



When to irrigate: “Look and Feel” Method

Knowing when to irrigate will reduce the problems of over- or under-irrigation and help improve crop yields. There are many ways to determine when to irrigate, however, the “Look and Feel” method is a practical and inexpensive way to assess soil moisture and irrigation needs.

How to use the “Look and Feel” method?

This method takes some practice. The following steps will help:

- 1) **Sample:** Get some soil from the root zone with a shovel
- 2) **Squeeze:** Squeeze the soil firmly in your hand and try to form a "ball" (Fig 1.)
- 3) **Bounce:** Test the strength of the "ball":
 - **Very weak ball** = breaks apart with one bounce
 - **Weak ball** = breaks apart with 2 to 3 bounces
 - **Good ball** = does not break apart when bounced
- 4) **Ribbon:** For medium- and fine-textured soils, squeeze the soil between thumb and forefinger and try to form a "ribbon" (Fig. 2)
- 5) **Stains/marks:** Observe any soil/water staining or marks on fingers (Fig.1)
- 6) Compare observations with Table 1 and Fig. 3 below

Table 1. What to look for in the “Look and Feel” method

Soil texture	Irrigate if...		
	“Ball” Strength	Ribbon	Stains/Marks
Course (Sand, Loamy Sand)	Forms no ball or a very weak ball	(Not applicable)	No staining or marks on fingers
Moderately Course, Medium, Fine (Sandy Loam to Clays)	Forms no ball or a weak ball	Does not form a ribbon	

Note: Method obviously not relevant for cloddy, bone-dry soil



Figure 1. The "ball" that forms after a moist soil is squeezed. Also see soil staining on fingers.



Figure 2. A soil “ribbon”

For more information visit: <http://ip.ucdavis.edu>

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Reference: Estimating soil moisture by feel and appearance, USDA

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Fig 3. Appearance of different soils with various amounts of water (Pictures from USDA)

Course-textured soils (sand, loamy sand):

Irrigate	Do Not Irrigate	Do Not Irrigate
 A photograph showing a hand holding a small amount of dark brown soil. The soil is slightly moist, forming a weak ball that falls apart easily when pressed. Finger marks are visible on the surface.	 A photograph showing a hand holding a larger amount of dark brown soil. The soil is more moist than in the first image, forming a slightly stronger ball that holds some shape when pressed. Finger marks are visible.	 A photograph showing a hand holding a large amount of dark brown soil. The soil is very wet, forming a very weak ball that cannot hold its shape when pressed. Finger marks are visible.
Slightly Moist	Moist	Wet
What to look for: Forms a very weak ball, no ribbon, well defined finger marks in ball	What to look for: Forms weak ball, no ribbon, moderate water staining and loose sand grains on fingers, darkened color	What to look for: Forms weak ball, no ribbon, heavy water staining and loose sand grains on fingers, darkened color

Moderately coarse-textured soils (sandy loam):

Irrigate	Do Not Irrigate	Do Not Irrigate
		
Slightly Moist	Moist	Wet
What to look for: Forms weak ball with defined finger marks, no ribbon, no water staining on fingers, grains break away, darkened color	What to look for: Forms good ball with defined finger marks, no ribbon, very light soil/water staining on fingers, darkened color	What to look for: Forms good ball with wet outline left on hand, weak ribbon, light/medium staining on fingers

Medium-textured soils (sandy clay loam, loam, silt loam):

Irrigate	Do Not Irrigate	Do Not Irrigate
 A hand holding a small amount of dark brown soil that has been partially washed off the fingers, leaving a thin layer on the palm.	 A hand holding a larger piece of dark brown soil that has been partially washed off the fingers, leaving a thin layer on the palm.	 A hand holding a large amount of dark brown soil that has been partially washed off the fingers, leaving a thick layer on the palm.

Slightly Moist

What to look for: Forms weak ball with rough surfaces, no water staining on fingers, few soil particle break away

Moist

What to look for: Forms a good ball, weak ribbon, very light staining on fingers, darkened color, pliable

Wet

What to look for: Forms a good ball with well-defined finger marks, ribbons well, light to heavy soil/water coating on fingers

Fine-textured soils (clay, clay loam, silty clay loam):

Irrigate	Do Not Irrigate	Do Not Irrigate
 A hand holding a small amount of dark brown soil that has been partially pressed between the fingers, forming a weak ball.	 A hand holding a larger amount of dark brown soil that has been more firmly pressed, forming a smooth ball with distinct finger marks.	 A hand holding a large amount of dark brown soil that has been heavily pressed, forming a very tight, solid ball that appears to be coated in water.
Slightly Moist What to look for: Forms a weak ball, no ribbon, very few soil particles break away, no water stains, clods flatten with applied pressure.	Moist What to look for: Forms good, smooth ball with defined finger marks, ribbons well, light soil/water staining on fingers	Wet What to look for: Forms a good ball, ribbons well, uneven medium to heavy soil/water coating on fingers