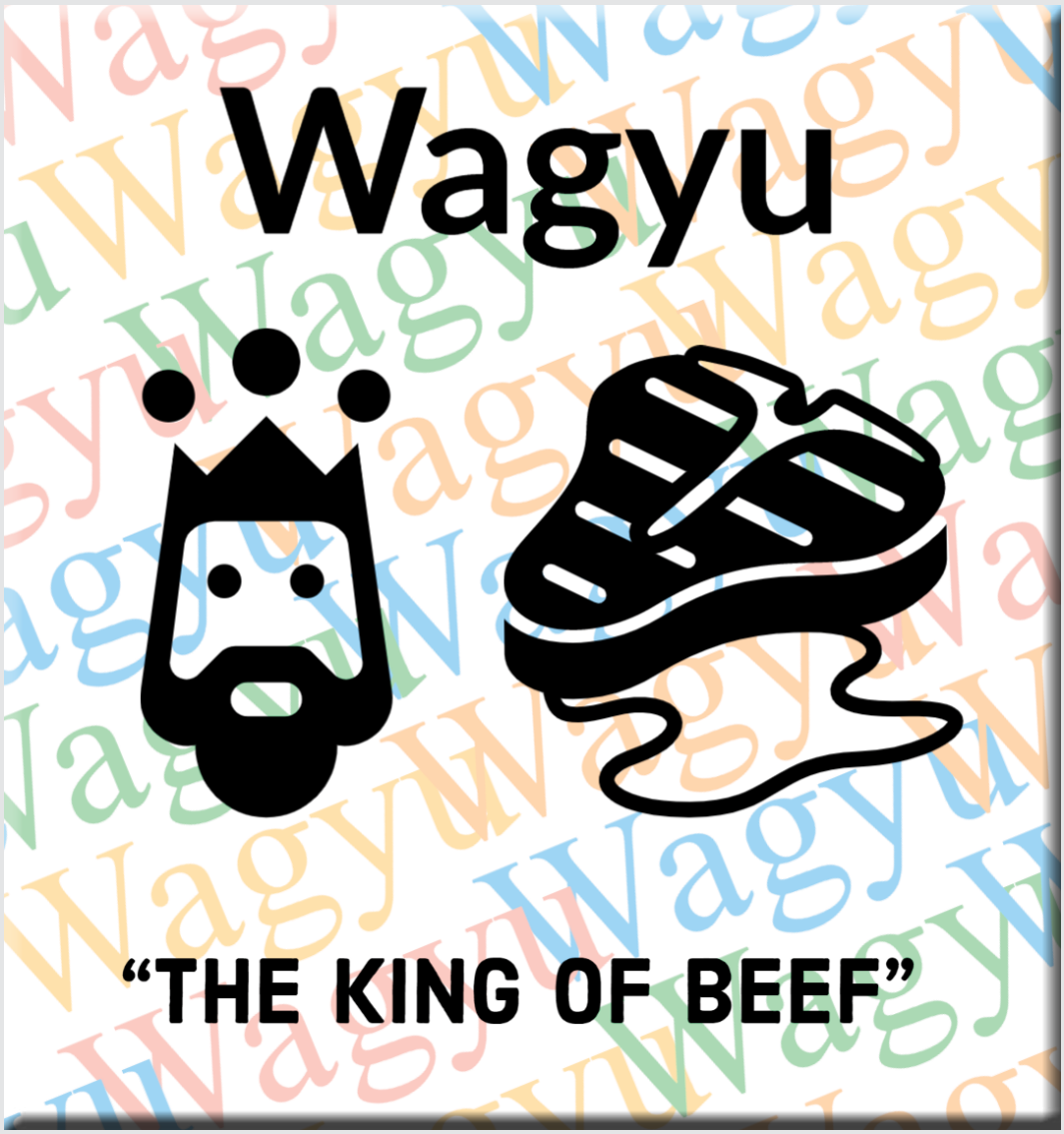
Breeding Plan - Fullblood

Breeding Plan

Fullblood herd:

1. Focus 1st on Marbling and Marble Score:

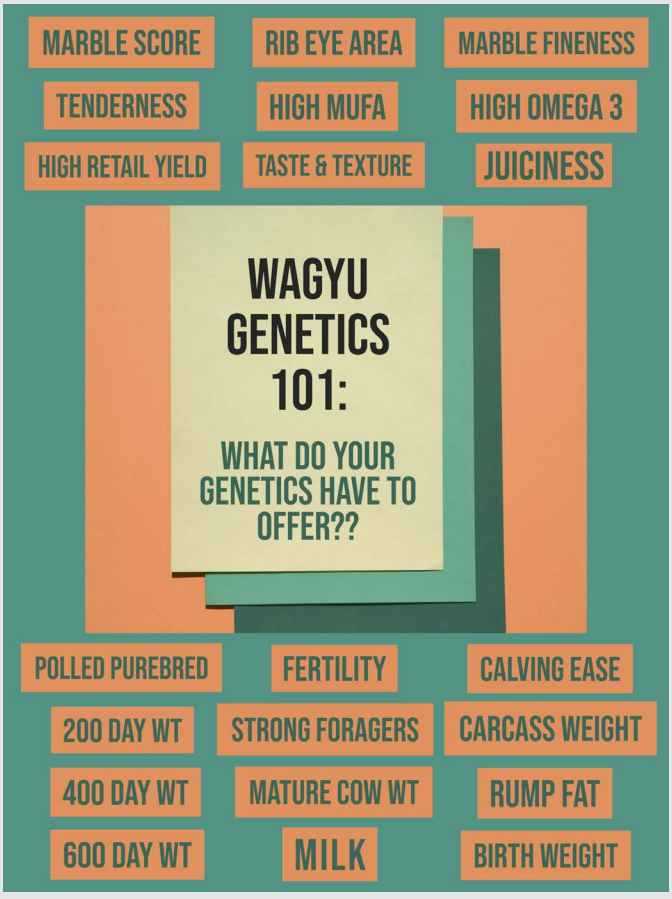
- This is the profit driving trait of Wagyu
- You need a salable carcass that has marbling to generate a premium, other wise you might as well be breeding Angus.



Written and compiled by: Mitchell Ruth

2. Focus 2nd on your choice of a few traits equally justifiable:

- **Carcass Weight**
  - i. Larger carcass weights allow for maximizing efficiencies of slaughter costs & processing, feed bunk/ feedlot space, and steady beef supply
- **Rib Eye Area**
  - i. The largest source of revenue from the carcass, drives carcass profit ability
- **Marble Fineness**
  - i. Fineness of marbling drives premiums and appeal to high end chefs and customers
  - ii. Fineness of marbling drives flavor; the more fine marbling in meat means there is more marbling cell wall which while cooked creates Wagyu's unique flavor.
- **Residual Feed Intake**
  - i. Feed costs commonly account for more than half the cost of produc tion from birth to slaughter.
- **Growth traits, 200 Day, 400 Day, 600 Day Weights**
  - i. Reducing DOF (Days On Feed) is a key factor in remaining profitable and competing with high marbling Angus and other breeds



How to accomplish gains in these areas:

1. Use Australian Breedplan

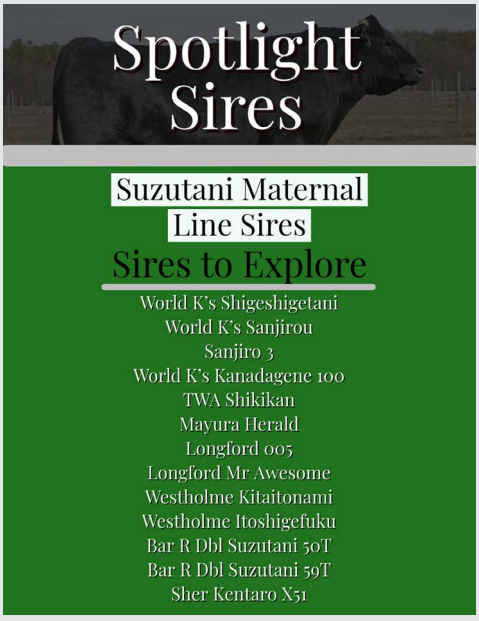
- Largest Wagyu EBV/EPD database outside of Japan
- More than 84,000 dams and 10,000 sires recorded, 6,700 AUS Meat Marble Score recorded, 5,800 Carcass Camera recorded carcasses (MS, MF, REA), 28,000 Weaning Wts, 24,000 400 Day Wts
- Now offers Genomic Testing based on all this data for traits including MS, MF, CW, REA, 200D Wt, 400D Wt, and 600D Wt
- 50K SNP profile based genomics (Cattle Industry Leading Technology)
- Highlights strengths and weaknesses of cattle numerically allowing for easier management and mating

2. Use/Invest in high reliability sires backed by actual carcass data (>80% Reli ability for MS)

- Or a variety of sons of elite high reliability bulls
- Young sires should be genomic tested to reduce risk and increase reliability

3. Maintain or invest in a variety of Maternal lines or Cow families

- Use high proven female maternal lines: think Suzutani, Okutani, Yuriko, Chisahime, Hikokura, etc. This minimizes your risk of failure carcasses
- Different maternal lines have different strengths that can be complimenting and successful crosses
- Increases your herds marketability (Seedstock)
- Manages inbreeding



4. Genomic Test your entire herd of Fullblood/purebred cattle

- Identifies top and bottom of your herd
- Identifies strengths and weaknesses of individual animals
- Adds value by creating higher accuracy EBVs for all cattle tested

5. Use Corrective mating, breeding complimentary cattle to one another to eliminate flaws or weaknesses.

- Use carcass bulls on females with size and growth, and maternal/growth bulls on females that need size and milk.
- Evaluate matings individually, often times Wagyu take 2-3 generation of carcass bulls on females that retain size and growth well like the Hikokura maternal line.

Common Mating Decision Strategies

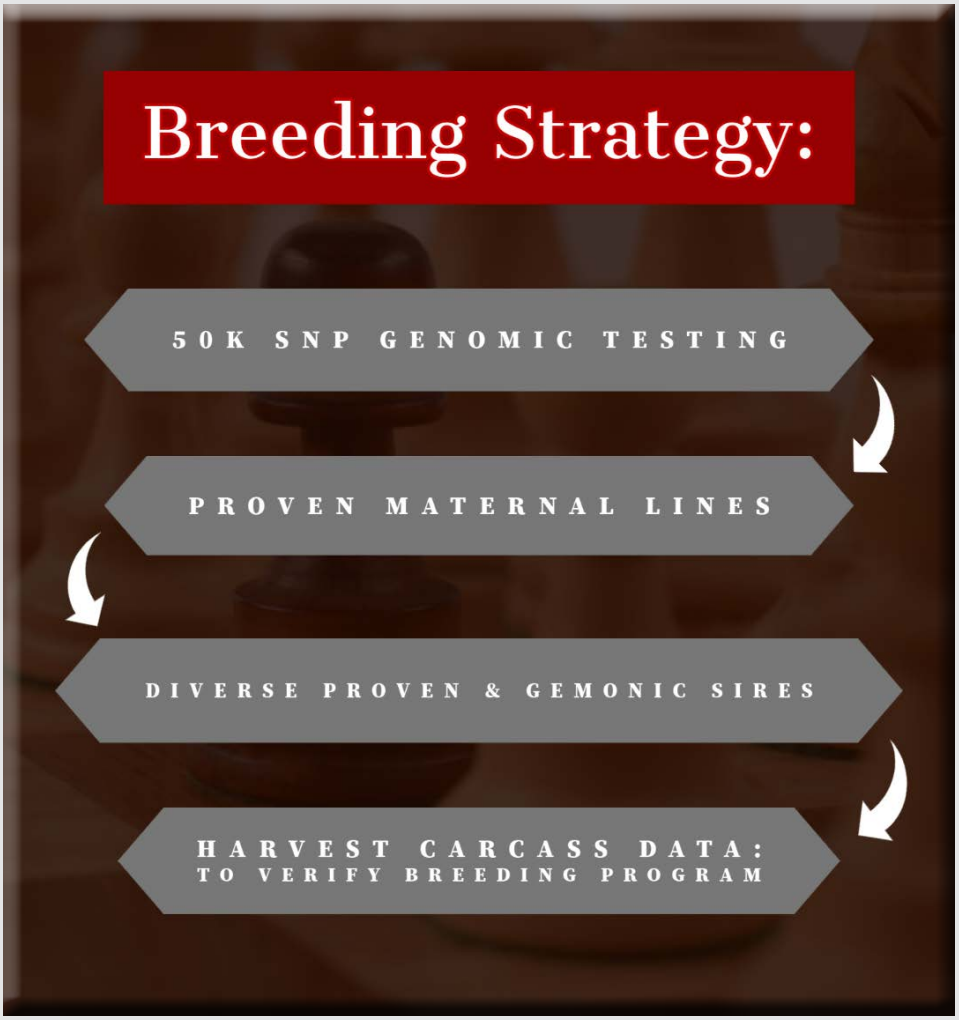
- **Random Mating**: Turn bulls out breed anyone, no rhyme or reason
- Mating based on inbreeding coefficient
- **Corrective Mating**:
  - Dairy – i.e. mating services
- **Linebreeding**: Consolidation of desirable traits
- Blanket AI or Natural Service: One sire on all cows
- Terminal Mating:
  - Sexed male semen
  - Carcass traits emphasized
  - No consideration to maternal traits, etc.
- Replacement AI:
  - Sexed female semen –
  - Focused on key replacement heifer traits
  - Less consideration to carcass traits

6. Make separate matings for Terminal use and Replacement use.

- Terminal matings should focus more on key carcass traits (MS, MF, REA, CWT)
- Replacement matings should focus on growth and maternal traits

7. Plan on killing animals to verify the genetics you have and are breeding

- Create sizeable contemporary groups for meaningful data (>10 head, same sex, 2 common reference sires, born in 3 week window, and must be fed and slaughter in the same system for the same period of time)
- Steer 80% of bulls, to prove the value of your top 20% remaining bulls each year
- Creates value thru carcass data
- Shows your cattle's strengths or weaknesses
- Allows for creating better matings in the future
- Submit your carcass data to Breedplan to increase your EBVs accuracy



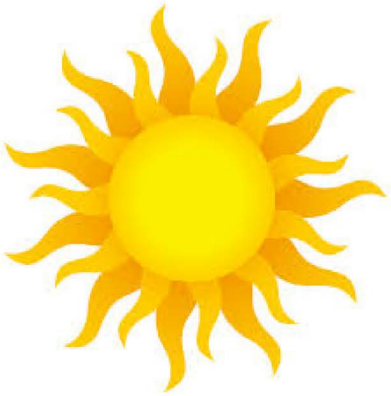
8. All of this will allow you to share and compare your Wagyu Cattle to other Elite breeders around the USA and Globe.

- Either your cattle will prove themselves to be elite, average, poor
- This allows you cull poor ones, better utilize the average, and flush or market the very elite cattle for more value.
- It also allows for you to identify better or complimenting genetics that can be bought or acquired to improve your herd.

Other Useful Data/Thoughts: What data says I should do all this?

The Bright Future of Wagyu

- Increasing Global Demand for Premium Beef
- Increasing Buying Power of Global Middle Class
- Genomics/ GEBVs
  - Reducing DOF
  - Continued Progress in Carcass Traits
- Increased Availability of Elite Semen & Genetics
- Strong Diversity of Genetics
- EBVs Make Pedigree Reading Easier



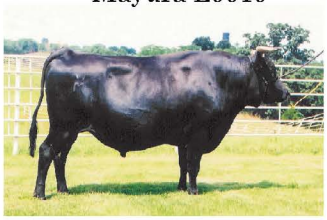
Proper Strategies for Utilizing Genomics:

- **Whole Herd**:
  - Identify the top and bottom of the herd
  - Donors & Recipients
- **Within Herd:**
  - Individual Selection & Decision Making
  - Comparison of Siblings & Flush mates
  - Identify Individual Strengths/Weaknesses
- **National/International Level:**
  - Top Sire Selection
  - Top Females Selectin
  - Buy or Acquire new or complimentary genetics

Mating My Donors

- What Should I Consider?
  - **Carcass Data** (if available): Strengths, Weaknesses
  - **Genomics**: Weaknesses, Strengths
  - **Pedigree**: Inbreeding, Complimentary genetics, Linebreeding
  - **Phenotype**: Strength, Faults/Corrections needed
  - **Genotype**: Recessives, Exon 5, SCD, etc.
- Sire Factors:
  - **Price**
  - **Availability**
  - **Reliability**
  - Above factors


Mayura L0010


World K's Michifuku


TF Itohana 2

"Cheap" or Inferior Genetics

- **"Don't be fooled by Cheap or Inferior Genetics, they will have long lasting effects in your herd."** – Scott de Bruin 2018 AUS Wagyu Edge Presentation
- **Long Lasting Effects**:
  - Their Steers – 3yrs+ from conception to harvest
  - Their Daughters – Replacements: 3yrs+ from conception until calving
  - Their Daughters Daughter's – 5 yrs + if retained for breeding
- **Directly Impact Profitability**: Limit the Potential Performance of Animals

Why Use Proven Genetics??

- **First What is Proven?**
  - **Gold Standard**: Performance recorded data, Objective 3rd Party Carcass Data, Breedplan data backed proof, etc.
  - **Next:** inhouse performance & carcass data
  - **Last:** Opinion – i.e. "I killed some and they looked great"
- **Consistency & Reliability of Outcomes:**
  - Risk management
  - In reality a son is rarely better than his sire/father!
  - Need a saleable carcass

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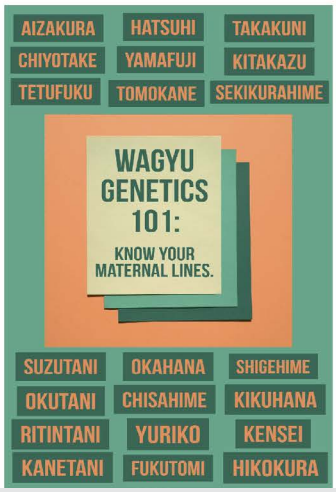
The Importance of Maternal Lines



1) Risk Management

2) Females Unique Ability to transmit to offspring

3) Marketability

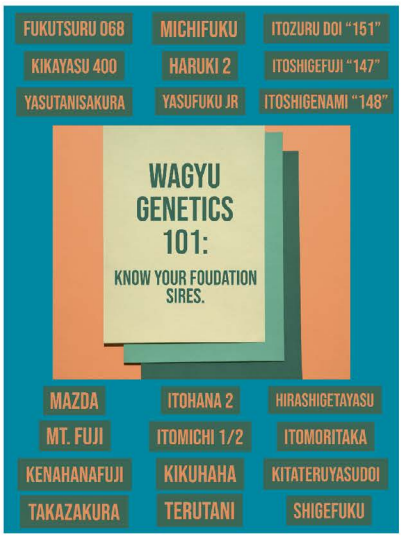
4) Genetic Merit

Female Bloodlines are Important!

- Aka **Cow Families** or **Maternal Lines**
- Female contributes half the DNA, just like the sire
- **Often overlooked** in carcass results & data evaluation
  - i.e. Itomichi ½ x Mayura Itoshigenami JNR steers will likely perform far better than Itomichi ½ x World K's Haruki 2 steers
  - May skew your perspective on how good Itomichi ½ is, Why EBVs are so valuable
- Mitochondrial DNA inheritance only coming from the dam
  - https://www.ajas.info/upload/pdf/17_243.pdf
- Cytoplasmic inheritance theories
  - https://www.sciencedirect.com/science/article/pii/S0022030286807731
- Epigenetics triggered in utero by the dam
  - https://epigeneticsandchromatin.biomedcentral.com/articles/10.1186/s13072-016-0081-5

IMPORTANT

Wagyu Bloodlines:



Prefectural Percentages: 16/16 Analysis: Tajima, Itozakura, Kedaka, etc

-Don't get caught up on these
-There are high marbling Tajima, Shimane, and Kedaka.
-There are high growth Tajima, Shimane, and Kedaka.

Instead classify sires on traits: Carcass (MS, MF, REA) specialists, Growth & Maternal specialists, or a Balance of both.

Prefectural Percentages are most useful for tracking inbreeding but Inbreeding coefficients do a better job

Essentially they have become obsolete with EBVs

Tajima	Kedaka	Tottori	Itozakura	Shimane	Okayama	Hiroshima	Other	TOTAL
9.4	1.6	0.5	2.8	0.4	1.1	0.3	–	16

The Danger of Breeding with Indexes, Single Traits, Etc.

- **Potential Loss of Traits**
  - Example: Holstein Dairy Cattle
- **Potential to Amplify Weaknesses**
  - Example: Guernsey Dairy Cattle
- **No Corrective Mating**
- **Inbreeding not controlled**

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THANK YOU!!

1) AS A BREEDER/FEEDER IT IS YOUR JOB/RESPONSIBILITY TO MAKE DECISIONS AND FIGURE IT OUT.

2) AFTER ALL, IT IS YOUR INVESTMENT!