About NRGene Technologies Ltd

NRGene Technologies is an AgTech company that uses AI and Big-Data solutions to analyze genetic information to accelerate and improve the natural development of key crops and animals in the global agriculture and food industries.

Our history

2010
Company founded

2015
Product launched

2021
IPO — Tel Aviv stock exchange

Our reach

30
Countries

140
Customers

50+
Publications based on NRGene's technology

Our outcomes

300
Projects

83
Species

500+
Assembled genomes

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Customers and Strategic Partners

Validated across diverse industries, 300+ projects

Faster
Reduced breeding time

Powered by Big Data
Broad ready-to-use proprietary databases

Proven
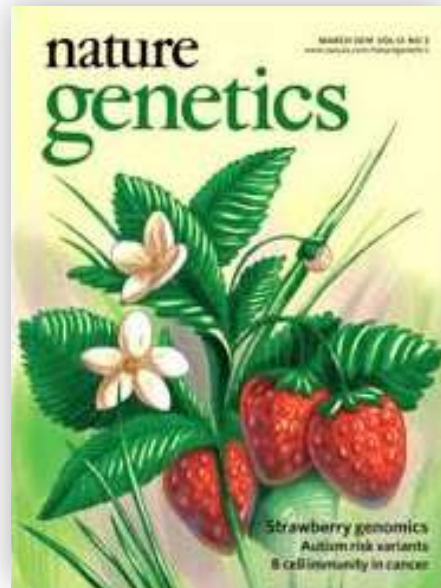Successful product implementation in the world's leading breeding companies

NRGene's Technology Global Impact is Recognized in Many Leading Scientific Articles

Shifting the limits in wheat research and breeding using a fully annotated reference genome

17/08/2018

Origin and evolution of the octoploid strawberry genome

25/02/2019

NRGene was the first to create high quality genome assemblies for complex crops such as wheat, oat, strawberries and potatoes.

Science

The opium poppy genome and morphinan production

30/08/2018

nature

Genome sequence of the progenitor of the wheat D genome Aegilops tauschii

01/11/2017

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Traditional Breeding vs. Breeding. AI™ with NRGene

	TRADITIONAL	BREEDING.AI™
Land resources		
Time to Market		
Manpower		
Data-driven decision making (DDDM)		

	TRADITIONAL	BREEDING.AI™
Accuracy		
Data Management		
Number of new varieties		
Investment		

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NRGene's Breeding.AI™ Technology

Meeting market needs quickly, using Natural AI Breeding

Variable BIG DATA

BREEDING.AI™

NON-GMO

1st Generation
2nd Generation
3rd Generation
6th Generation

NEW IMPROVED VARIETY

2 YEARS
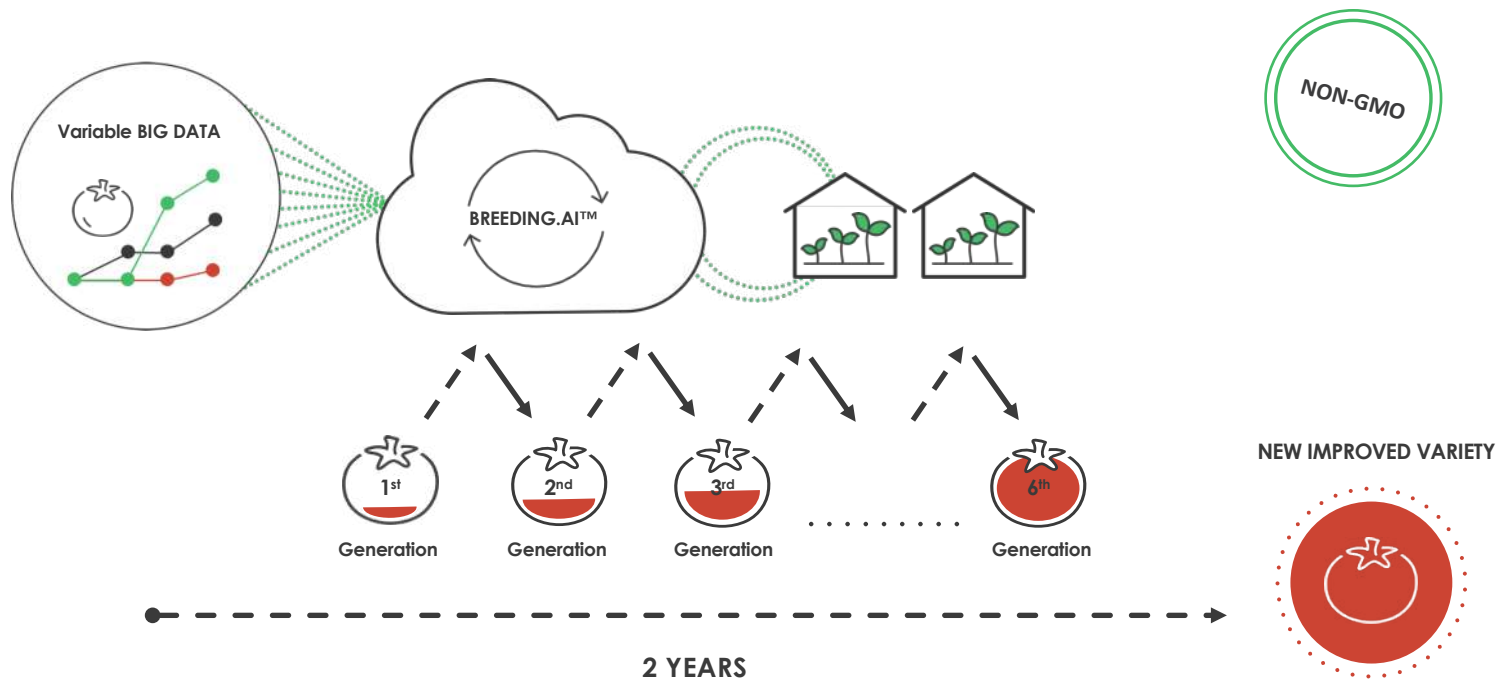
The benefits
Reduces development time
Reduces costs
Increases likelihood of success
NON-GMO

Advancing Agriculture Through Genomics: NRGene's Technology

Supree™ - Development of naturally self-dry on the vine cherry tomato

Seedlings for dairy cattle feed *(grown in vertical farming)*

Non allergenic wheat *(Suitable for high quality bread production)*

Novel Black Soldier Fly (BSF) Strains *(as Alternative protein for Animal Feed)*

Fungus disease resistance in Canola

Breeding Fresh water shrimps for improved FCR and tail weight

Breeding tomatoes resistant to the ToBRFV

Breeding resistant Oysters to MSX parasite

Bridgestone Collaboration

Research collaboration with NRGene on guayule

The four-year collaboration to advance the commercialization of guayule, as an alternative to natural rubber, started in 2018 and achieved its goal when the rubber hit the track in August 2022

DesignNews

Investment in Natural Rubber Hits the Track

Bridgestone's cultivating an alternative source of tire rubber and has put it to the test in IndyCar.

Dan Carney | Aug 08, 2022

"The collaboration between Bridgestone and NRGene will provide important advances for the future of the automotive and rubber industries. The combination of our previous work with the sequencing and assembly of the hevea genome and our current work with guayule uniquely positions Bridgestone to utilize these resources for comparative genetic analysis of the rubber biosynthetic pathways and become a leader in the genetics and improvement of rubber-producing plants."

William Niaura
Director - New Business
Development Bridgestone
Americas

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NRGene's Holistic Approach for Molecular Breeding

VISUALIZE + DECIDE

PREDICT

IDENTIFY

COMPARE

ASSEMBLE

GenoMAGIC™

TraitMAGIC™

SNPer™

PanMAGIC™

DeNovoMAGIC™

Breeding platform
Visualization of all genomic data — the breeding platform for data driven decisions

Predictive genomics
Trait and marker discovery and development; genotype- phenotype association

Genotyping
Routine genomic testing and identification for advanced breeding applications

Comparative genomics
Explore genetic diversity of breeding the populations

Reference genomics
The basis for all genomic analysis and comparisons
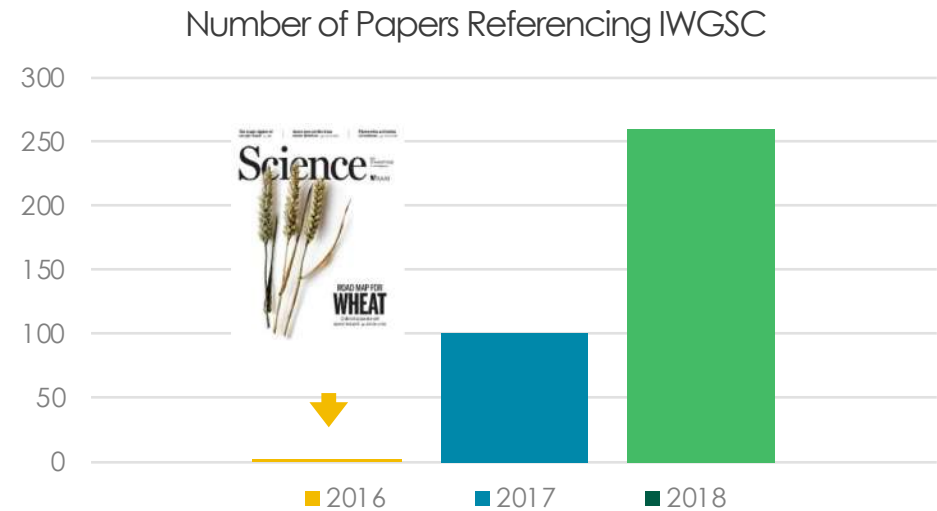
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Reference Genomes

Reference Genomes are Physical Maps of an organism and are the foundations of molecular breeding

Number of Cloned Trait Genes

Number of Papers Referencing IWGSC
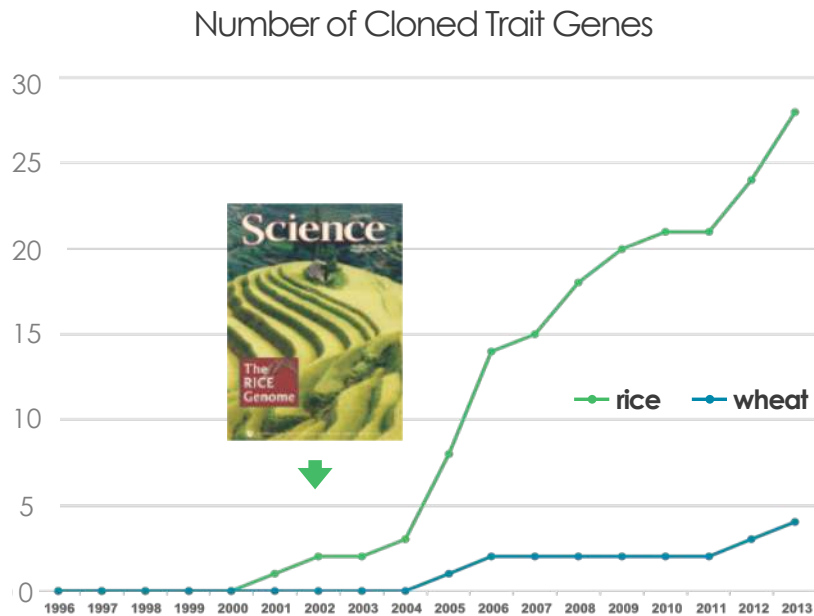
- The impact that the genome sequence made on rice genetics and breeding research was immediate, as evidence by citations and DNA marker use

- In 2016 IWGSC and NRGene completed the first hexaploid bread Wheat made available for download and research

Accurate Assembly and Phasing of BSF Genomes

Comparison of NRGene pseudochromosome sizes with reference genomes

Chromosome number	Reference Size [bp]	BSF IL male phase A Size Mapped NRGene [bp]	BSF IL male phase A NRGene / Reference Ratio [%]	BSF IL female phase A Size Mapped NRGene [bp]	BSF IL female phase A NRGene / Reference Ratio [%]
1	222,122,703	225,581,929	101.56	223,843,041	100.77
2	191,142,057	196,984,156	103.06	199,251,828	104.24
3	180,357,958	182,518,172	101.2	180,880,899	100.29
4	173,077,783	177,828,890	102.75	175,808,725	101.58
5	116,824,456	119,922,291	102.65	119,940,593	102.67
6	103,444,952	105,552,042	102.04	102,325,760	98.92
7	15,435,017	16,618,321	107.67	14,908,233	96.59
Unmapped99	2,528,864	2,123,143	83.96	69,791	2.76
Total Chr Size (bp)	1,002,404,926	1,025,005,801		1,016,959,079	

First Description of the Male Y Chromosome

Key Features of Advanced Genotyping Platform

LOWER COSTS
reduced number of genotyped loci

MAXIMIZED GENOTYPIC DATA
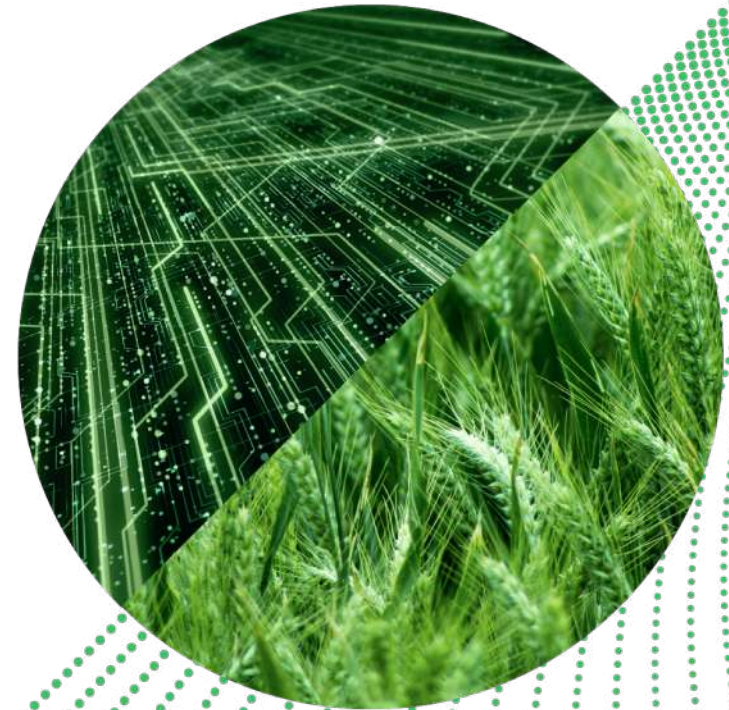through imputation of SNP loci

HIGHEST QUALITY
genotyping data accuracy >95%

CUSTOMIZED
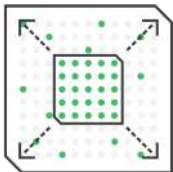optimized SNP panel tailored specifically to your needs

FAST TURNAROUND
4 weeks from sample submission to data delivery

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NRGene's Solution: SNPer™

Fully customized, all-inclusive genotyping solution utilizing NRGene's vast experience and genomic data in all key species.
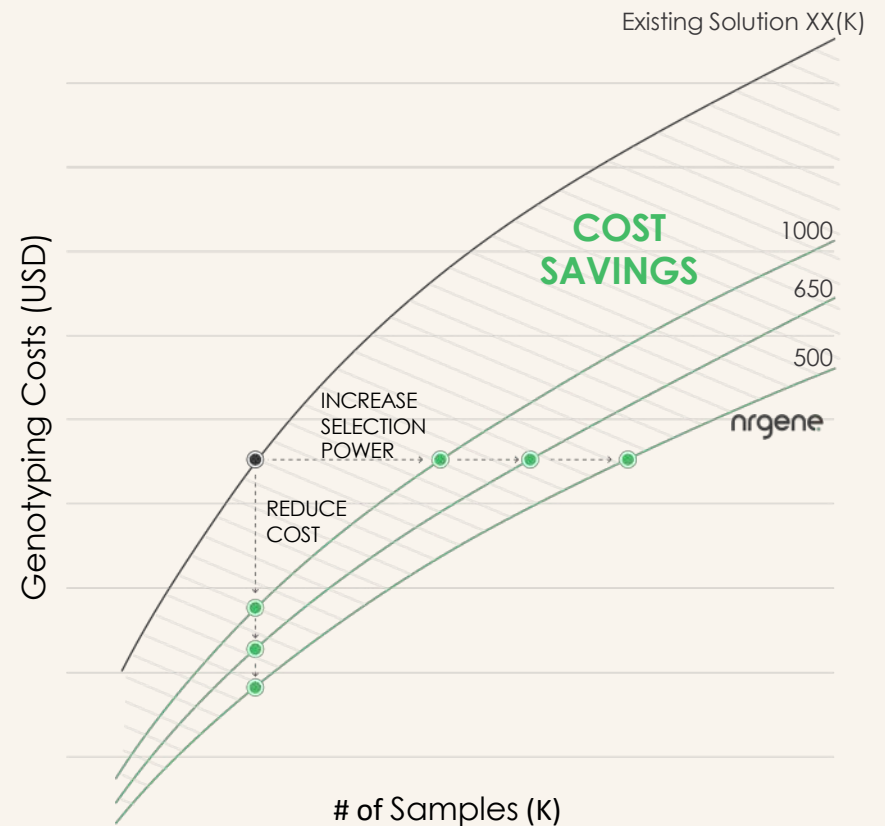
A minimal SNP subset imputed to a maximized genotypic data set

COMPLETE SERVICE
from sample submission through data delivery

Existing Solution XX(K)

COST SAVINGS

1000

650

500

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INCREASE SELECTION POWER

REDUCE COST

Genotyping Costs (USD)

# of Samples (K)

How is Data Imputed?

Parent Genotypes

Progeny Genotypes

Parent Haplotypes

Progeny Haplotypes

Complete data, all SNPs genotyped directly
Parents and progeny assumed inbred or DH

Incomplete progeny data, SNPro™ genotyping
Cost of in-lab genotyping minimized

Complete progeny data, SNPro™ imputation
Maximum data return, 96% accuracy

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Genotyping Panel:
Driving Agricultural Innovation Forward

Hundreds of Thousands

Samples genotyped

16

Panels

3

Calibrated kits

11

Species

Generating the Genotyping Panel

Sequencing of ~150 Samples from 16 Different Populations (10X Per Sample)

Filtering of SNPs

Full panel- 24,671,831

Reliable and informative

1,181,872

Valid SNPs (SNV,) distant from other variants Placed on chromosome

High quality Assay applicable

327,984

Discovery quality, GC content, Ns, low composition complexity, small letters...

Relatively distributed

62,571

In 300 bins
Based on LD calculations

Minimal Panel for Genotyping

520
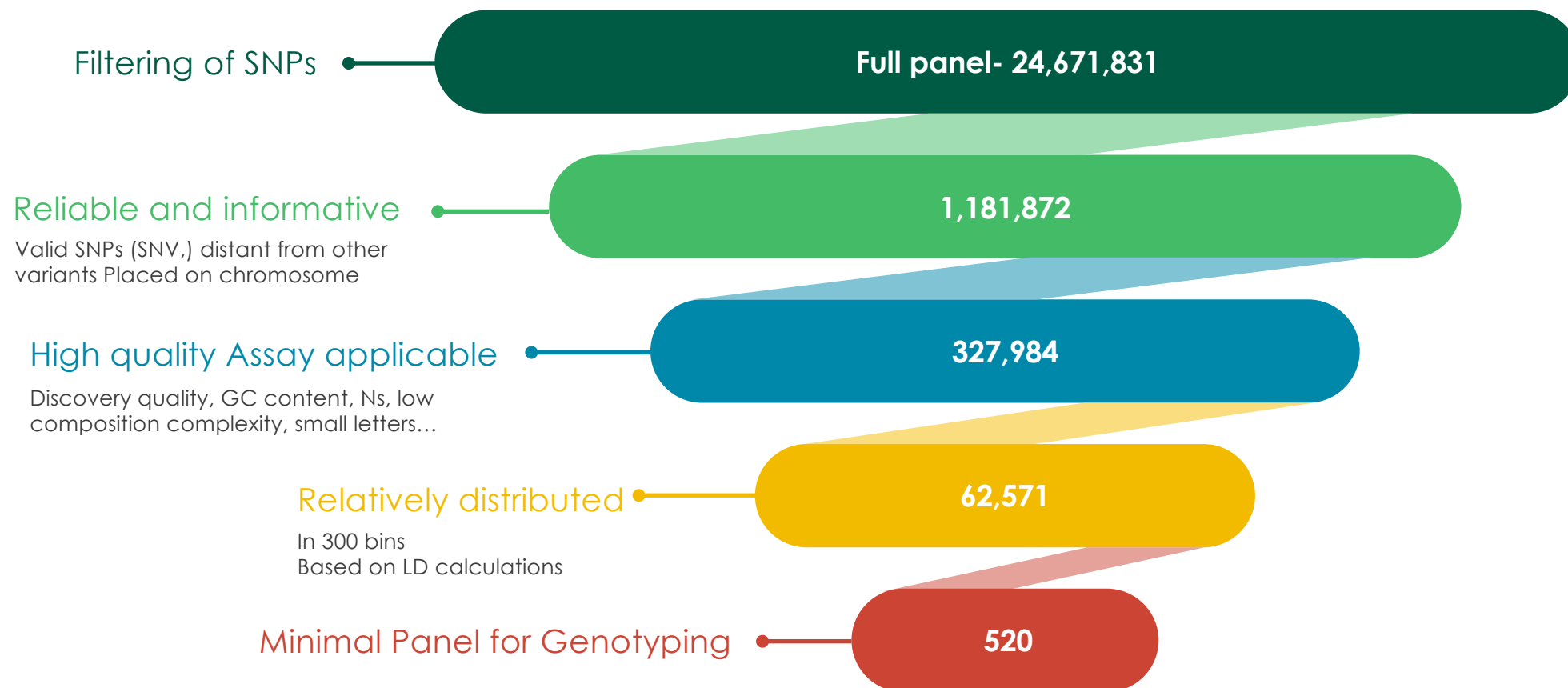
Expand Your Genotyping Capabilities: Explore Our Panel Initiative

#	Platform	# Samples	$ Per Sample(USD)	DNA Extraction	TAT
1	~62.5K SNPS array	20K-100K	25-35	Included	4-6 weeks
2	~550 SNPS amplicon sequencing	1,500-100K	11-15	Included	2-4 weeks

* Prices may vary and dependent on # of samples
**Not include shipping costs

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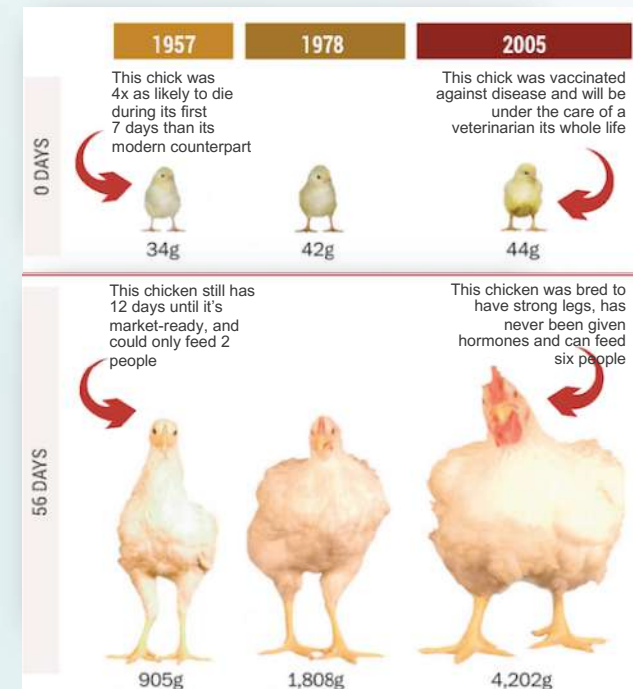canada

Summary - Increased Efficiency through Genetics

Lessons from history - Poultry

Results show that 95% of the

improvement is due to GENETICS

By leveraging advanced genetics, the BSF industry is poised to accomplish in just **3** years what took the poultry industry more than **50** years.

https://www.chickencheck.in/faq/supersized-chicken/

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Chicken's growth increased more than 4x between 1957 and 2005 (Day 56)

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Join us in building a sustainable future!

Thank you!

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