

Fungicide Seed Treatments for Cotton

The most typical seed treatment packages for cotton in west Texas are:

RTU (Ready to use) Baytan-Thiram + Allegiance FL (3 + 0.75 oz/100 lb seed)

Baytan 30 + Argent + Allegiance (0.5 + 1.5 + 0.75 oz/100 lb seed)

Nuflow M + Apron XL (1.75 + 0.32 oz/100 lb seed)

Vitavax-PCNB + Allegiance FL (6 + 0.75 oz/100 lb seed)

A new seed treatment package was recently labeled for use in cotton called Dynasty CST 125 FS. This is a combination of three fungicides (Maxim 4FS + azoxystrobin {Protege} + Apron XL). It is recommended at a rate of 3.9 oz/100 lb seed.

Fungicides from this list with *Rhizoctonia* activity include: Baytan, Argent, Nuflow M, Vitavax-PCNB, and Dynasty (Maxim and Protege).

Fungicides from this list with *Pythium* activity include: Allegiance FL, Apron XL, and Dynasty (Apron XL).

Fungicides from this list with *Thielaviopsis* activity include: Baytan and Nuflow M.

None of these combinations are effective against Fusarium wilt.

In 2004, tests were conducted with several of these combinations on three varieties (Paymaster 2167R, Paymaster 2280 BG/RR, and Fibermax 960 BR), in replicated studies at multiple sites. The sites were all located in the northern High Plains. The project was conducted by Dr. Greta Schuster, Dr. Terry Wheeler, Greg Harmsmire, Danny Nusser, Andy Hefley, Brandon McGinty, and Rick Auckerman. The fungicide comparisons were:

- 1) no fungicide protection
- 2) “old” fungicide treatment: Vitavax-PCNB + Allegiance FL (6 + 0.75 oz/100 lb seed)
- 3) “modern” fungicide treatment: Baytan 30 + Argent + Allegiance FL (0.5 + 1.5 + 0.75 oz/100 lb seed)
- 4) “newest” fungicide treatment: Dynasty 125 FS (3.9 oz/100 lb seed)

All fungicide treatments performed similarly and better than the seed without fungicide protection. This is typical of what we have been seeing in past years as well, with respect to plant stand.

Table 1. The affect of seed treatment, averaged across three cultivars and four sites, on stand.

Seed Treatment	oz of product per 100 lbs seed	Stand at 14 days	Stand at 28 days
None	0	66 b	68 b
Vitavax-PCNB FL + Allegiance FL	6 + 0.75	77 a	79 a
Baytan 30 + Argent 30 + Allegiance FL	0.50 + 2 + 0.75	76 a	78 a
Dynasty 125 FS+ Systhane 40WDG	3.1 + 0.84	78 a	79 a
Minimum significant difference		4	4

Root and hypocotyl health has been compared between untreated seed and Baytan 30, and Nuflow M. Root necrosis (Fig. 1) is often caused by the black root fungus, *Thielaviopsis basicola*. In general, if root necrosis is in the range of 10 to 30%, then Baytan 30 and Nuflow M seed treatments decrease the amount of root necrosis compared with untreated seed. However, if root necrosis is much higher than 30% of the root system, then these fungicide seed treatments are not able to reduce root necrosis over any other seed treatments. Yields have been increased by 10-12% by reducing the amount of black root rot by fungicide seed treatment (Table 2).

Table 2. Affect of fungicide seed treatment on black root rot and yield in large plot tests in west Texas.

Fungicides	oz/100 lb seed	% Root necrosis at McClure site	lbs of lint/a at McClure sites	% Root necrosis at Welch site	lbs of lint/a at Welch site
Captan 4000	2.5	30 a	848 b	46 a	795 ab
Captan 4000 + Apron TL + Nuflow M	2.5 + 2 + 1.25	12 b	958 a		
Captan 4000 + Apron TL + Nuflow M	2.5 + 2 + 1.75	21 ab	942 a		
Thiram 42S + Allegiance FL + Baytan 30	3 + 0.75 + 0.5	16 b	977 a	31 b	784 b
Thiram 42S + Allegiance FL + Baytan 30	3 + 0.75 + 1.0	12 b	919 a	29 b	895 a

Figure 1. Black root rot (*Thielaviopsis basicola*)



Rhizoctonia and *Pythium* will typically cause hypocotyl damage and root rot (Fig. 2). Systemic fungicides like Vitavax-PCNB, Baytan 30, Apron XL, Allegiance FL, and Dynasty will reduce the damage caused by these fungi.

Figure 2. Root and hypocotyl damage caused by *Rhizoctonia* and *Pythium*



In a number of tests comparing Vitavax-PCNB to Baytan 30, root health was almost always better with Baytan 30 than with Vitavax-PCNB. Baytan 30 is considered a premier *Rhizoctonia* fungicide seed treatment for root and hypocotyl protection. The new fungicide package Dynasty also provides excellent *Rhizoctonia* protection for roots and hypocotyl tissue.