

**CYTOPLEX™ SUPPLEMENT:  
A HORMONE MICRONUTRIENT  
SUPPLEMENT TO PROMOTE  
SEEDLING VIGOR**

**Jerry V. Mayeux, Ph.D.  
Plant BioTech, Inc.  
Corrales, NM**

**Abstract**

**Cytoplex Supplement** is formulated to contain the three major plant growth hormones and supplemental micronutrients required for optimum enzyme and growth activity early in the growth of the seedling. Cytoplex provides supplementary hormone support to physiological processes regulated by the cytokinins, auxins, and gibberellins that affect seedling vigor and provides an aid to overcoming early season stress such as cold, wet, seedling disease, and other conditions that deter the development of the cotton seedling. Cytoplex is a source of cytokinins, auxins, and gibberellic acid, hormone precursors, and micronutrients.

**Introduction**

Table 1 shows that the recommended use guidelines for Cytoplex are to apply it in the seed furrow if the seed is not treated with Arise Seedling Booster, to then follow with the first foliar application at the third true leaf stage at 2 ounces banded over the top, and following with a second foliar application at pinhead to matchhead square at 4 oz/acre banded. These applications will provide a more vigorous development of the seedling, a better root system, earlier square development, and generally will produce an earlier bloom.

Cotton plants that were treated with Cytoplex, and pulled from a field and evaluated about one week before bloom showed a difference in growth and size of the plants. The ones treated with Cytoplex developed more quickly and had more nodes and more leaf biomass.

Upon stripping the leaves of these same plants the treated plants are much further developed. The number of squares are greater, and the squares are much larger. The application of Cytoplex resulted in bloom occurring from 5 to 10 days earlier than in the untreated plots.

Table 2 shows the results of HS-200 cotton treated with Cytoplex after planting May 5. The plots were hand-harvested on October 11. The Cytoplex treated HS-200 yielded 109 lbs/acre more than the control.

Table 3 shows the yields of Cytoplex treated HS-200 planted May 20 and harvested October 11. The check plots at the time these plots were hand harvested were about 50% open, and the Cytoplex treated plots were slightly further ahead. As you can tell by the lint yields, the Cytoplex yielded 607 lbs/acre, compared to 400 lbs/acre for the check. What is interesting to note is that there are still 155,000 green bolls remaining in the Cytoplex, and 127,000 bolls remaining in the check plots. A killing freeze at this stage would have provided a substantial yield advantage for the Cytoplex over the check.

Table 4 shows the yield of Cytoplex treated HS-26 in Lamesa, Texas. The Cytoplex treated cotton yielded 220 lbs/acre more than the check. The increase in yield came from more bolls in addition to the Cytoplex bolls being slightly heavier than the untreated bolls.

Table 5 shows the results of 1995 cotton, HS-26, in the Texas High Plains. This dry land cotton had received seed treatment with Arise, a Cytoplex foliar application, and then Cytok foliar applications during bloom and boll fill. The combination of Arise, Cytoplex and Cytok showed an increase in the boll load, as can be seen here where only 21 plants of the treated cotton were required to produce 100 bolls, while 32 plants of the check were needed to produce 100 bolls, a difference of over 50%. The boll weight has a significant increase of 0.91 grams heavier bolls in the Arise-Cytoplex-Cytok treated plants than in the check. The final yield was calculated to be 614 lbs/acre in the treated plots, compared to 353 lbs/acre in the check, for a difference of 261 lbs. These differences were calculated from hand-harvested plots. The actual yields obtained by the grower were 520 lbs/acre in the treated area, and less than 300 lbs/acre in the check, a difference of over 200 lbs/acre.

**Summary**

In 1996, we will be introducing a program recommending Arise, Cytoplex, and Cytok treatments to maximize cotton physiology management and cotton production. Based on the results we have seen over the last several years, and the development of products specifically for the different growth stages of the plant - the Arise Seed Treatment, Cytoplex for the foliar applications to provide and maintain seedling vigor after emergence, followed by Cytok applications during the bloom stages of cotton development to provide better boll development and better boll fill.

Arise Seedling Booster, Cytoplex Supplement, and Cytok Bioregulator Concentrate will be available during the 1996 growing season. Distribution is by Miller Chemical & Fertilizer Corporation (1-800-253-2040).

Table 1. Cytoplex Cotton Use Guidelines

<u>Growth Stage</u>	<u>Application Rate</u>
Apply in seed furrow*	2 oz.
1 to 3 leaf stage	2 oz. banded
Pinhead to matchhead square	4 oz. banded

\* Only if seed has not been treated with Arise

Table 2. Yield of Cytoplex treated HS-200 cotton planted 5 May and harvested 11 October 1994. (Seminole, Texas)

	<u>Cytoplex</u>	<u>Check</u>	<u>Difference</u>
Turnout (%)	33.63	34.67	- 1.04
Lint Yield (lbs/acre)	1119	1010	109

Table 3. Yield and green bolls for Cytoplex treated HS-200 planted 29 May (late planting) and harvested 11 October. (Seminole Texas)

	<u>Cytoplex</u>	<u>Check</u>	<u>Difference</u>
Turnout (%)	35.92	33.64	2.28
Lint (lbs/acre)	607	394	213
Green bolls left/acre	155000	127000	28000

Table 4. Yield of Cytoplex treated and irrigated HS-26 cotton (Lamesa, Texas) - 1994

	<u>Cytoplex</u>	<u>Check</u>	<u>Difference</u>
Turnout (%)	34.16	34.24	- 0.08
Lint yield (lbs/acre)	968	748	220
Boll weight (grams)	4.04	3.76	0.28

Table 5. Effect of Arise Seed Treatment, Cytoplex Foliar, and Cytokinin Foliar on boll production and boll size in Dry Land HS-26 Cotton - (Lamesa, Texas) - 1995

	<u>Check</u>	<u>Arise + Cytoplex + Cytokinin</u>	<u>Differ- ence</u>	<u>Sig. level(%)</u>
Plant number*	32	21	-11	0.01
Boll weight (grams)	3.54	4.45	0.91	0.01
Lbs. lint/acre**	353	614	261	0.03

\* Number of consecutive plants to yield 100 bolls.

\*\* Calculated based on 33% gin out for hand picked cotton.