Bio-Fungicide Seed Treatments on Valencia Peanut Yield and Grade

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Peanut (*Arachis hypogaea* L.) is prone to soil-borne diseases, mostly transmitted through seeds, such as Aspergillus crown rot, Verticillium wilt, black hull, limb rot, Phymatotrichum root rot, and pod rot. Seeds treated with fungicides reduce the incidence of seed-transmitted and soil-borne diseases in peanut and increase peanut production. Yield and stand loss of more than 50% with non-treated seed is possible. Three field studies were conducted on organically managed grower's fields in western Texas and eastern New Mexico. The experimental design was a Randomized Complete Block with four replications. We evaluated the effectiveness of bio-fungicides as a seed treatment and its effect on peanut yield, grade, net return, and plant stand. This study evaluated four bio fungicides: Neem combo, AKX-602, AKX-612, and mycostop, along with chemical check Azoxystrobin seed treatment (Dynasty), and an untreated control. The application of Bio-fungicides increased peanut yield up to 65% compared to an untreated control group. Among organic seed treatments, neem combo resulted in a significant higher yield than non-treated seed. Also, net return generated by bio-fungicides treatments over a three year period was greater by 70% compared to control untreated check. Mean plant populations across years were significantly greater than the un-treated control. The average plant population across all locations were 55% higher for neem combo. Our results suggest that the use of bio-fungicide have potential in increasing plant population, yield, quality, and net return in organically grown peanuts in eastern New Mexico and west Texas. They can be used as alternatives to chemical fungicides which could minimize the negative effects on the environment.