



FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

CROP WEED COMPETITION

Weeds appear much more adapted to agro-ecosystems than our crop plants. Without interference by man, weeds would easily wipe out the crop plants. This is because of their competition for nutrients, moisture, light and space which are the principle factors of production of crop.

Generally, an increase in on kilogram of weed growth will decrease one kilogram of crop growth.

1. Competition for Nutrients

Weeds usually absorb mineral nutrients faster than many crop plants and accumulate them in their tissues in relatively larger amounts.

Amaranthus sp. accumulate over 3% N on dry weight basis and are termed as “nitrophills”.

Achyranths aspera, a ‘P’ accumulator with over 1.5% P₂O₅

Chenopodium sp & Portulaca sp. are ‘K’ lovers with over 1.3% K₂O in dry matter
Mineral composition of certain common weeds on dry matter basis

The associated weed is responsive to nitrogen and it utilizes more of the applied ‘N’ than the crop. Eg. The ‘N’ uptake by Echinochloa crusgalli is more than rice.

Nutrient removal by weeds leads to huge loss of nutrients in each crop season, which is often twice that of crop plants. For instance at early stages of maize cultivation, the weeds found to remove 9 times more of N, 10 times more of P and 7 times more of K.

2. Competition for moisture

In general, for producing equal amounts of dry matter, weeds transpire more water than— do most of our crop plants. It becomes increasingly critical with increasing soil moisture stress, as found in arid and semi-arid areas.

-As a rule, C₄ plants utilize water more efficiently resulting in more biomass per unit of water. Cynodon dactylon had almost twice as high transpiration rate as pearl millet.

In weedy fields soil moisture may be exhausted by the time the crop reaches the fruiting stage, i.e. the peak consumptive use period of the crop, causing significant loss in crop yields.

3. Competition for light

It may commence very early in the cop season if a dense weed growth smothers the crop seedlings.

It becomes important element of crop-weed competition when moisture and nutrients are plentiful.

In dry land agriculture in years of normal rainfall the crop-weed competition is limited to nitrogen and light.

Unlike competition for nutrients and moisture once weeds shade a crop plant, increased light intensity cannot benefit it.

4. **Competition for space (CO₂)**

Crop-weed competition for space is the requirement for CO₂ and the competition may occur under extremely crowded plant community condition. A more efficient utilization of CO₂ by C₄ type weeds may contribute to their rapid growth over C₃ type of crops.