

**MAT PLANTS.**

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Mat plants are plants with numerous prostrate branches which are usually closely crowded and form a more or less circular body a few inches to eight or more feet in diameter. This prostrate discoid body habit is quite characteristic of a small number of plants belonging to various families. Among the most typical mats may be mentioned *Amaranthus blitoides* Wats., *Portulaca oleracea* L., *Euphorbia maculata* L. and *Euphorbia serpyllifolia* Pers. Mats are usually annual plants either of the ordinary herbaceous type or very fleshy. There are, however, a number of geophilous perennials which form mats, like *Verbena bracteosa* Mx. The main radiating branches usually give rise to numerous smaller branches and they may or may not strike root. In the more typical cases there are no roots except the main central root. Mats are especially characterized by having a large number of small leaves, seeds, and flowers. These peculiarities, of course, harmonize with the shape and position of the plant.

Like most ecological groups, mat plants intergrade with other types of body habit. On the one hand they pass over into such forms as *Malva rotundifolia* L., *Callirrhoe involucrata* (T. and G.) Gr., *Citrullus citrulus* (L.) Karst., and the typical carpet plants; and on the other, transitions occur between them and tumbleweeds or even normally erect forms. Although it is not intended to give a definition here of carpet plants, yet, since the terms mat and carpet are often used synonymously, it might be stated that typical carpets are perennials with numerous trailing branches or runners which take root at the nodes and develop low tufts of leaves or rosettes, finally forming a close low covering of the ground. Among this type of carpet plants may be mentioned the buffalo-grass, *Bulbilis dactyloides* (Nutt.) Raf., and the various species of *Antennaria*.

Mat plants are at home in open and exposed places where there is little or no individual crowding. They are abundant on prairies and appear extensively on newly plowed land. On newly broken prairie they are usually the most characteristic vegetation. They are also prominent on dry or moist sandbars, on salt marshes, and in cultivated fields.

Nearly all typical mats, when growing in shaded places, assume the upright habit. But it is especially interesting to note that normally erect plants may assume the mat habit in a suitable environment. One of the most striking cases is the slender pigweed, *Amaranthus hybridus* L., which is usually erect and often attains the height of eleven feet. This plant when growing on exposed dry or moist sandbars frequently develops as a mat,

without a central stem but with a number of prostrate radiating branches. Sometimes there is a central erect stem a few inches high with long prostrate branches radiating in all directions from the base. The same form has been seen by the writer on sandhills in central Kansas. So peculiar is the appearance that one hardly recognizes the plant in its new form. *Eragrostis purshii* Schrad. and *Diplachne acuminata* Nash also form mat-like bodies when growing on sandbars. On exposed broken ground various normally erect, ascending, or decumbent plants also form mats. Noteworthy among these are *Echinochloa crus-galli* (L.) Scrib., *Eragrostis major* Host., and *Cenchrus tribuloides* L. In salt marshes of the interior one meets with fleshy mat plants like *Sesuvium sessile* Pers. *Sesuvium martimum* (Walt.) B. S. P. is common on the sands of the Atlantic coast. *Dondia depressa* (Pursh) Britt. is also a fleshy halophyte which commonly assumes the mat form on the salt marshes of Kansas.

It should not be difficult, with suitable physiological experiments, to determine the ecological factors which induce the formation of mats. Intense light and unobstructed space appear to be very important. The wind may have some influence. Water supply appears to have little or no effect. Thus *Eclipta alba* (L.) Hassk. was observed to form perfect mats on very wet exposed sandbars but in shaded situations a little distance away it grew entirely erect, some plants being three feet high.

The Ohio plants named below are either typical mats or develop as mats under proper conditions. The more typical species are marked with an x.

<i>Echinochloa crus-galli</i> (L.) Beauv.	<i>Alsine media</i> L. x
<i>Chaetochloa glauca</i> (L.) Scrib.	<i>Euphorbia polygonifolia</i> L. x
<i>Cenchrus tribuloides</i> L.	<i>Euphorbia serpens</i> H. B. K. x
<i>Eragrostis major</i> Host.	<i>Euphorbia maculata</i> L. x
<i>Eragrostis purshii</i> Schrad.	<i>Euphorbia humistrata</i> Engelm. x
<i>Polygonum aviculare</i> L. x	<i>Euphorbia nutans</i> Lag.
<i>Polygonum littorale</i> Link. x	<i>Verbena bracteosa</i> Mx.
<i>Amaranthus hybridus</i> L.	<i>Spermacoce glabra</i> Mx.
<i>Amaranthus blitoides</i> Wats. x	<i>Diodia teres</i> Walt.
<i>Mollugo verticillata</i> L. x	<i>Eclipta alba</i> (L.) Hassk.
<i>Portulaca oleracea</i> L. x	