



Preplant and Preemergence Dinitroaniline Herbicides in Cotton

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The use of a dinitroaniline (DNA or “yellow”) preemergence residual herbicide at the beginning of the cotton season provides a foundation for season-long weed management. Along with tillage and other practices, DNAs are key in the struggle to delay or avoid developing herbicide resistant weed populations. **The discovery of glyphosate-resistant Palmer amaranth in central Arizona cotton requires the use of a diverse suite of weed control tactics.**

The DNAs (pendimethalin and trifluralin) are inexpensive and selective in cotton. They suppress the emergence of small-seeded broadleaf (Fig. 1) and grass weeds and stunt the growth of larger seeded weeds like morningglory that do emerge (Fig. 2). This provides more time to spray small weed escapes and improves the effectiveness of postemergence herbicides.

DNA herbicides are most effective when applied and mechanically incorporated with a light disk or field cultivator prior to listing and bed formation (Fig. 1 & 2). However, these operations require an extra pass over the field and incur additional operation costs. To avoid the extra operation, DNA herbicides can be applied with a mulcher after listing (Fig. 5) although their effectiveness is slightly reduced.

Preemergence herbicides can be applied after cotton emergence. DNAs or metolachlor can be sprayed on the soil surface (**avoiding contact with cotton foliage and stems**) and immediately incorporated with a rolling cultivator or Lilliston. A less reliable substitute for mechanical incorporation is to simply irrigate and rely on water infiltration to incorporate the herbicide; this leaves the beds and cotton seed-line without residual herbicide. Subsequent cultivations can be used to throw soil into the seed-line. Preemergence herbicides will not control weeds already emerged at the time of application.

The Prowl H₂O[®] formulation of pendimethalin can be broadcast sprayed over-the-top of cotton either alone or mixed with post-emergence herbicides such as glufosinate and glyphosate and incorporated (see above). However, do not tank mix Prowl H₂O with metolachlor, pyriithiobac, Sequence[®] (glyphosate, S-metolachlor), prometryn, diuron, or fluometuron herbicides. Metolachlor can also be sprayed over-the-top of cotton with or without glufosinate or glyphosate but only provides about 25 days of Palmer amaranth suppression in contrast to the DNAs, which last longer.

Soil texture affects the rates of DNAs needed for control. Finer soil textures (i.e., more clay and less sand) require higher rates of DNAs; consult product labels before applying herbicides.

http://ag.arizona.edu/crops/cotton/files/DNA_Herbicides.pdf

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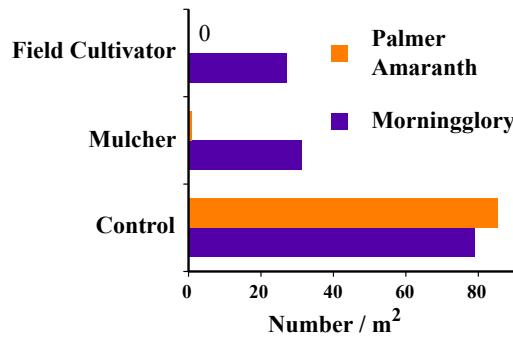
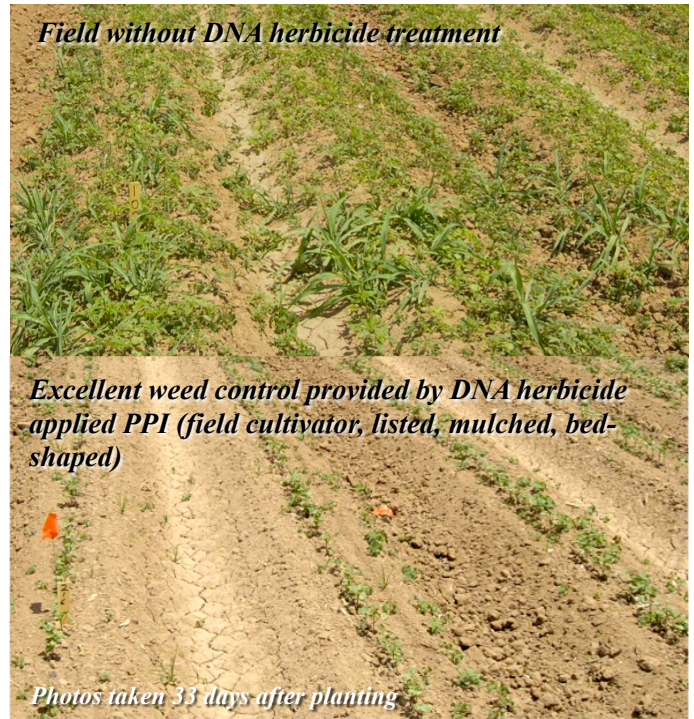


Figure 1. DNA herbicides (pendimethalin or trifluralin) reduce the number of weeds that emerge.

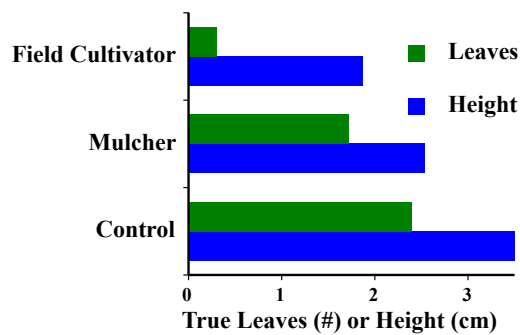


Figure 2. DNAs stunt large seeded weeds like annual morningglory (left) especially when applied and incorporated prior to listing and bed formation.

