



ECTOL - CORN

Ectol – reduces plant stress and increases yields

The natural bio-protectants found in Ectol are derived from terrestrial and marine plant extracts. Ectol assists crop protection from stresses caused by frost, cold, heat, salinity and disease.

Stress is the “hidden enemy” of plant health, growth and yield, usually unseen by the naked eye and is instrumental to the onset of crop disease.

Osmoprotectants, amino acids, complex sugars, Potassium, Phosphorous, Nitrogen and a selection of micro-nutrients contained in Ectol, help to boost the resistance to disease and increase yields in broad acre crops by up to 10% and more.

Ectol is an easy to handle liquid foliar that may be mixed with most crop protection products.

Key weather related stresses impacting corn

Frost/Freeze Damage:

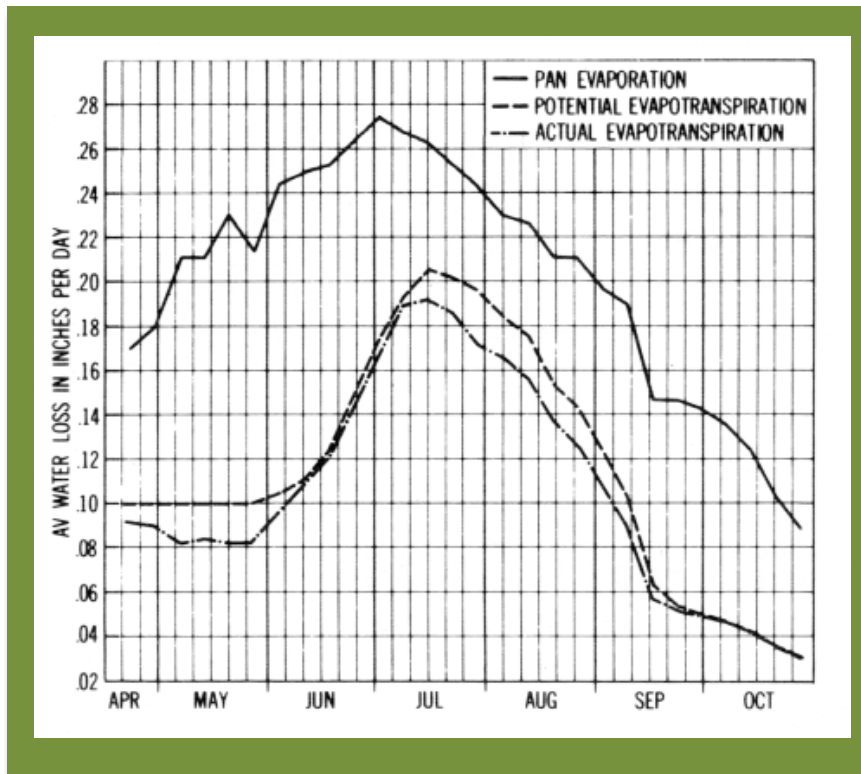
Early spring frosts and cold soils stress corn seedlings, but the degree of damage will depend on the stage of seedling emergence. Newly emerged seedlings are able to recover from minor frost, as the growing point of the seedling remains below the soil and the impact on yield is minimal. The growing point for corn is typically below the ground until growth stage V5-V6. Beyond this growth stage the plant is vulnerable to frost, cold temperature and soil saturation stresses with the potential risk of Pythium and other damping off disease.

Moisture and Heat Stress:

Plants experience moisture stress when the “actual” plant evapotranspiration exceeds the “potential” evapotranspiration (plant transpiration without stress) and therefore experiences a net loss of water from its tissues. The impact from this loss will depend on many factors including available soil moisture, times, temperatures and atmospheric humidity. However during such periods

of stress, which may have no visible impact on the crop, the plant may experience nutrient stress and damage to cell organelles and membranes, all of which will impact crop health and yields.

The following chart prepared by the Iowa State University shows how a corn crop was experiencing deficit transpiration from mid July to mid September (Northern Hemisphere summer).

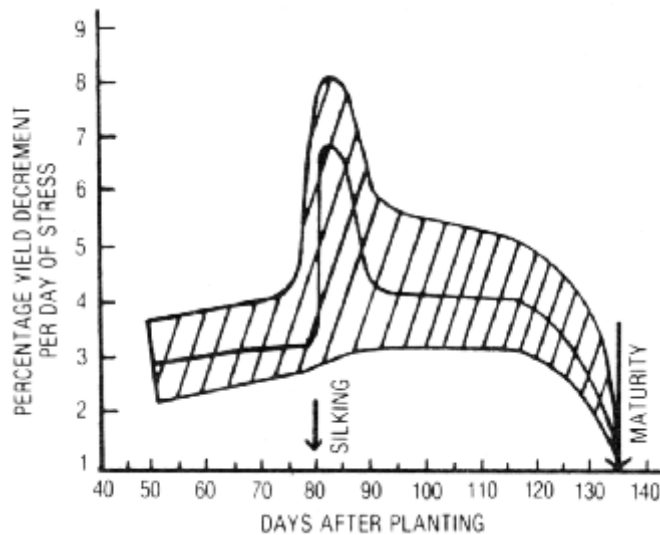


Transposing the US research into Australian and New Zealand conditions corn crops may regularly experience deficit transpiration during the months of December to March.

Effect of stress at various stages of growth on yield:

Growth stage	Stress	Impact
Planting to emergence	Cold wet soils	Slow emergence and pathogens
Early vegetative growth V5 – V6	Frost	Permanent crop damage
Vegetative growth V7 – V10	Wet soils and heat	Minimal impact on yields. Plant size reduced.
Rapid stem elongation to tasseling VT	Moisture and heat. Average daily temps above 22°C cause stress.	Yield loss of 2-3% per day of stress.
Tasseling VT and Silking R1	Moisture and heat. Average daily temps about 24°C Resulting nutrient stress.	Delays silking and increases the time for pollination. Yield losses of up to 13% per day of stress.

Age of crop vs. percentage yield loss at harvest from one day of moisture stress. (Middle line shows the average)



Moisture stress at silking can cause the greatest crop yield loss, with as little as one day of moisture stress causing up to 13% yield loss at maturity.

Ectol on Corn Crops.

The natural biochemicals in Ectol maintain the plants cellular **hydration** during frost or heat stress events. Ectol is recommended as a frost protectant once the growing points have emerged (V6 –V7) or as a heat protectant during the tasseling to silking growth stages when summer temperatures and winds are exacerbating the transpiration deficit and the potential yield loss most serious.



Application Rates:

Ectol may be applied as split applications up to 20L /ha in water, by centre-pivot or foliar spray with crop protection fungicides.

In order to maintain plant hydration during the critical periods of tasseling to silking apply 7L/ha at early tassel and a further 7L/ha at early silking.

JH McKay.

Refs: Purdue University National Corn Handbook – RH Shaw
Iowa State University of Science and Technology
LG Seeds – Mark Seem.



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