

WEED SEEDS IN MARKETING WHEAT AND THEIR IDENTIFICATION

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ABSTRACT

Weed seeds of fifteen species representing 12 genera and 7 families have been observed, contaminated in wheat samples available in Calcutta ration shops. A key has been prepared for identification of these seeds.

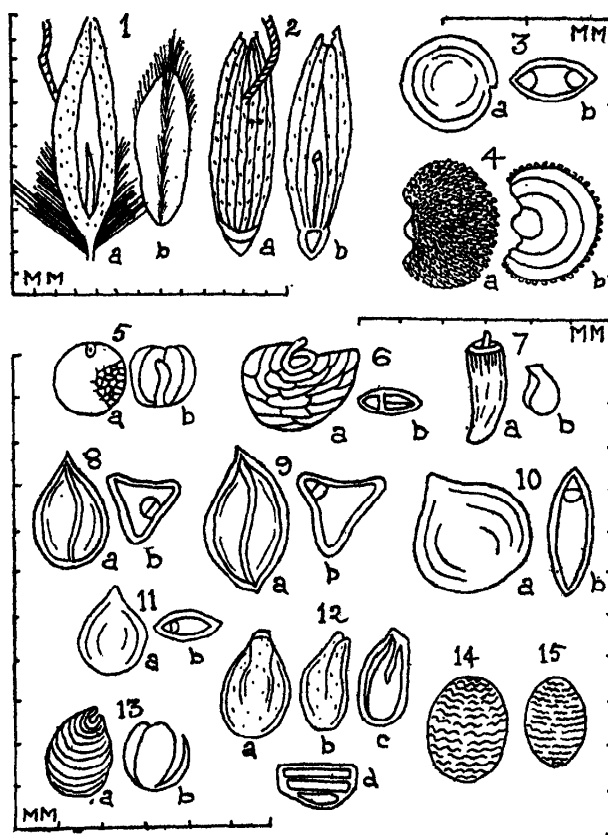
INTRODUCTION

Agricultural crop plants have their share of weeds. While harvesting, the main crop gets mixed with propagules such as seeds, fruits etc. of weeds. Apart from the Botanists who have got over all interest on plants and plant parts, identification of these weed seeds is interesting to the Farmers, Agriculturists and Conservationists. Farmers and Agriculturists try to keep their crop free from weeds for their obvious adverse effects. Conservationists want to control them so that weeds would not become a menace.

Much work on the study of weeds has been made in other countries as evidenced by publication of Heinisch (1955), Muenschner (1955) and Martin & Barkley (1961). Recently Martin & Barkley stressed the importance of internal morphology of seeds. Morphology of seeds of some of the families like Apiaceae (Umbelliferae), Brassicaceae (Cruciferae), Polygonaceae, Geraniaceae, Papaveraceae, Plantaginaceae, Asteraceae (Compositae), Poaceae (Gramineae) etc. are known to be of importance.

There is a great scope for this type of research in India also. A beginning has been made by the publication of Datta & Bhupal (1968), Datta & Banerjee (1975) etc.

Wheat as one of our major crops deserves a detailed study of associated weeds. A preliminary attempt has been made to identify the weed seeds from wheat samples collected from Calcutta ration shops at different times



Figs. 1-15: 1. *Avena fatua* L. : (a) Seed, (b) Grain. 2. *Avena sativa* L. : (a) Seed-dorsal view, (b) Seed-ventral view. 3. *Amaranthus spinosa* L. : (a) Seed, (b) T. S. of seed showing endosperm and embryo. 4. *Silene gallica* L. : (a) Seed, (b) L. S. of seed showing endosperm and embryo. 5. *Brassica juncea* (L.) Coss. : (a) Seed, (b) Cotyledons and radicle. 6. *Medicago lupulina* L. : (a) Seed, (b) T. S. of seed showing cotyledons and radicle. 7. *Cirsium arvense* (L.) Scop. : (a) Seed, (b) Cotyledons. 8. *Rumex dentatus* L. : (a) Seed, (b) T. S. of seed showing embryo and endosperm. 9. *Polygonum hydropiper* L. : (a) Seed, (b) T. S. of seed showing embryo and endosperm. 10. *Polygonum orientale* L. : (a) Seed, (b) T. S. of seed showing embryo and endosperm. 11. *Polygonum lapathifolium* L. : (a) Seed, (b) T. S. of seed showing embryo and endosperm. 12. *Lepidium draba* (L.) Desv. : (a) Seed-dorsal view, (b) Seed-lateral view, (c) L. S. showing embryo, (d) T. S. showing embryo. 13. *Thlaspi arvense* L. : (a) Seed, (b) Embryo. 14. *Setaria pallidifusca* Stapf.-Seed. 15. *Brachieria eruciformis* (Smith) Griseb.-Seed.

of the year.

Husked wheat is broadly oblong, 6-8 mm long, yellow, longitudinally grooved on one side, with a broken basal embryo area on the other side. This can easily be separated from the mixed weed seeds.

The shape, size, colour, texture, surface markings, appendages if any, nature of seeds etc. of these weed seeds have been studied in detail. The seeds have been soaked in water, peeled off or cut longitudinally and transversely to examine the internal morphology such as presence and absence of

endosperm, position and shape of embryo etc. The term seed here is used to cover both true seeds and fruits including the grains of Gramineae covered with glumes. Cotyledons together with radicle constituting the embryo are sometimes accumbent when radicle is against the edges of cotyledons and incumbents when radicle is on the surface of cotyledons. On the basis of this study a key has been formulated to identify the seeds. Fifteen species representing 12 genera and 7 families have been identified.

Key to the species of weed seeds

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|--|-----|--|
| 1a. Seed awned, 10-12 mm long; grain hairy, longitudinally grooved. | ... | <i>Avena fatua</i> L. 1 |
| 2a. Seed hispidulous at base, deep brown | ... | <i>A. sativa</i> L. 2 |
| 2b. Seed glabrous at base, light yellow to brownish yellow | ... | |
| 1b. Seed awnless, 3 mm or less long; grain glabrous, not grooved. | | |
| 3a. Seed round or reniform. | | |
| 4a. Surface smooth, glossy | ... | <i>Amaranthus spinosa</i> L. 3 |
| 4b. Surface rugose or granular, dull. | | |
| 5a. Surface with concentric tubercles; endosperm encircled by embryo | ... | <i>Silene gallica</i> L. 4 |
| 5b. Surface reticulate; endosperm nil or if present then covering the embryo. | | |
| 6a. Seed globose, pentagonally or hexagonally reticulate; cotyledons folded, incumbent | ... | <i>Brassica juncea</i> (L.) Coss. 5 |
| 6b. Seed coiled, elongately reticulate; cotyledons accumbent | ... | <i>Medicago lupulina</i> L. 6 |
| 3b. Seed elongated. | | |
| 7a. Surface smooth. | | |
| 8a. Seed depressed at the top with a tubercle at its center; endosperm absent | ... | <i>Cirsium arvense</i> (L.) Scop. 7 |
| 8b. Seed neither depressed nor tubercled; endosperm present. | | |
| 9a. Triangular in cross section. | | |
| 10a. Embryo on a side | ... | <i>Rumex dentatus</i> L. 8 |
| 10b. Embryo in a corner | ... | <i>Polygonum hydro-piper</i> L. 9 |
| 9b. Elliptic in cross section. | | |
| 11a. Seed \pm 3 mm long | ... | <i>P. orientale</i> L. 10 |
| 11b. Seed 2 mm or less long | ... | <i>P. lapathifolium</i> L. 11 |
| 7b. Surface granular. | | |
| 12a. Seed ovoid, beaked. | | |
| 13a. Seed planoconvex marked by 2 lateral lines on one side; cotyledons incumbents | ... | <i>Lepidium draba</i> (L.) Desv. 12 |
| 13b. Seed biconvex marked by 10-16 concentric lines on both sides; cotyledons accumbents | ... | <i>Thlaspi arvense</i> L. 13 |
| 12b. Seed ellipsoid, beakless. | | |
| 14a. Strongly rugose, broadly oblong (2.5-3 \times 1.5-2 mm) | ... | <i>Setaria pallidifusca</i> Stapf. 14 |
| 14b. Faintly rugose, narrowly oblong (1.5-2 \times 1-1.5 mm) | ... | <i>Brachieria eruciformis</i> (Smith) Griseb. 15 |

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