the increase in competitive effect from introducing increasing numbers of wild oats to a normal-density wheat crop (35-50 lb per acre, 39.2-56.1 kg per hectare) is only slight, and little wheat yield reduction can be expected from up to 50 wild oat plant per sq yard (41.8 plants per sq metre).

THE USE OF LODICULE SHAPE AS A MEANS OF SEPARATING WILD OAT STRAINS

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It is common knowledge that varieties of *Avena sativa* differ in their plant characteristics, growth pattern, and floret characteristics, and that these differences are used as a means of classification. Recent work has shown that wild oat types (*Avena* spp.) also differ in many plant and floret characteristics, but as with *A. sativa*, some of these differences are extremely difficult to assess with any degree of accuracy. Hence the need for further points of difference.

Baum (1969) was able to use lodicule shape to differentiate between *A. sativa* and *A. fatua*, and he was also able to tell whether supposed hybrids or fatuoids were the result of an *A. sativa* cross or an *A fatua* cross. It was thought that lodicule shape may be of use in differentiating wild oat types both within and between *A. fatua* and *A. ludoviciana*.

Early work by the author, in which 57 visually different florets were selected and grown for five generations to test the stability of floret characteristics, revealed the existence on this basis, of possibly 14 wild oat types. When the seedling characteristics, particularly the presence or absence of hairs, were noted, the number of wild oat types increased to 21.

Lodicules from ten florets of the original and fifth generation seed of all the wild oat types grown were examined and all but three showed fatua-type lodicules. Two of these three, a grey *A. ludoviciana* type and a brown *A. fatua* type could be differentiated from types with similar floret characteristics by

their having, in contrast, glabrous and densely haired seedlings respectively. The remaining sativa-type lodicule occurred in a grey *A. fatua*. This was the only factor that could be used for differentiation in this wild oat. Hence in only one case was lodicule shape of any use in separating wild oat types.

The lodicules of *A. sterilis*, *A. barbata*, and three stable fatuoid types were also examined and all were found to be of a fatua type. It was concluded that lodicule shape was of little use by itself as a means of differentiating between wild oat types on the Darling Downs.

It may be thought that the classification of wild oats is purely of academic interest, but observations and some research have shown that different types of wild oats affect crop competition, herbicide effectiveness, and the degree of weed infestation in a crop (associated with sowing date). These three factors alone show the need to differentiate between wild oat types in any one paddock if an effective approach is to be made towards controlling the weed. A great deal more research is needed in this field of wild oat classification and type characteristics.