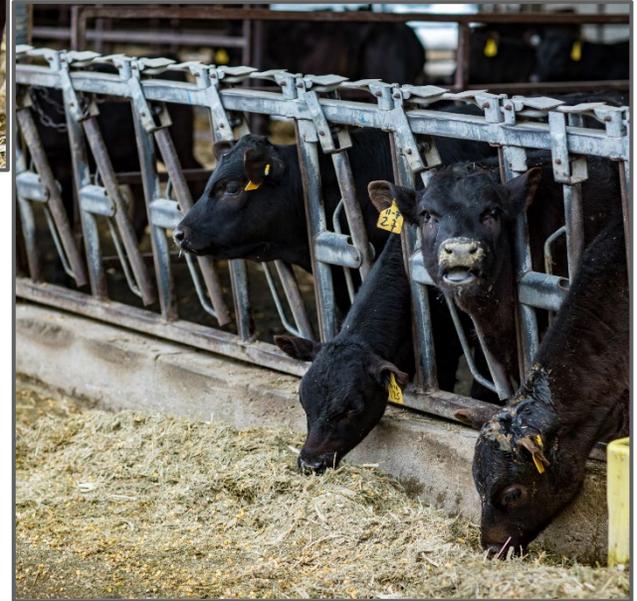
断奶重Weaning Weight

- Predicts the difference, on average, in 205-day weight of one bull's progeny compared to progeny from another bull.断奶天数205天
- Reported in pounds with a high number being more desirable.单位磅，越高越好
- Focus on weaning weight offers the most potential value to producers who market their calves at 6-8 months of age.犊牛饲喂场，越高越好



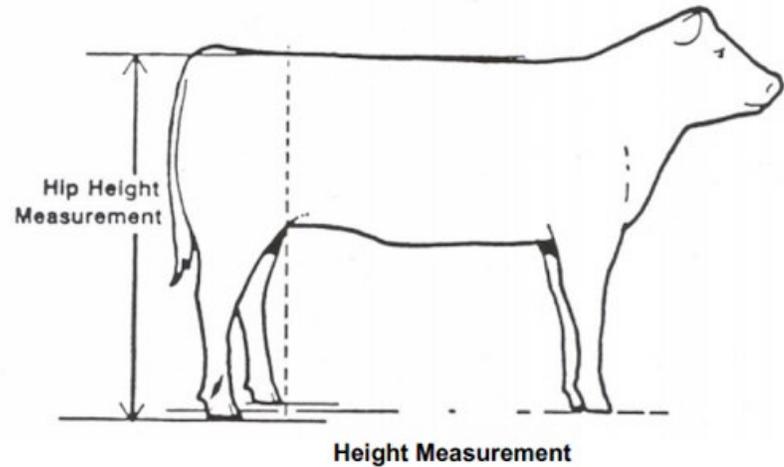
周岁重Yearling Weight

- Predicts the difference, on average, in post weaning - 365-day weight of one bull's progeny compared to progeny from another bull.周岁365天
- Reported in pounds with a high number being more desirable.越高越好
 - To a point?



奶牛配安格斯时推荐选择较低的周岁身高

Selecting for lower Yearling Height traits works well when breeding Holsteins with Angus semen



周岁体高Yearling Height

- Predictor of a sire's ability to transmit yearling height, expressed in inches, compared to other sires.
- Frame size is an indicator of final harvest weight.
- Challenge with Beef x Dairy cross is for offspring to fit into an acceptable size range for beef processors without being penalized for tall (Holstein) or short (Jersey) carcasses. 奶肉杂交牛往往面临屠宰时的规格不符惩罚

生长速度与体型高度相关Growth (WW & YW) are highly correlated with frame size (YH). It's a balancing act!

肉牛效益指数反应断奶到销售整个过程中的收益情况

Beef Value (\$B) is the ultimate measure of terminal animals that is based on postweaning and carcass traits

- A terminal index, expressed in dollars per carcass, to predict profitability differences in progeny due to genetics for postweaning and carcass traits.
- The terminal index assumes producers wean all male and female progeny, retain ownership of these animal through the feeding phase and market the animals on a carcass grid.
- Traits included in the index are: Yearling Weight, Dry-Matter Intake, Marbling, Carcass Weight, Ribeye Area and Fat.
- 肉牛效益指数/断奶后效益指数，衡量断奶后到加工出售后整体带来的收益，单位是美元
- 饲养模式是全进全出，计算断奶犊牛最终收益
- 相关性状：周岁重，干物质采食，大理石花纹，胴体重，眼肌面积和脂肪率



最终的利润点始终来自胴体重和评级

Don't lose sight that the ultimate determination of success will be the carcass attributes: grade, yield, cutability

胴体重 Carcass Weight

- Expressed in pounds, is a predictor of the differences in hot carcass weight of a sire's progeny compared to progeny of other sires. 胴体鲜重
- Main factor in the determination of the value of the carcass when cattle are sold on the grid. 利润主要决定因素

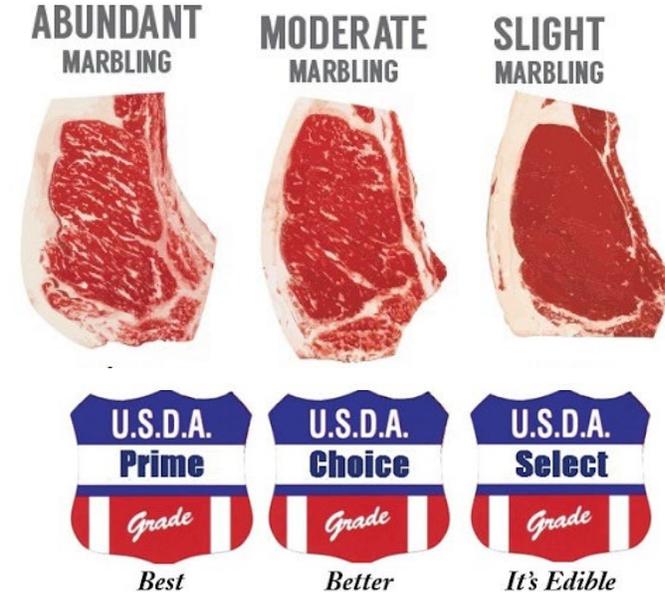


质量越高，价值越高

The higher the quality, the more it's worth!

大理石花纹Marbling

- Measure of intramuscular in the ribeye muscle between the 12th and 13th rib.
- Expressed as a fraction of the difference in USDA Marbling Score of a sire's progeny compared to other sires.
- Marbling is one of the most important factors in determining the quality of a carcass.
- Strong visual indicator for the meat's tenderness, texture, juiciness and flavor.
- 公牛后代脂肪分布评分，背最长肌第12至13肋之间横切面脂肪分布评分。



眼肌面积Ribeye Area

- Expressed in square inches, it is a predictor of the difference in ribeye area of a sire's progeny compared to progeny of other sires.
- It is the best interpreter of overall muscling within the carcass.
- As ribeye area increases, retail product yield increases.
- 公牛后代眼肌面积，单位是平方英寸。



安格斯奶肉杂交指数帮助奶农预测杂交情况

Angus Beef x Dairy Indexes allow dairy producers predictive results for their mating decisions

安荷指数Angus x Holstein (AxH)

安娟指数Angus x Jersey (AxJ)

- Estimate of how future Beef x Dairy progeny of Angus sires are expected to perform, on average, compared to Beef x Dairy progeny of other Angus sires. 评估杂交后代对比其它公牛后代差异
- Traits included: calving ease, growth from birth through the feeding phase, feed intake, dressing percent, yield grade, quality grade and muscling. 包括, 易产性, 生长性能, 采食量, 屠宰率, 产量评分, 质量评分和肌肉率
- \$AxH adds a negative weighting on height. 安荷指数体高权重为负, 帮助调整体型
 - Help to moderate crossbred's stature.
- List of Beef x Dairy sires and their Index Values on the extranet.

Relative Trait Comparison to \$B:			
	\$B	\$AxH	\$AxJ
Calving Ease	→	→	↑
Growth	→	↑	↑
Muscle	→	↑	↑↑
Height	→	↓	→
Carcass Weight	→	→	→
Marbling	→	→	↓

安格斯-世界上最知名的肉牛品种

Angus remains the most recognized breed in the world

优势Considerations

- Calving Ease易产性
- Marbling, carcass quality大理石花纹, 胴体品质
- Growth生长速度
- Most widely available, largest selection分布广, 受众广
- Less "visual" muscle than other breeds瘦肉率低
- Fatten sooner育肥时间短
- Carcass cutability; slightly less red meat yield胴体分割性, 红肉产量略低



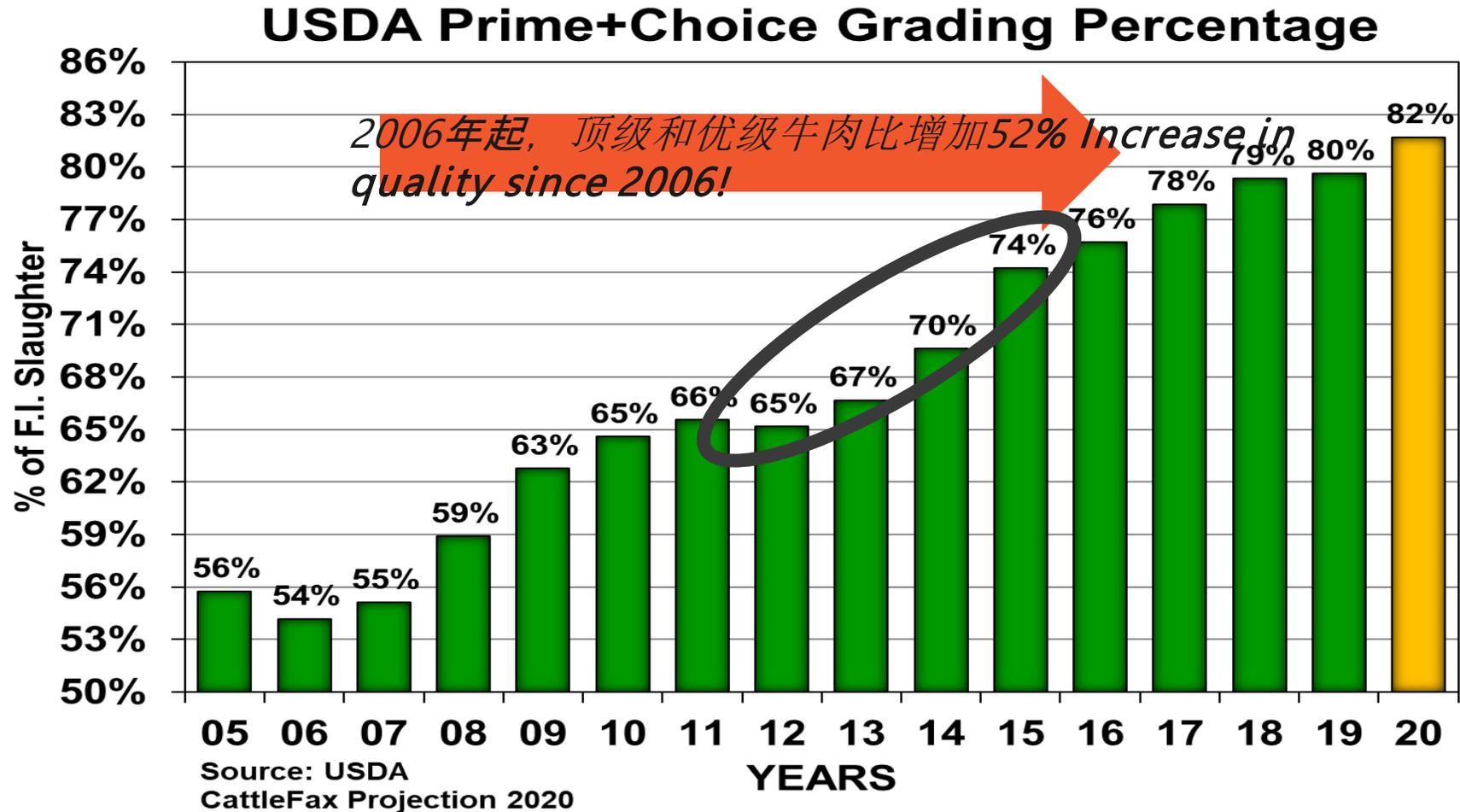


肉牛产业主要驱动因素

Beef Industry Key Drivers

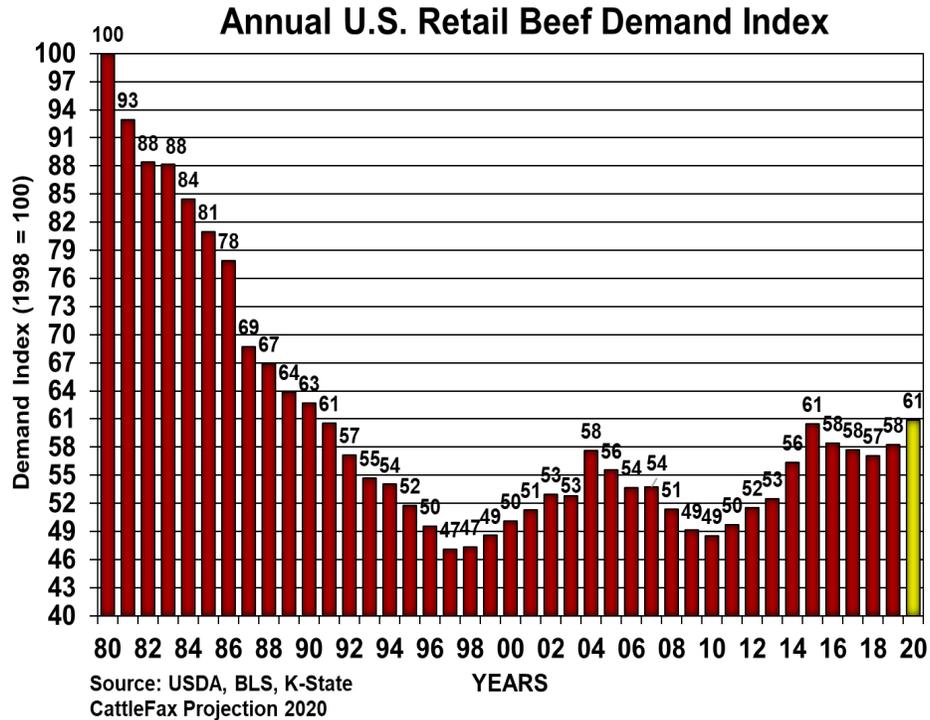
消费者对牛肉质量要求不断提高

Demand is strong due to improved beef quality which ensures a consistent and enjoyable dining experience

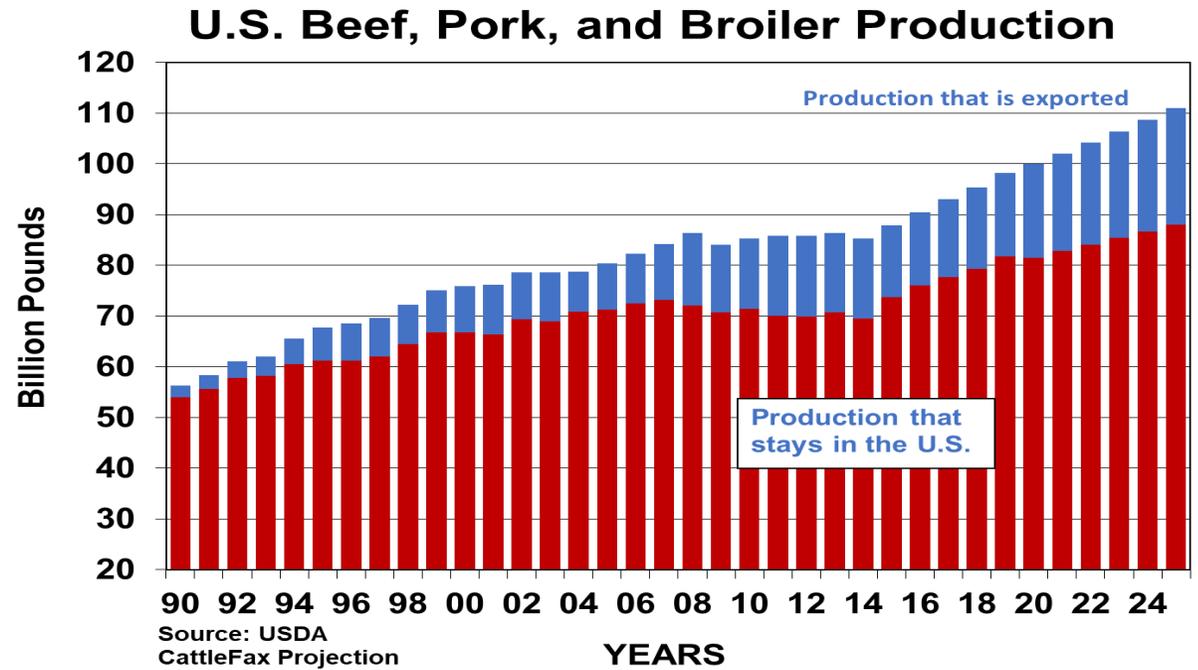


美国肉牛消费指数每头牛增加240美元， 出口指数增加350美元

US beef demand has added almost \$240 per head to the value of cattle while exports add another \$350



Beef demand grew by 25% during 2010 – 2020!
牛肉需求增加25%



Export values are forecast to increase to \$500 per head by 2030!
预计每头牛出口价值增加500美元

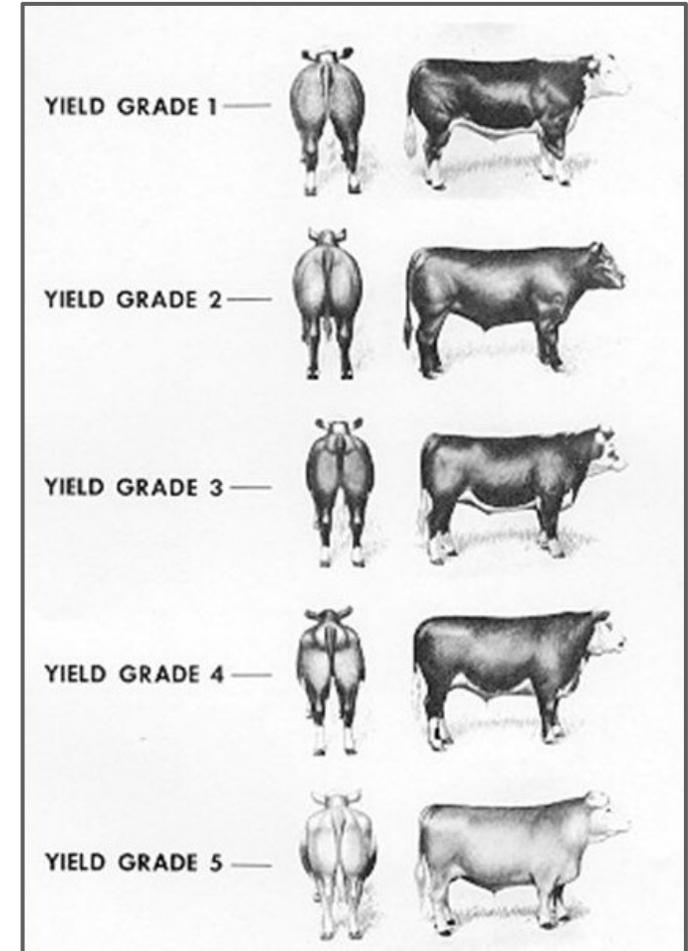


产量评级达标之后，牛肉质量评级越高收益越大

Producing quality beef is rewarded when yield grade targets are achieved

		YIELD GRADE				
		1	2	3	4	5
QUALITY GRADE	Prime	\$\$\$\$\$	\$\$\$\$	\$\$\$	\$	(\$\$)
	CAB®	\$\$\$\$	\$\$\$	\$\$	(\$)	(\$\$)
	Choice	\$\$\$	\$\$	-	(\$)	(\$\$\$)
	Select	(\$)	(\$\$)	(\$\$)	(\$\$\$)	(\$\$\$\$\$)
	Standard	(\$\$\$)	(\$\$\$)	(\$\$\$\$\$)	(\$\$\$\$\$\$)	(\$\$\$\$\$\$)

Source: Drovers, Certified Angus Beef



提升牛肉品质带来的收益推动育种进展

Financial incentives for producing a quality product has driven breeding decisions

Grid Premiums and Discounts			
	Prime	CAB®	Select
2015	\$ 16.11	\$ 4.13	\$ (7.57)
2016	\$ 15.05	\$ 4.50	\$ (10.72)
2017	\$ 15.94	\$ 4.33	\$ (11.82)
2018	\$ 12.50	\$ 4.31	\$ (11.36)
2019	\$ 13.98	\$ 4.19	\$ (15.37)
2020	\$ 10.80	\$ 4.67	\$ (12.08)
AVG	\$ 14.06	\$ 4.35	\$ (11.49)

U.S. Average Quality				
	Prime	CAB®	Choice	Select
2015	5%	28%	69%	21%
2016	6%	29%	70%	19%
2017	6%	30%	72%	18%
2018	8%	34%	71%	17%
2019	9%	35%	71%	17%
2020	10%	36%	73%	14%



Source: Drovers, Certified Angus Beef

宏观上，北美肉牛产业受三个因素影响

At a macro level, there are three key drivers for the North American beef industry

- **肉牛表现Cattle Performance:** Commitment to improved production efficiencies drive the cattle feeding industry. Health, ADG, feed efficiency, grade and yield standards allow cattle to qualify for grid premiums and higher profits. Data analysis and insights drive the process.肉牛生产效率提升，包括健康，品质等。
- **供应链效率Supply Chain Efficiencies:** As the beef chain becomes more closely aligned, multiple organizations will work together in partnership to streamline and improve supply chain efficiencies. These new partnerships will require organizations to work with others in the chain while new tracing technologies will emerge to add efficiencies and process verification.多环节联合，追溯系统
- **消费者期望Consumer Desires:** Today's consumers want to align with brands that offer a premium product that meet their personal expectations that cattle were raised with a minimal impact on the environment and accepted animal care and handling standards.品牌信赖，环境保护，动物福利等



育肥场重视效率，数据透明化和标准化

Feedlots are placing a greater emphasis on transparency, improved efficiencies and documenting SOP's

牛肉生产认证确保牛肉生产过程中标准化，动物福利，环境友好和可持续发展
Progressive Beef certifies that feedlots meet strict standards for cattle care, environmental sustainability and process control



- Feedlots: 60
- Fed Cattle: ~4,000,000
- Digital Data
- Beef Processor: Tyson Fresh Meats
- Food Service: Culver's



产业链提升效率并增加产品价值

Key partnerships will be critical to improve supply chain efficiencies and overall product value

It will be challenging and at times difficult, but nonetheless imperative, that organizations work together toward a common goal to improve efficiencies.

产业链整合

共同目标COMMON GOALS

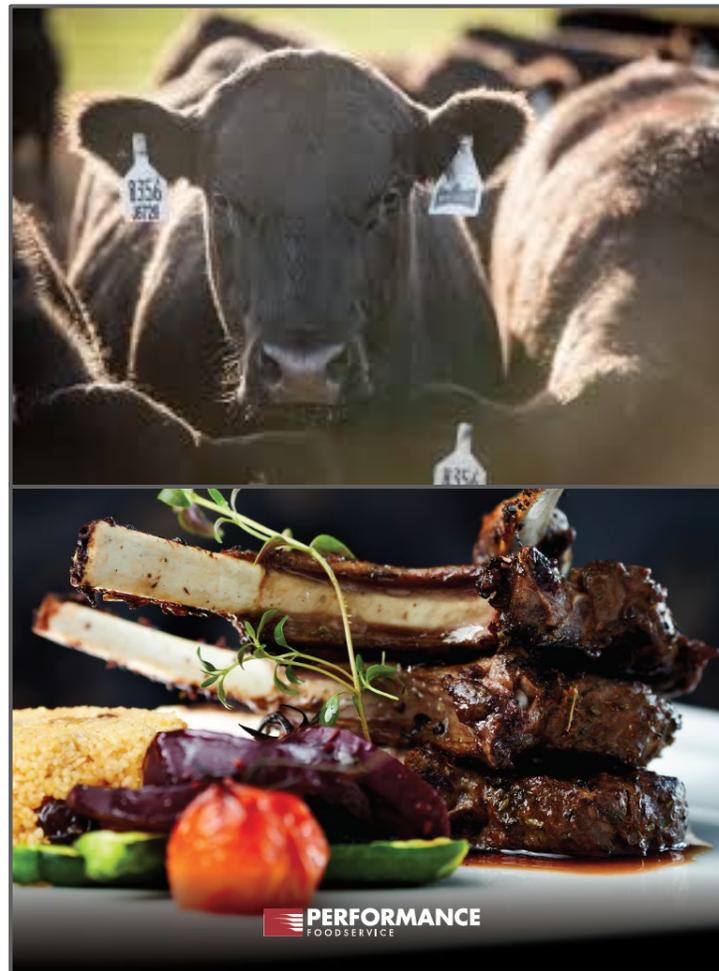


牛肉已经脱离普通商品进化成为优质食品

Beef continues its evolution from a commodity business to a differentiated premium branded product



- Sources cattle raised in the Midwest with an emphasis on humane practices and sustainability 来自中西部的牛肉强调人与环境可持续发展
- Developed PathProven program to assure quality 发展可追溯系统保障牛肉品质
- Use DNA Traceback to confirm Angus genetics and require meeting minimum standards for feeding, health and humane handling 采用基因技术确保遗传品质，并指导牧场饲养，健康和管理





肉奶杂交利益链

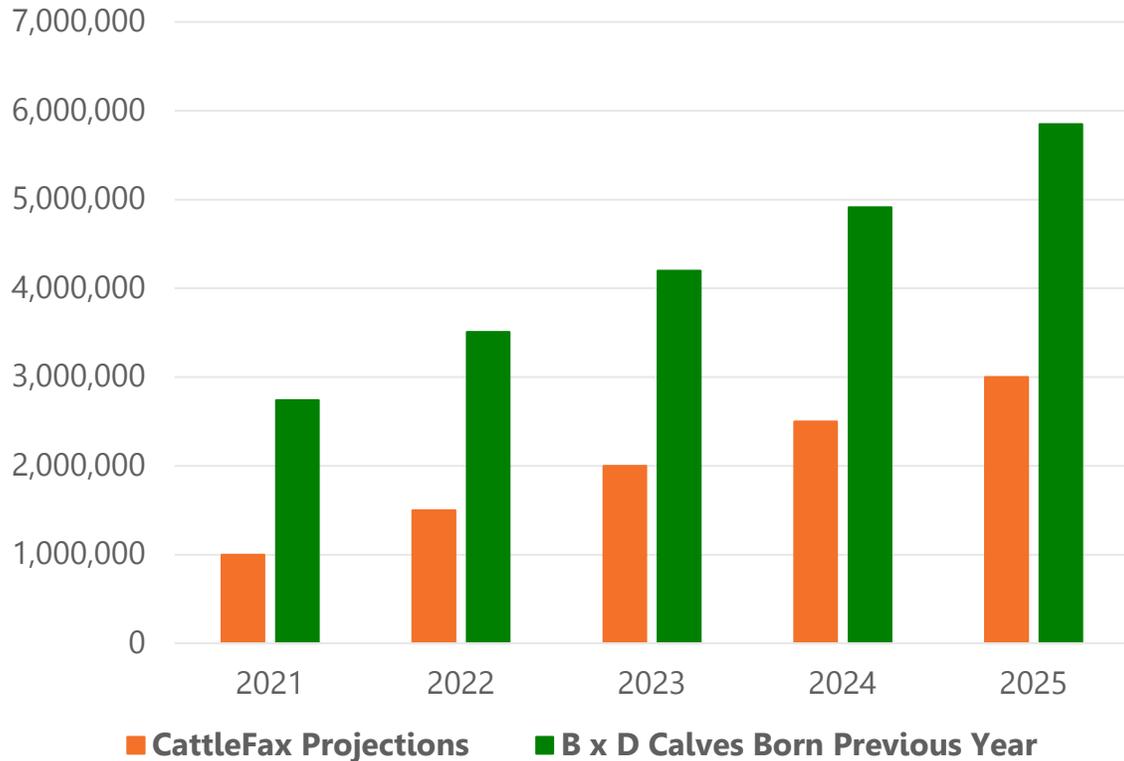
Beef x Dairy

Value Chain

肉奶杂交爆发式增长

Beef x Dairy segment is growing exponentially!

Beef x Dairy US Growth Projections



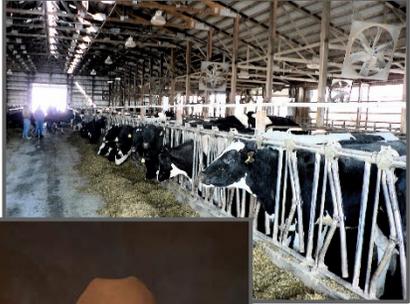
ENM/WT*



*Eastern New Mexico, West Texas
January 6, 2021 Price Data

供应链中有大量不同需求

Stakeholders within the supply chain have multiple – and often different – needs



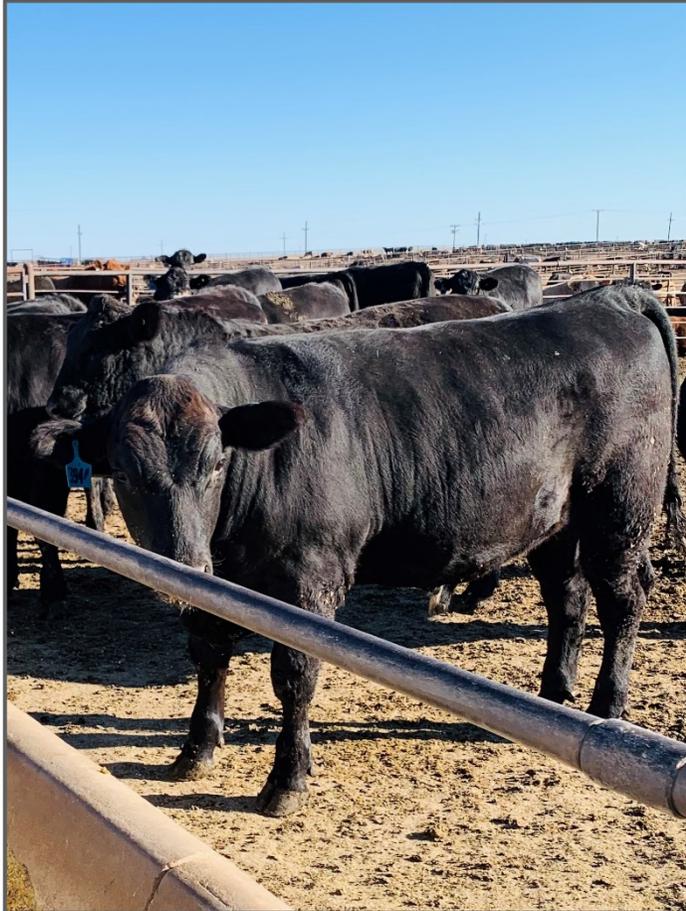
Stakeholder	Key Drivers
奶农 Dairy Farmers	Fertility, Calving Ease, Gestation Length, Live Calves, Beef Breed Characteristics, Reducing Risk, Supply Chain Relationships 繁殖力, 易产性, 孕期, 活犊率, 育种性状等
犊牛饲养者 Calf Growers	Genetics, Health, Average Daily Gain, Profitability, Feeder Partnership 遗传, 健康, 日增重, 效益性, 饲喂
肉牛饲养者 Cattle Feeders	Consistent Supply, Health (Liver Abscesses), Feeding Performance, Grid Eligibility, Data Driven (Performance and Carcass) 持续供应, 健康, 饲养表现, 数据, 品质等
加工商 Processors	Quality Grade, Yield, Cutability, Reduced Liver Abscesses 牛肉品质, 产量等
零售商 Retail/Food Service	Product Consistency, Quality, Animal Welfare, Sustainability 产品可持续性, 质量, 动物福利等
消费者 Consumers	Quality Dining Experience, Animal Welfare, Sustainability 质量口感, 动物福利, 可持续发展
行业管理者 Industry Partners	Organizations with common goals in the segment that are data driven and focused on improving supply chain efficiencies 组织, 目标设定, 产业链组织等

DAIRY
BEEF



奶肉杂交后代优势

Beef x Dairy calves generally provide key advantages over native beef calves



- **一致性Consistency:** The calves are typically produced via a minimum number of bulls which creates consistent phenotypes in terms of size and performance.公牛数量少
- **健康Health/Handling:** By the time the Beef x Dairy calves arrive at a feedlot, health issues are typically minimal due to their time in grower yards while the cattle are gentle and easy to handle.温顺
- **品质Quality:** Beef x Dairy calves, with their dairy influence, marble well which creates a desirable beef carcass – typically of a higher quality than native beef calves, especially those with “eared” influences from the Southeast.大理石花纹丰富
- **来源稳定Consistent Source:** While almost all beef calves are born in the spring and fall, dairy calves are born each month which creates a consistent supply source for cattle feeders.奶牛四季产犊
- **饲喂时间Length of Feeding:** Unlike straight dairy calves, B x D calves feed like native beef calves in terms of the length of time required for feeding prior to harvest. While they typically enter the feedyard at a lighter weight (~400 lbs.), they remain in the feedyard for approximately 12 months which works well for financing and feedyard capacity utilization.利用时间
- **可持续性Sustainability:** The neutrality of the carbon footprint of dairy cattle is a significant advantage over native beef calves which will grow in importance as focus on battling climate change increases.温室气体

前景广阔但需要改进很多

The potential of the sector is large, but there remain significant areas for improvement



- **奶牛式脆弱 Dairy Phenotypes:** While the calves are generally consistent when it comes to phenotype, there is an issue with dairy phenotypes – typically in heifers. Culling rates can be as high as twenty-five percent prior to finishing. 青年牛淘汰率高
- **犊牛问题 Calf Ranches:** The negative perception of calves being raised in “crowded hutches” is a barrier with many consumers. Messaging must be developed to address those concerns with urban audiences. 群饲
- **行为问题 Behavioral Issues:** While the calves are gentle, some feedlot pens of B x D calves never really settle down but appear nervous 紧张 (restless, grinding teeth, etc.) which negatively affects performance.
- **饲料效率 Feed Efficiency:** In general terms, B x D calves do not feed as efficiently as native beef calves when it comes to Average Daily Gain (ADG) and Feed Conversion Ratio (FCR) which increases costs of production.
- **胴体结构 Carcass Conformation:** In some cases, B x D carcasses produce small, triangular shaped ribeyes and are “light” in the round which results in a carcass with a lesser value. 三角, 小眼肌
- **肝脏和胃粘连问题 Liver Abscesses:** Like straight dairy calves, B x D calves generally have higher liver abscess and stomach adhesion rates than native beef cattle. The increase in abscesses is most likely due to inadequate development of the rumen during the calf ranch period.



成功的关键

Keys to Success

PEXX

育种的目标是生产表现好的肉牛

When making your breeding decisions, remember that the goal is to produce a high-performing beef calf

目标Goal

与Genex等优秀的育种公司合作，选择高品质的冻精Work with your GENEX representative to choose beef semen that will produce a quality beef animal that will ultimately provide a superior dining experience.

关键点Key Considerations

- (A) 选择目标EPD和适合自己的经济指数Use targeted EPD growth traits and Terminal Indexes to choose superior beef sires to breed to your dairy herd.
- (A) 如条件允许，可追溯适合的奶牛家系If possible, monitor B x D calves for excessive dairy phenotypes that trace back to specific maternal lines.



选择认同您的合作伙伴并保持沟通

Choose partners that align with your program goals and that are willing to share information and feedback

目标Goal

选择认同性高并愿意帮助实现共同育种目标的合作伙伴Establish partnerships with organizations that have similar goals and approaches on how to accomplish your breeding goals.

关键点Key Considerations

- (A) 有共同目标和语言，合作会更紧密Your Beef x Dairy program will only be as strong as the partners that you align with your operation.
- (A) 不要局限于短期收益，稳定的犊牛场和育肥场合作伙伴才有利于育种Don't jump into partnerships based on short-term returns; find calf raising and feeding partners that work with you to achieve long-term success.



奶肉杂交丰富您的产品结构

The Beef x Dairy calves that are produced on your dairy will impact the perception of your operation in the market

目标Goal

像奶牛一样严格要求Maintain the same exacting standards of performance and expectations for your Beef x Dairy program that you do with your dairy operation.

关键点Key Considerations

(A) 丰富产品结构The Beef x Dairy calves that you produce will impact – positively or negatively – the perception of your dairy operation.

(B) 认真经营Don't treat your Beef x Dairy program as an afterthought but rather as a key driver of your dairy operation strategies.





谢谢Thank You!

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