RAMA UNIVERSITY

FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

Crop density and geometry

Crop density

Density in plant ecology is defined as the number of individuals of a given species that occurs within a given sample unit or study area.

Number of plants per unit area in the cropped field is the plant population or plant density.

Optimum plant population

It is the number of plants required to produce maximum output or biomass per unit area. Any increase beyond this stage results in either no increase or reduction in biomass.

Crop geometry

The arrangement of the plants in different rows and columns in an area to efficiently utilize the natural resources is called crop geometry. It is otherwise area occupied by single plant. This is very essential to utilize the resources like light, water, nutrient and space.

Importance of plant population/ crop geometry

1. Yield of any crop depends on final plant population
2. The plant population depends on germination percentage, and survival rate in the field.
3. Under rainfed conditions, high plant population will deplete the soil moisture before maturity, whereas low plant population will leave the soil moisture unutilized.
4. When soil moisture and nutrients are not limited , high plant population is necessary to utilize the other growth factors like solar radiation efficiently.
5. Under low plant population individual plant yield will be more due to wide spacing.
6. Under high plant population, individual plant yield will be low due to narrow spacing leading to competition between plants.

Factors affecting plant population

A. Genetic factors
   1. Size of the plant
   2. Elasticity of the plant
   3. Foraging area or soil cover
   4. Dry matter portioning

5. Crop and variety
B. Environmental factors
   1. Time of sowing
   2. Rainfall/irrigation
   3. Fertilizer application
   4. Seed rate