

THE EFFECTS OF WEED CONTAMINATION ON THE
VALUE OF AGRICULTURAL PRODUCTS

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The effects of weed contamination on the value of agricultural products depend on a number of interacting factors, the principal ones being - 1. the type of product, 2. the market outlet, 3. the identity of the weed, and 4. the degree and type of contamination.

PRODUCTS FOR HUMAN CONSUMPTION

Weeds as economically significant contaminants of products for human consumption fall into five main categories:

- a) Toxic Weeds, principally Mexican poppies (*Argemone* spp.) and thornapples (*Datura* spp.), as seed contaminants in milling and malting grains, can cause whole consignments to be rejected or considerably reduced in value.
- b) Tainting Weeds can have -
 - (i) a direct effect on the saleability of a product. Hexham scent (*Melilotus indica*) seed is an unacceptable contaminant of milling and malting grains.
 - (ii) an indirect effect. Hexham scent, a wide range of cruciferous weeds and some umbelliferous weeds when eaten by dairy cattle, produce taints in milk which can result in rejection or downgrading.
- c) Weeds Affecting Product Quality or Processing are of greatest importance in wheat for milling. Excessive contamination with other grains will adversely affect the baking quality of flour. Climbing buckwheat (*Polygonum convolvulus*) affects flour colour. Oil seeds cause screen blockages. Large-seeded species such as spiny emex (*Emex australis*), soybean and maize can damage rollers.
- d) Quarantinable Species can adversely affect the saleability of agricultural products on overseas markets. In this context it is important to realize that a relatively non-significant species locally may be very significant to an importing country. Fairly recently wheat consignments to the U.S.S.R. were rejected because of contamination with lucerne seed.

- e) Contamination Irrespective of Species can lead to the rejection or downgrading of agricultural products if the level is high enough. Limits are usually of the order of 1% by volume.

STOCK FOODS

The value of stock foods is usually affected by weed contamination in much the same way as food for human consumption except:

- a) all parts of toxic plants are significant, not only the seeds. Hay, chaff or any other stock food contaminated with any part of a *Datura* plant is prohibited from sale under Queensland Stock Foods Regulations.
- b) agronomically significant weeds are of greater importance because stock foods are potential sources of infestation of farming lands. Several non-toxic noxious weeds such as skeleton weed (*Chondrilla juncea*), dodder (*Cuscuta* spp.) and giant sensitive plant (*Mimosa invisa*) are prohibited contaminants of stock foods in Queensland.

SEED FOR SOWING

All States have relatively uniform regulations which prescribe standards of physical purity (and germination) for seed offered for sale. Any line of seed which is found not to comply with the prescribed standards can be withheld from sale until made to comply. If compliance is not obtained within a reasonable time the seed (in Queensland at least) is destroyed.

Weed contamination of seed falls into three categories -

1. Seed contamination with a gazetted prohibited weed is ineligible for sale irrespective of the level of contamination. There are over 60 species which fall into this category.
2. For species other than those prohibited, the regulations prescribe maximum weed seed contents in most commercial crop and pasture seeds. These regulations permit contamination levels varying from 0.1% to 1.0%. In these regulations 'other crop seeds' are currently distinguished from weed seeds. The permissible maximum 'other crop seeds' levels range from 0 to 5%.
3. Contamination by parts of weed plants other than the seeds is limited in the regulations by prescribed maximum levels for inert matter. These levels vary from 0.7% to 59.8%.