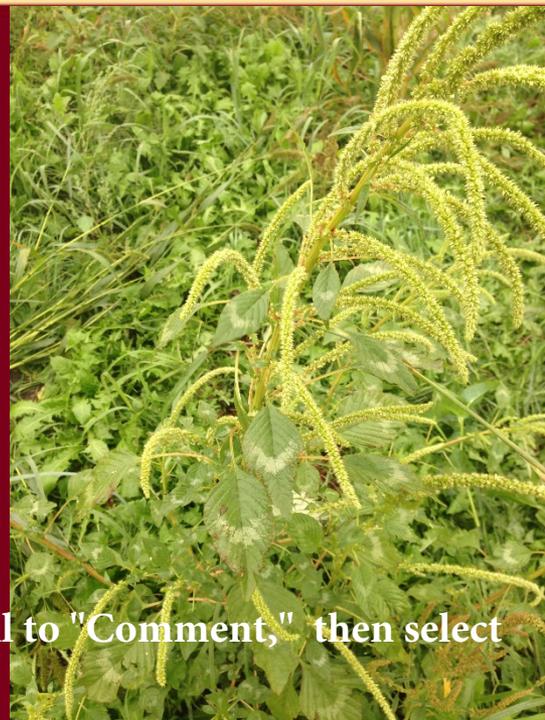


# Comparing Palmer Amaranth and Tall Waterhemp - Growth & Development

Jeffrey L. Gunsolus  
gunso001@umn.edu



To view accompanying notes, open file with Adobe, click on "View", scroll to "Comment," then select "Annotations".



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 6/19/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Tall waterhemp seeded on – 6/12/2014

Emerged approximately on - 6/22/2014

Photo taken on - 6/24/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 6/24/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 6/24/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Tall waterhemp seeded on – 6/12/2014  
Emerged approximately on - 6/22/2014  
Photo taken on - 7/03/14

Photo credit –  
Brad Kinkaid  
Univ. of MN



Tall waterhemp seeded on – 6/12/2014  
Emerged approximately on - 6/22/2014  
Photo taken on - 7/03/14

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 7/03/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 7/03/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014  
Emerged on - 6/16/2014  
Photo taken on - 7/11/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Tall waterhemp seeded on – 6/12/2014  
Emerged approximately on - 6/22/2014  
Photo taken on - 7/11/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Tall waterhemp seeded on – 6/12/2014  
Emerged approximately on - 6/22/2014  
Photo taken on - 7/11/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 7/11/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth seeded on – 6/12/2014

Emerged on - 6/16/2014

Photo taken on - 7/17/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth

Tall waterhemp

Seeded on - 6/12/14

Photo taken on - 7/17/2014

Photo credit –  
Brad Kinkaid  
Univ. of MN



Palmer Amaranth –  
Note long leaf petioles

Photo credit –  
Bruce Potter  
Univ. of MN



Palmer Amaranth –  
Note leaf petiole often longer  
than the leaf.

Photo credit –  
Bruce Potter  
Univ. of MN



Palmer Amaranth –  
Female – seed producing plant  
Note spiny bracts

Photo credit –  
Bruce Potter  
Univ. of MN



Palmer Amaranth –  
Close up of spiny bracts on female plant.

Photo credit –  
Bruce Potter  
Univ. of MN



Palmer Amaranth –  
Male – pollen producing plant

Photo credit –  
Bruce Potter  
Univ. of MN



## Palmer Amaranth – Lyon County Minnesota

Photo credit –  
Monika Chandler  
MN Dept. of  
Agriculture



Powell Amaranth –

Note the compact seed head.

Seed head will be prickly but not as prickly as Palmer.  
Male and female structures on the same plant.



Palmer Amaranth –  
In a field with other Amaranth species in  
Yellow Medicine County Minnesota

Photo credit –  
Jared Goplen  
Univ. of MN