

The advantages of single stage versus multi stage incubation

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It is true that great quality chicks can be achieved through multi stage and single stage incubation. However, it is the difference between great quality chicks and excellent quality chicks that single stage incubation brings to the table.

Single stage incubation provides results which exceed that of multi stage incubation through less cull chicks, improved quality and improved hatch, producing more viable, hydrated and healthy chicks. Results also proved reduced first week mortality rates, improved growth rate and improved feed conversion.

Over the past 10 years there has been a great deal of research carried out in universities and actual field settings, comparing single stage and multi stage incubation.

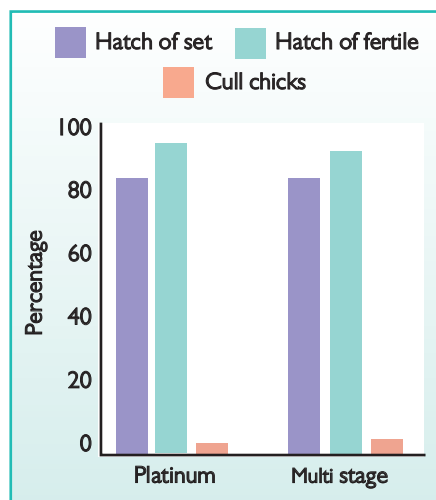
Compiled data shows not only improved hatchery results, but displays better results in grow-out data as well.

Reduced early and late embryo mortalities, present an increase in hatch rates and reduce the number of dead chicks in tray.

The ability to maintain total control over the incubation environment attributes to a great increase in chick quality.

As demonstrated in Fig. 1, single stage incubation allows for precise control of tem-

Fig. 1. Platinum versus multi stage.



	Single stage	Multi stage	Difference
Total chicks placed	4,193,180	3,962,541	+230,639
Total birds processed	4,016,518	3,732,787	+283,731
Livability (%)	95.79	94.20	+1.59
Total field mortality (%)	4.21	5.80	-1.59
Bird age at processing (days)	45.8	45.4	+0.4
Average weight at processing (lb)	6.05	5.92	+0.13
Average daily gain (g)	59.9	59.1	+0.8
Grower pay/bird (cent)	.2232	.2080	+.0152
Feed conversion	1.894	1.951	-0.057
Feed cost/US ton (\$)	314.28	314.28	-
Total meat processed (lb)	24,317,151	22,106,851	+2,210,300
Total production cost (cent/lb)	37.17	37.21	+1.04

Table 1. Single stage versus multi stage savings.

perature and humidity, while controlling the upper limits of carbon dioxide. The industry is rapidly advancing, demonstrating changes in the genetics of broiler breeders.

This change is due to the increasing demand for rapid growing, high yielding birds. Many hatcheries are still operating on the standards and technology of 20 years ago. Single stage incubation is changing the thinking and the processes of the way we operate a modern day hatchery, becoming the standard in the industry, to meet the constant increasing demands of the present and future. It increases both hatchability and quality, ultimately resulting in a greater number of healthier chicks being delivered to the grower. Results have shown that these healthier chicks produced through the single stage incubation process, show decreased seven day mortality rates, with research also indicating that these chicks will perform better during the entirety of the grow-out cycle as well.

Increased hatch results

An increased hatch typically results from a decrease in early and late embryo mortality.

When proper profiles are followed, a proven decrease in dead in shell and pipped eggs will result, attributed to the vast difference in how single stage and multi stage machines operate.

Multi stage incubators operate on averages, causing all eggs to be treated as an

average and not an exact match to their individual demands for incubation.

Single stage incubation can be profiled to supply the developing embryo with the precise incubation conditions it requires. When proper profiles are followed, in single stage incubation, it will maximise the incubator's efficiency and produce the highest number of excellent quality chicks.

Data collected through the use of single stage incubation consistently indicates improvement in all areas of incubation. The ability to maintain total control over the incubation process allows for improved results, producing higher hatch rates and a greater number of chicks to sell or to contract to growers. Higher hatch rates will also reduce the cost per chick, increasing the efficiency of the hatchery.

Hatchery labour savings

Hatchery labour savings can be attributed to the flexibility allowed with single stage machinery. Egg setting can be completed when the labour is available, and the ability to utilise some single stage incubators for egg holding for a period of time (at egg room temperatures) allows the manager to set eggs when the labour becomes available. With the cost of labour soaring in parts of the world, this factor alone can offer increased savings to a hatchery. Table 1 demonstrates the projected savings and

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increased earning potential through single stage incubation, comparing field data from single stage and multi stage machinery. These numbers are based on one million chicks per week.

With results demonstrating an increase in livability and a decrease in field mortality there is huge potential for increased savings and earnings through single stage incubation.

The statistics were compiled from various companies producing over one million chicks per week. This research was achieved through a direct comparison between single stage and multi stage Incubators.

As demonstrated in Table I, substantial improvement is shown in all areas, but the

big numbers are shown when carrying the totals over to processing.

Assuming the price of processed meat is 0.89 cents per lb (per average Georgia Dock) multiplied by 2,210,300lb, then this would equal an additional \$1,967,167.00 in earnings to the select company.

In today's trying economy, this can make the difference between making a profit and losing money!

High quality end product

The consumer demands safe and healthy food (high quality end product). It is true that both single stage and multi stage incuba-

tion can produce healthy chicks when the machines are properly operated and maintained, however the advantage that is presented with single stage incubation is that approximately every 18 days the entire machine can, and should, be cleaned and sanitised.

In multi stage incubators, cleaning of the machines may only happen once a year or less, offering less sanitation and cleanliness and more possibility for contamination, than single stage incubators.

Single stage incubators, in comparison to multi stage incubators, offer the capability to thoroughly sanitise the incubator after each set of eggs has passed through the machine.

While this type of sanitation has been an 'industry norm' for hatchers, single stage operation now allows for the sanitation process to be included in the setter operation as well.

Importance of biosecurity

Biosecurity has become a term more frequently used and heard in the poultry sector today.

As production of poultry becomes more intensive, and genetic selection is able to produce chickens that are faster growing, it also presents the possibility that these chickens may become more susceptible to disease.

All aspects of the incubation and production process must establish advanced procedures to maximise the levels of sanitation and hygiene, to avoid any potential contamination or disease.

Single stage incubation allows for accountability and traceability. At any given time, multi stage incubators will have eggs at multiple stages of incubation (approximately 18 days).

If there is a problem with contamination, all of the eggs in the incubator will be exposed and could result in the need to destroy the eggs.

However, within single stage incubators, all of the eggs are the same age, and at the same stage of incubation, so in the case of contamination, it may only be required to destroy one machine's worth of eggs.

The end consumer is demanding accountability and single stage incubation has the ability to deliver!

Future hatchery demands

We do not know what the future brings, but we do know that continued strides will be made to genetically develop faster growing, better converting birds.

For these reasons, single stage incubation systems will allow the hatchery to keep up with the increasing demands of the future.

Total control and flexibility will allow the hatchery manager to continually meet and exceed the challenges presented by the constantly changing genetics of the bird. ■