

# SPRING MIX



*Presented by*



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This production summary provides an overview of spring mix growing, harvesting, and post harvesting practices. There are some common practices that many large commercial growers use when producing spring mix, and though there are variations in these practices, having an understanding of the most common methods used will be helpful when carrying out regulatory activities.

## By the end of this summary, you will be able to:

1. List the types of leafy greens that may be included in spring mix.
2. List the top producing regions in the U.S. for spring mix.
3. Identify the most common farming practices used in the production of spring mix.

### INTRODUCTION

It may be surprising to learn that the term "spring mix" can be applied to a variety of different packaged salad products. It isn't always made up of the same mix of leafy greens but in general, it usually contains tender baby lettuce, spinach, and other edible leaves. Leafy greens that make up spring mix may include red and green romaine, red and green oak leaf, chard, arugula, spinach, endive, radicchio, and other heirloom lettuces.

Spring mix is primarily grown in California, Arizona, and Florida (Fig 1). In California, the largest production areas are located in the Salinas Valley including Monterey and San Benito counties. In Florida, the major spring mix production is located in the Everglades Agricultural Area in South Florida.

### GROWING

Spring mix components have distinct temperature requirements. Optimal growing temperatures are 73°F during the day and 45°F at night. Freezing can damage the leaves of the young plants, leading to decay. Spring mix components grow best in silt loams and sandy soils. These types of soils provide better drainage during cold weather and warm up more readily during the day, which is especially important in cooler times of the growing season.

Prior to planting, the soil is typically amended to loosen clods and to improve the overall quality for root development. There are a number of different implements pulled by tractors to prepare a field for cultivation. Some are used to spread soil amendments, others to loosen and aerate the soil, and still others to form uniform and parallel raised beds.



Pre-irrigation water is applied to fields after beds are formed in preparation for planting using overhead sprinklers. Spring mix components are planted using pelleted seed in wide, raised beds that consist of 20 to 25 rows per bed. Commercial growers will often plant different greens in parallel rows.



**Fig 1 - Top Spring Mix Producing States in the US**



In California and Arizona, spring mix is produced nearly all year round. Planting starts in January and continues through October. Harvesting begins in February and the last crops of the season are usually harvested by the end of November. In Florida, the summer months are too wet and hot for optimal growth of baby greens, so the production period runs September through April. The overlapping production timelines of California, Arizona, and Florida ensure the availability of spring mix year round for the U.S.

Commercial growers use chemical fertilizers or properly composted organic materials to provide nutrients to growing plants. Fertilizers can be added by injection into the soil, through the irrigation system, or added as a side dressing in the furrow that is distributed when it rains or during irrigation.

Weeds and insects can be a problem for leafy green growers. Several commercial herbicides and pesticides are available for use. These chemicals can be applied with tractors fitted with sprayers or injected into the irrigation system much like fertilizers. Growers use traps and bait stations to control rodents around lettuce fields.

## HARVESTING

One or two days prior to harvest, the final irrigation is applied and the irrigation equipment is removed. Food safety checks are conducted each time a field, or section of a field, is harvested. Before workers or equipment enter the field, a food safety or field manager will walk the harvest area looking for signs of animal intrusion, pooling water, and foreign debris that may cause an area of a field to be flagged as non-harvestable.

Spring mix components are harvested mechanically at a very young age, before they reach five inches in height.

Commercial growers prefer to harvest baby spring mix components at night when temperatures are cooler, the air is still and there is less humidity which allows the greens to stand up making them easier to cut.

The mechanical harvesting equipment uses a horizontal saw blade that cuts the leaves at the base. The height of the blade is adjustable. The cut leaves are carried on a conveyor belt to an air gap, where heavier contaminants such as weeds or debris will fall through. The young spring mix leaves fall onto a secondary conveyor belt and are transferred into a bulk harvest bin.

## PACKING

The totes and bins are transported from the field to a packinghouse where they are kept in a cooled warehouse at 34°F until they are processed. Some greens are grown with multiple lettuce varieties in the same bed and arrive at the packinghouse in totes already mixed and ready to be washed and packed.

Alternatively, some spring mix operations may mix the components at the packinghouse. Uniform batches of greens are mixed together using various conveyor systems. Depending on the size of the operation, the mixing may be automated or manual. All greens whether premixed at harvest or mixed at the packinghouse, are washed, dried, and packaged.

Boxes of packaged mix are held in refrigerated holding rooms at 34°F before being shipped to retail warehouses in temperature controlled trucks. As stated at the beginning of this production summary, there is no identity standard for "spring mix." Each company or customer may have their own special blend of ingredients consisting of various ratios of lettuce varieties.



## CONCLUSION

**Having a basic understanding of the way spring mix greens are grown, harvested, cooled, and prepared will provide the basic background information that will be helpful to regulators when completing inspections or investigations in the field.**

*The agricultural practices described in this production summary are common on most large commercial farms like those found in major spring mix producing regions in the United States. There are undoubtedly variations in these practices depending on the region, operation size, and individual grower preferences. This is especially true of farms outside of the U.S.*

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