



# Drought Tolerant Annuals: A Toronto Master Gardeners Guide

As annual plants complete their lifecycle in a single season the concept of drought tolerance is a bit moot. Unlike perennials that can become drought tolerant after they are well established, our Southern Ontario short growing season means that annuals really do not have enough time for that process to take place. However, there are some annuals that will tolerate drier conditions, and by giving them a good start, and continuing with good gardening practices, you can compensate for drier conditions.



Like all nasturtiums, *Tropaeolum* 'Milkmaid' flowers are edible and make a pretty addition to salads.

Photo: Helen Battersby

As a first step determine why you want drought-tolerant annuals — i.e. will the drought conditions be the result of infrequent watering — either yours or nature's as in a cottage garden that you visit only on weekends; is your garden on a balcony subject to windy conditions and baking sun; or, are you planning to xeriscape (conserving resources such as water by using drought-resistant plants). While not depending solely on annuals consider also that you can grow drought-tolerant perennials such as Hens and Chicks — sempervivums, Blanket Flower — Gaillardia or Gaura in pots along with annuals. You could also grow agaves, echeverias or other succulents too. By choosing plant material carefully you will get the colour and interest you are looking for, and maintain drought tolerance.

## Considerations Related to Choice

Start by picking the healthiest plants by looking for good root growth (but not pot-bound) as dry conditions will stress your plants and the strongest plants will have the best chance of survival. If possible choose a disease-resistant variety. Make sure that your plants have been hardened off (reputable growers ensure that their plants have made a gradual transition from the warmth of the greenhouse to our frequently cool springs) and don't plant before the last average frost date in your area. Remember that while it's easier to see what colour and shape a plant is when it's in bloom, it may have been forced prematurely and is, therefore, not going to be as strong as another plant that has good leaf growth only.



Cosmos is a hardy annual, meaning that while the plant itself dies after one year, its seeds will often live through winter to grow the following spring.

Photo: Helen Battersby

The right site for your plant's requirements is key. For example, don't expect shade-loving plants like impatiens to thrive in full sun. If you have containers on a balcony recognize that it mimics an alpine climate. Try not to mix plants with differing water requirements and protect plants from the hot afternoon sun by planting in the shade of trees or other plants, or by putting containers near a trellis or other sheltering garden structure.

## Cultural Practices

### Soil

In a garden bed work three to six inches of organic matter such as compost, or manure into the soil. This will lighten up heavy clay soils and not only improve water retention in sandy soils but prevent valuable water from running away from the plant. For containers use a good quality potting soil mixture and add water holding granules or other conditioners that will hold water, e.g. coconut husk fibre.

Mix in some granular fertilizer before you plant the bed or the container but first check your soil to see the nutrient levels. Use the right fertilizer for the plants but make sure the middle number i.e. the phosphorous in the N-P-K (Nitrogen -Phosphorous-Potassium) formula is higher than the N number. In general, bonemeal, which is a natural source of phosphorous, is a good soil additive as it will improve blooming and strengthen the roots of all plants – perennials and annuals.

Test your soil to learn its pH (a measure of the acidity or alkalinity of a soil on a scale of 0 to 14 with a pH below 7 indicating acidity, a pH above 7 indicating alkalinity, and a pH equal at 7 indicating neutrality). A pH range between 5.5 and 7.5 is beneficial as it allows for sufficient microorganism activity and nutrient availability. Adding lime to the soil will make the soil more alkaline and mulching with pine needles, pine bark or shredded oak leaves will make the soil more acidic.

#### *Air circulation*

Ensure good air circulation around your plants as this will help prevent diseases, particularly the moulds, which can weaken plants. Space your plants properly. The general rule for annuals is 6 inches apart but some could be spaced closer together for a fuller appearance. However do check the estimated width of the plant on the tag first.

Protect your plants from strong winds which will dry out both the soil and the plants especially if you are balcony gardening.

#### *Water*

All annuals have to be watered for at least 4 weeks after planting in order for them to get established. Drought tolerant does not mean planting them in the garden or container and leaving them. Once the roots are established then they can be watered only occasionally. Water thoroughly when you do. Even if it rains check to see that the soil surface is wet at least one inch down – if not, top up with additional water. Remember that rain barrels capture valuable rain water which is better for your plants than treated tap water.

Mulch plants with shredded bark, leaves, cocoa shells or compost to retain moisture plus it will keep the weeds down.

### General Care and Maintenance

As a general rule, good cultural practices that ensure optimal growing conditions, and good air circulation should minimize the risk of disease. Healthy plants, grown in appropriate conditions are less stressed and less vulnerable.

Maintain a chemical free garden, which will promote natural predators. Plant other plant species that attract a variety of insects to the garden. For example a light infestation of scale insects can be kept in check by birds and beneficial insects. Plant disease resistant cultivars.



The California poppy (*Eschscholzia californica*) is native to the southwest climes of North America. It requires a cool, moist germination period, but remains quite drought-tolerant once established.

Photo: Helen Battersby

Other control strategies include:

- Use only clean garden tools.
- Do not water over the heads of the plants, particularly in late afternoon.
- Rake up and destroy all diseased parts of plants and debris. Do not use this organic material as compost.
- Use mechanical control methods such as using a strong jet of water to knock off aphids, or liquid hand soap mixed with water.
- Visit your garden centre for natural predators or parasites that occur naturally to control some pests.

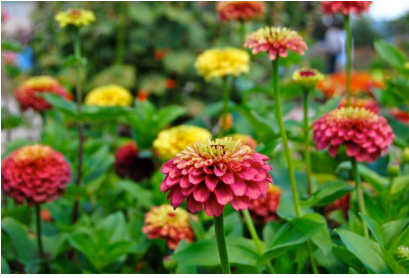
## Recommended species/varieties/cultivars

### Annuals for dry locations

- African Daisy (*Gazania* species)
- Annual Candytuft (*Iberis umbellata*)
- Blue-eyed African Daisy (*Arctotis stoechadifolia*)
- Browallia (*Browallia*)
- California Poppy (*Eschscholzia californica*)
- Calliopsis (*Coreopsis tinctoria*)
- Cape Daisy, African Daisy (*Dimorphotheca qurantiaca*)
- Cosmos (*Cosmos* species)
- Floss Flower (*Ageratum*)
- Nasturtium (*Tropaeolum majus*)
- Plume Cockscomb (*Celosia cristata*)
- Ross Moss, Portulaca (*Portulaca grandiflora*)
- Spiderflower, Pink Queen (*Cleome hasslerana*)
- Swan River Daisy (*Brachycome*)
- Zinnia (*Zinnia* species)

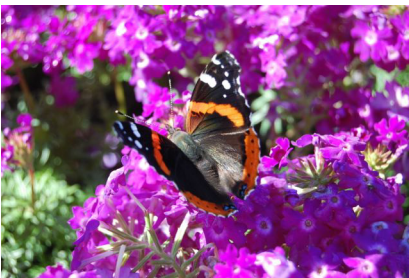
### Annuals for dry, hot locations

- African Daisy (*Gazania* species)
- American Marigold (*Tagetes erecta*)
- Annual Baby's Breath (*Gypsophila elegans*)
- Annual Blanket-Flower (*Gaillardia pulchella*)
- Annual Phlox (*Phlox drummondii*)
- Basket Flower (*Centaurea americana*)
- California Poppy (*Eschscholzia californica*)
- Calliopsis (*Coreopsis tinctoria*)
- Cape Daisy, African Daisy (*Dimorphotheca qurantiaca*)
- Cardinal climber (*Quamoclit sloteri*)
- Creeping Zinnia (*Sanvitalia procumbens*)
- Cup-Flower (*Nierembergia*)
- Cypress Vine (*Quamoclit pennata*)
- Four O'Clock (*Mirabilis jalapa*)
- French Marigold (*Tagetes patula*)
- Ice Plant (*Mesembryanthemum crystallinum*)
- Lantana
- Madagascar Periwinkle (*Catharanthus roseus / Vinca rosea*)
- Mealy-cup Sage, Blue Sage (*Salvia farinacea*)
- Nasturtium (*Tropaeolum majus*)
- Perilla, Beefsteak Plant (*Perilla frutescens crispa*)
- Petunia (*Petunia*)
- Plume Cockscomb (*Celosia cristata*)
- Poppy (*Papaver* species)



Zinnia 'Queen Red Lime' is one of the growing array of choices for lovers of annuals.

Photo: Helen Battersby



Annual Verbena is attractive to butterflies such as this pretty Red Admiral.

Photo: Helen Battersby

- Ross Moss, *Portulaca (Portulaca grandiflora)*
- Sand Verbena (*Abronia umbellata*)
- Scarlet Sage (*Salvia splendens*)
- Snow-on-the-Mountain (*Euphorbia marginata*)
- Spiderflower (*Cleome hasslerana*)
- Statice (*Limonium*)
- Strawflower (*Helichrysum bracteatum*)
- Summer-cypress, Burning Bush (*Kochia scoparia*)
- Sunflower (*Helianthus annuus*)
- Sweet Sultan (*Centaurea moschata*)
- Zinnia (*Zinnia*)



Gazania is a South African native perennial, grown as an annual in our Canadian climate.

Photo: Helen Battersby

Annuals for dry shade/light shade locations

- Aadagascar Periwinkle (*Catharanthus 'roseus'*)
- Spiderflower (*Cleome hasslerana*)
- Gazania
- Godetia (*Clarkia*)- full sun or light shade
- *Lamium maculatum* – if you have this as a perennial in your garden you can dig some up and put in a container and use as a trailing annual
- *Pelargonium* (in partial shade will not bloom as profusely)
- *Senecia cineraria*
- Spike (*Dracaena indivisa*)

## References

1. Hole, Lois. *Lois Hole's Bedding Plant Favorites*. Edmonton, Alberta: Lone Pine Publishing, July 1996
2. Cornell University website [www.gardening.cornell.edu](http://www.gardening.cornell.edu)
3. <http://www.prairiegardens.ca>

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