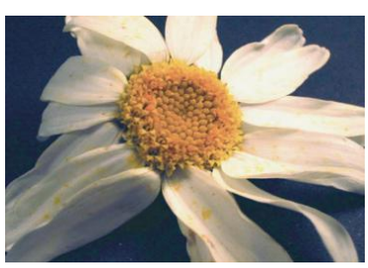
Pyrethrum Growing in Kenya

Suitability Factors

Pyrethrum is a perennial crop with a daisy-like appearance, its white flowers possess insecticidal properties. It is cultivated commercially solely for the production of six closely related esters called pyrethrins.

PYRETHRUM:

- Tufted, slender and herbaceous plant growing up to an approximate height of 1 meter.
- Leaves are alternate and pinnately lobed/narrowly lanceolate to oblong lanceolate.
- Flowers are produced at the termini of stems and consist of a cluster of 40 to 100 bisexual, yellow disk florets encircled by a ring of 18 to 22 pistillate white ray florets.



CLIMATE

Climate is a key factor in determining site selection for growing a successful pyrethrum crop. This includes temperature and rainfall requirements at different stages in the crop's growth cycle. Pyrethrum is favoured by cool temperatures and high rainfall.

Temperature: Pyrethrum requires a temperature of less than 18° C for at least 6 weeks in order to initiate flowering.

Vernalisation is an essential requirement for flower initiation in pyrethrum otherwise plants may remain in the vegetative stage. Temperature also influences pyrethrin content; as mean temperature decreases pyrethrin content increases. It should be noted heavy frost, which can occur at high altitudes, causes reduction in yield due to wilting of tillers.

RAINFALL

Pyrethrum requires a minimum of 750mm rainfall per annum well distributed over the season. In areas with high evaporation, high rainfall (>1000mm per annum) well distributed throughout the growing season is preferable. On the basis of rainfall pyrethrum growing zones can be divided into 3 major regions in Kenya:

1. **Nyanza:** wet climate with continuous rainfall.
2. **Rift Valley:** 1000-1250 mm with clear peaks in April-August and October-December coinciding with low temperatures.
3. **Central:** 1,000-1500 mm annual rainfall with high peaks between April-May and October-November (bimodal pattern).

ALTITUDE

Pyrethrum grows best at high altitudes, 1980m above sea level. However, there are varieties suitable for low-altitudes 1760-1980m. Best flowering is achieved over 2130m above sea level.

SOILS

Soil type and drainage strongly affect a sites suitability for pyrethrum growing. Soils should be well drained with good texture and structure in order to enable proper water infiltration and to minimize soil erosion.

Pyrethrum thrives in well-drained, loamy volcanic soils with a pH of >5.6. These should be rich in phosphorous, calcium and magnesium.

- Acidic soils have a phosphorous deficiency due to P-fixation by aluminum. Farmers with acidic soils should use adequate amounts of phosphate fertilisers, gypsum or lime.
- Alkaline soils have low water filtration rates and a poor physical condition. Soil pH can be lowered by applying sulphur based acidic fertilisers.

NOTE: All farmers intending to grow pyrethrum should first **test their soil**. This will determine the pH and fertility level of the soil which is the first step in planning a sound nutrient management program.

FIELD PLANTING

Pyrethrum is a perennial crop with a lifespan of up to 4 years.

- Land preparation should be aimed at controlling perennial weeds. Plough and apply herbicides about 2 weeks before planting.
- Seedbed preparation: break up soil up to a depth of a minimum depth of 15-30cm.
- Field layout: dig out holes at a spacing of 60x30cm = 21,000 holes/acre .
- Transplanting: Seedling should be transplanted after 5-6 months in the nursery.
- Should be done before onset of rains, this allows development of young roots and tillers.

FERTILIZER APPLICATION

Accurate fertilizer application rates are dependent on results from the **soil analysis**. However, farmers may use the following general recommendations:

Triple superphosphate (T.S.P) (46% P205) should be applied in each planting hole at the rate of 50–60 kg/acre (aproximatley 1 teaspoon/hole).

Farmyard Manure (FYM) may be used at the rate of 4 tonnes per acre (approximately one handful per hole). The FYM should be applied 3 months before planting of the crop.

CUTTING BACK

Pyrethrum plants should be cut back once a year, towards the end of the dry season, after picking the flowers. Removed stalks should be burnt as they may act as hosts for pests and diseases.

HARVESTING

Flowers should be harvested at the correct bud stage; when ray florets are horizontal, and 3-4 lines of the outer disc florets are open (see image below). During the optimal stage the pyrethrins content may reach 1.8 - 2.2% in improved clones.

3-4 disc florets open - Pyrethrins content at 2.2% w/w

The best picking method is by holding the flower between the first and second finger and then jerking the flower head with the thumb.

- Flowers should not be picked under rainy conditions as this results in fermentation leading to poor quality and low pyrethrin concentration.
- Picked flowers should be put into well-ventilated baskets to reduce fermentation.

DRYING OF FLOWERS

Flowers should be dried immediately at farm level to reduce deterioration of quality. Sun drying is the most common method. Flowers are dried to a moisture content <15%. For better drying farmers are advised to use a solar dryer.

CTA: Get in touch with us and we will put you in contact with the local agronomy adviser in your area.

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