# NOVEL TECHNOLOGY TO IMPROVE SOYBEAN YIELD IN NORTH AMERICA

Despite extensive research and advances in genetics and genetic engineering leading to the development of high-yielding soybean varieties, the rate of soybean yield increase in the US has been slow. This slow pace, not commensurate with inflation, has resulted in reduced profitability compared to a decade ago. Aggressive marketing strategies by major input suppliers and a reluctance to explore innovative approaches beyond existing methods may contribute to this phenomenon.

Soybean yield is directly correlated with key parameters such as the number of pods per plant, the number of seeds per pod, and seed weight. Enhancing these fundamental factors holds the potential to significantly improve soybean yield, assuming other variables like variety, nutrition, soil, and weather remain constant.

To address these challenges and revitalize profitability, a strategic and forward-thinking approach is essential. Encouraging innovation, adopting advanced technologies, and fostering collaboration among stakeholders are crucial strategies to overcome existing yield limitations in soybean cultivation in the US.

Hi Cell has conducted extensive research on addressing the issue of flower drop in legumes, with a specific focus on soybeans. Prolific flowering followed by significant flower drop is a common challenge in legume cultivation. This drop can be attributed to various factors, including biotic elements such as diseases and pests, and abiotic factors like inadequate moisture, nutrient supply, adverse climate conditions, insufficient root development, and competition.

Hi Cell Incrementum is formulated to induce and retain flowering in a wide range of plants, including soybeans. Through our research, we have observed a substantial increase in the number of retained flowers, resulting in a remarkable yield improvement of 15-35% over control, irrespective of the plant variety and geographical location.

Hi Cell Incrementum addresses both biotic and abiotic factors, contributing to enhanced flower retention and ultimately higher yields. The product's efficacy has been demonstrated across various conditions, showcasing its potential impact on agricultural productivity. Further details regarding the specific mechanisms and performance data under diverse conditions are available upon request.

## STAGES OF SOYBEAN GROWTH

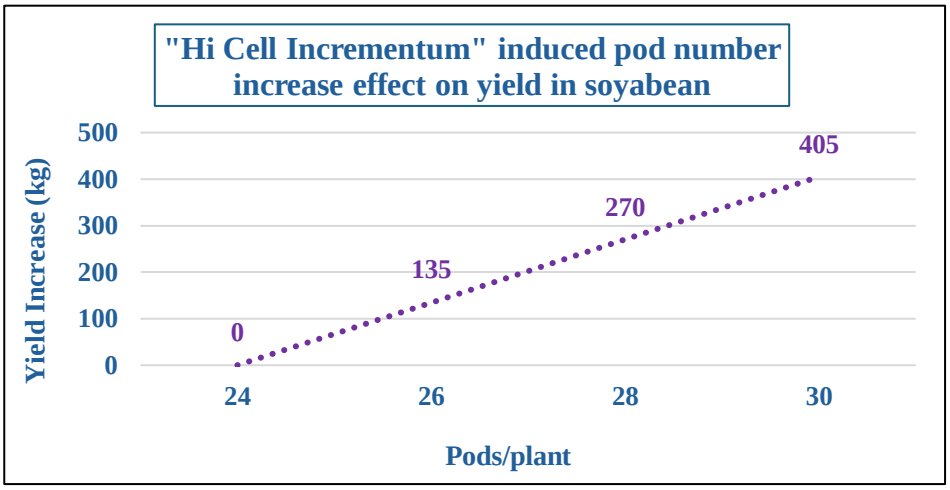
### 1. R1-R2 Stage (Flowering Initiation and Retention)

At the onset of flowering (R1-R2 stage), the soybean plant begins to set the foundation for pod formation. Successful flowering is critical, as it directly correlates with the plant's future yield potential. At this stage, the plant can often experience premature flower drop, which can result in reduced pod development if not adequately managed. Hi Cell Incrementum is applied during this stage to foster prolific flowering while addressing the potential abscission of unpollinated flowers.

**Objective:** Enhance flower initiation, mitigate abscission of unpollinated flowers, and optimize pod retention post-pollination.

**Application Rate:** 30-40 ounces per 100 gallons or through an ultra-fine spray at the R1 stage.

**Benefits:** Prolific flowering in soybeans and sustained retention of pollinated flowers and subsequent pod development.




| Pods/Plant | Estimated Yield Increase (Kg/Acre) |
|---|---|
| 24 | 0 |
| 26 | 135 |
| 28 | 270 |
| 30 | 405 |

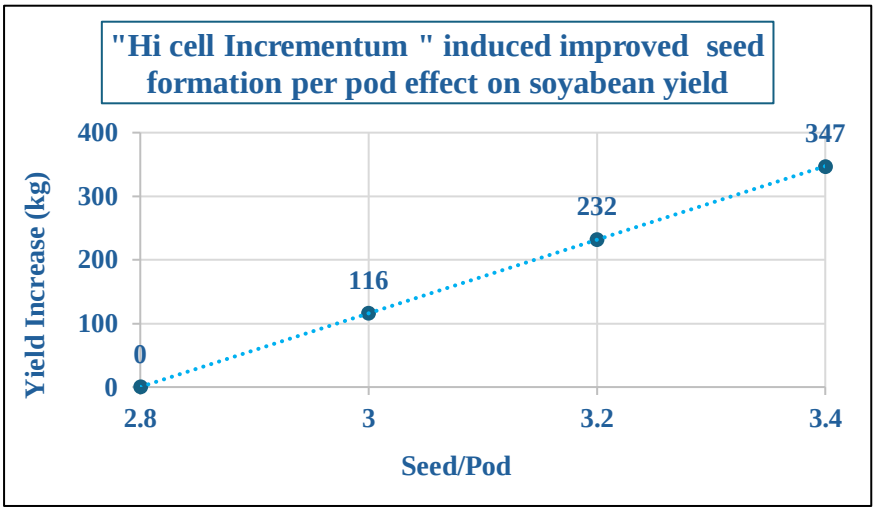
## 2. R3-R4 Stage (Pod Formation)

As the plant moves from flowering to pod formation (R3-R4 stage), nutrient demand increases significantly. At this stage, the soybean plant forms the majority of its pods, which are vital for seed production and overall yield. The plant's nutrient flow must be optimal to support the growth of new pods and the development of seeds within these pods.

**Objective:** Ensure meticulous management of nutrient availability to support the nourishment of additional pods.

**Application Rate:** 30-40 ounces per 100 gallons, 7-10 days after the first application.

**Benefits:** Enhances nutrient flow to developing pods, optimizing pod retention, and elevating soybean seed yields.




| Seed/Pod | Estimated Yield + Kgs /Acre |
|---|---|
| 2.8 | 0 |
| 3 | 116 |
| 3.2 | 232 |
| 3.4 | 347 |

### 3. R5-R6 Stage (Seed Development)

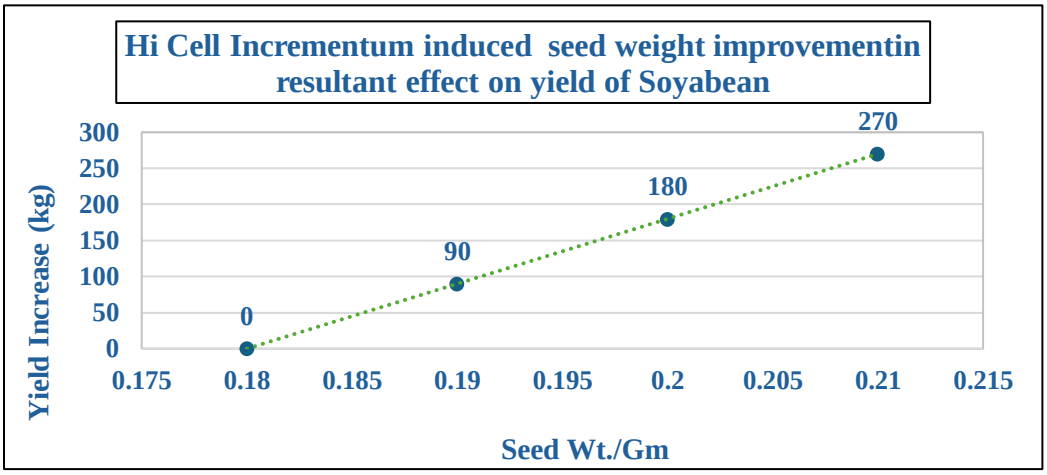
Once the plant reaches the seed development stage (R5-R6), attention shifts toward seed size and weight, both of which are key determinants of the final harvestable yield. Seed development is heavily influenced by both genetic potential and nutrient availability, and this stage is crucial for realizing the full yield potential of the crop.

**Objective:** Optimize seed formation, ensuring the production of seeds with optimal weight.

**Application Rate:** 30-40 ounces per 100 gallons.

**Product:** Hi Cell Incrementum

**Benefits:** Expedites the development of a greater number of large-sized seeds within the pods, maximizing soybean yields.




| Seed Wt./Gm | Yield + Kgs /Acre |
|---|---|
| 0.18 | 0 |
| 0.19 | 90 |
| 0.2 | 180 |
| 0.21 | 270 |

## GROSS INCREASE IN YIELD BY USING HI CELL INCREMENTUM

**Combined effect of application of Hi cell Incrementum on soybean crop can result substantial improvement in yield potential of Soybean under average growing conditions.**

| Combined effect Hi Cell Incrementum on all factors on soyabean yield | | | | |
|---|---|---|---|---|
| **Pods/Plant** | **Seed/Pod** | **Seed Wt./Gm** | **Yield Increase Kgs** | **Yield + $/Acre** |
| 24 | 2.8 | 0.18 | 0 | 0 |
| 26 | 3.0 | 0.19 | 341 | 123 |
| 28 | 3.2 | 0.2 | 682 | 245.5 |
| 30 | 3.4 | 0.21 | 1022 | 367.9 |

**Note: Soybean rate calculated at 0.36$ per Kilo**

## CONCLUSION: The Combined Impact of Hi Cell Incrementum on Soybean Yield

Through its strategic, stage-specific application, Hi Cell Incrementum delivers cumulative yield benefits across the entire soybean growth cycle. By enhancing flower retention, maximizing pod and seed development, and strengthening the plant's resilience to flower and pod drop, Hi Cell Incrementum provides a comprehensive solution for achieving higher, more stable soybean yields. The collective effect is a substantial increase in yield potential, translating to greater profitability for farmers and a stronger crop output to meet market demands.

## FIELD TRIALS

Hi cell Incrementum would be further validated by independent agencies and farmer bodies during 2025 season. Entire data collected from various soybean growing locations would be shared on our website.

Hi cell Crop Sciences LLC is open to conducting commercial field trails at any location in North or South America if approached before Feb 2025.

## LAUNCHING

**Hi Cell Incrementum would be made available commercially through select dealers in 2026.**

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