**Plant Propagation by Seed**

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**Seed Starting:**

Seed germination affected by moisture, heat, oxygen, and light:

 Soil – **seed starting mix** (not garden soil) sterile and without fertilizer

 Temperature – germination is improved with **soil** temperatures 79⁰ or above

 Moisture – constantly moist, but not too wet – mist then bottom water after germination

 Light – usually not needed for germination (some exceptions), but immediately after

 Oxygen – germination requires respiration

**To start seeds you will need:**

Containers – purchased options; saved or used must be disinfected – 10% bleach solution.

 Soil – **soil-less** seed starting medium

 Plant labels

 Plastic sheets or bags for greenhouse effect

 Water – room temperature until true leaves(2nd set) develop – **mist**, then from bottom

 Light – high intensity – plant/grow light fluorescent etc. Light source should be within 1 inch of foliage.

**Seed packet will have valuable information:**

 Common name, specific cultivar, sometimes botanical name

 Maturity time in days (important for succession planting), number of seeds, and date

 Minimum germination percentage

 Germination temperature and planting depth

 Scarification (nicking or breaking hard outer coating) or stratification (exposure to cold)

 Seeds starting time should consider last frost date for your area (April 15 – 20)

**Procedure:**

Planting medium – dampen until clumps form, but easily fall apart; fertilizer isn’t needed

Fill containers loosely; tap on table top to settle; level and firm top

Sow seeds in containers according to package directions; sow extras as not all will germinate

Cover lightly with additional dampened medium to specified depth – lettuce etc. won’t be covered at all

Water with mist to ensure good contact between seed and soil

Provide humid environment by covering with plastic sheet, plastic bag, container, “greenhouse” top, etc.

Provide proper soil temperature – heat mat, water heater top, refrigerator top

Provide proper light once germinated – 12 to 16 hours; 1 to 4 inches above soil/plant

Check daily – moisture, temperature, light, germination – **remove plastic at germination**

**First leaves on seedlings are cotyledons** – part of the seed

**Second leaves are “true” leaves** – seedlings require diluted fertilizer at this point –

 Water from bottom

 Warm soil temperature; cooler air temperature

 16 hours of light

 Air circulation to control fungus – “damping off”

**Once true leaves** are developed, seedlings **should be transplanted** to individual pots or spaced in flats to prevent spindly seedlings; most are transplanted up to the cotyledon; most will require potting up a second time before transplant

Transplants continue to require 16 hours of light, bottom watering/fertilizing, and air circulation – heat mats are no longer required – air temperature of 55⁰ to 60⁰ will encourage sturdier, more compact plants

**Hardening off transplants** – gradual introduction of plants to outdoor conditions:

 Move plants outside to shady spot for increasing amounts of time for a week or so –

 starting with a couple of hours

 Gradually increase amount of time outside and amount of sunlight until transplants are

doing well in outside growing conditions

Bring inside anytime temperatures fall below 50 degrees

Your transplants are ready to go in the ground once the **soil** has reached 55 degrees and

all chance of frost is past (usually around Mother’s Day)