

PREFACE

- 1 ▶ Superior Growth
- 2 ▶ Efficient Distribution
- 3 ▶ Maximum Control
- 4 ▶ Water Conservation

Most people think of drip irrigation as primarily useful in times of drought and for saving money on the water bill. However, as the following examples will demonstrate, drip irrigation can also be used in any garden to increase vegetable and plant yields—even in climates that get periodic summer rain or are very humid.

Many studies reveal the overall horticultural efficacy of the slow dripping of water. The examples and research found in the next chapter illustrate the increasingly undeniable fact that drip-irrigated plants grow and produce more prolifically while actually using *less* water for irrigation.

Please note that (in my experience) the same effect is found when drip irrigation is used for the purpose of increasing ornamental growth and bloom, but this aspect hasn't been widely explored, as the focus of most studies is on economic food crops and practical results that farmers can actually use to maximize their yields.

I'll also present here a detailed review of how it's possible to simultaneously reduce water use *and* increase yields. This apparent contradiction is due to the intimate relationship of properly applied water and the health of the irrigated soil.

The following chapters will concentrate specifically on how to apply water to gardens for maximum growth and yields. Information on all other aspects of choosing, installing and using drip irrigation, down to the last drop and wick, can be found in the latest edition of my book *Drip Irrigation for Every Landscape and All Climates*, Metamorphic Press, Occidental, CA, 2009 (see www.robertkourik.com)

And finally, this may well be the only drip-irrigation book in history that comes complete with recipes and dishes made from vegetables and fruits that naturally need less water, courtesy of the culinary artistry of Suzanne Adams. (See Appendix B.)

—*Texas Research Drip Irrigation Project Yields Promising Results*; Dr. John Sij, AgriLife Research Agronomist, Texas A&M AgriLife (2009, March 3).

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Drip irrigation produces one-third of a ton more alfalfa per acre per cutting for the Wuertz family of Sundance Farms Coolidge, Arizona. “I have a neighbor who gets 1.3 tons of alfalfa per acre per cutting with flood irrigation,” Howard Wuertz said. “Our production under SSDI [Sub-Surface Drip Irrigation] averages 1.75 to 1.8 tons per acre/cutting. That’s one heck of a story.” Phosphate, nitrogen, calcium, magnesium, and other nutrients are applied through the drip. Says Wuertz: “My experience demonstrates that it’s about 30 to 40 percent more efficient to place nitrogen and phosphates in the root zone via SSDI than spraying on top of the ground and then watering it in,”

— *Texas Research Drip Irrigation Project Yields Promising Results*; Dr. John Sij, *ibid.*

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According to Dr. Jim Ferguson, Irrigation Engineer at the University of Arkansas, the higher capital cost of solid-set sprinkler irrigation (typically \$1200 to \$1500 per acre as opposed to \$1000 to \$1200 for drip irrigation) combined with the lower operating costs for drip irrigation (typical fuel costs for sprinkler irrigation of \$60 to \$80 per acre as opposed to \$20 to \$30 for drip irrigation) is one reason for looking closely at drip irrigation, or trickle irrigation, as it is frequently called. Studies have shown

that trickle irrigation not only increases yields during dry summers by as much as 40% for some varieties, but that the effects of irrigating or not irrigating carry over to subsequent years. Even in years with normal rainfall, yields tend to be higher in vineyards that have been irrigated in previous years. Vines that have suffered moisture stress in dry years may have their vigor and performance affected in the following years.

— *Evaluating Drip Irrigation in Eastern Vineyards* by Dr. Justin R. Morris, Director of the Institute of Food Science and Engineering at the University of Arkansas, 272 Young Ave., Fayetteville, AR 72704

(More quotes/studies in **Appendix A**, page 53.)

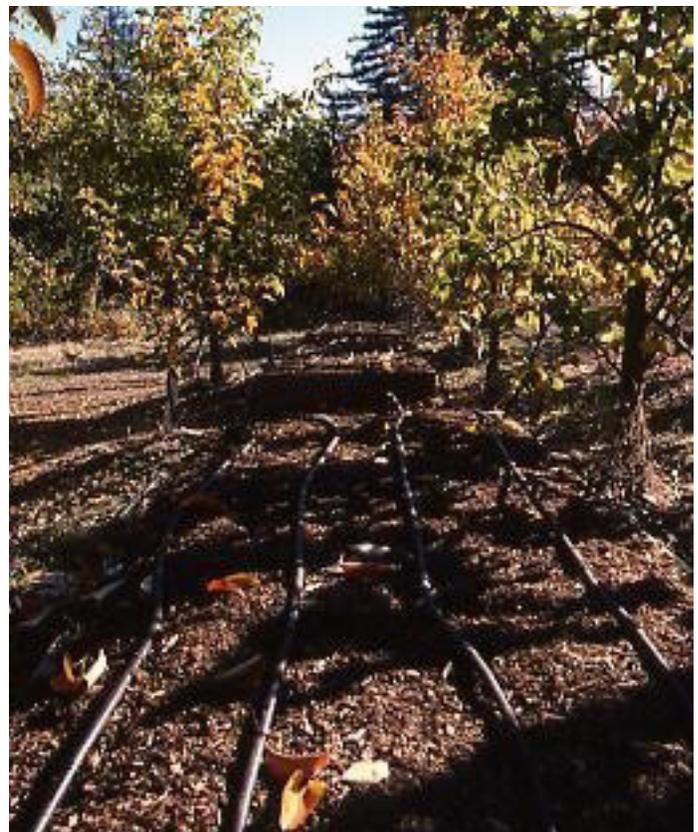


Figure 1: An Asian pear orchard with in-line emitter tubing laid out to irrigate the entire root system.

Fava Bean

(*Vicia faba*)

Legumes have the ability to fix atmospheric nitrogen gas into available, “free” fertilizer because of the symbiotic bacteria which live on the plant’s roots. The best time to till under a green manure crop for maximum nitrogen is just prior to bloom or before 20% of the blossoms open. By turning under young succulent growth, the largest amount of nutrients are quickly released. Older growth is more woody and resistant to decomposition by the soil’s bacteria.

Fava beans as food requires forgetting about the best nitrogen fixation. First you can eat the young leaves and the flowers as salad greens. Then you can use the green beans. You can leave some pods to ripen and have dried beans for winter use.



Fava Bean Spread

3 Cups shelled and cooked fava beans (see instructions below)

Juice and zest of one lemon

1/4 to 1/2 cup of olive oil

Handful of fresh mint leaves - chopped

Salt and pepper to taste

To prepare fava beans remove beans from large pod and simmer for 5 minutes. Drain and allow to cool to room temp. Remove outer skin from each bean. Place peeled beans in a food processor and add lemon zest and juice. Combine well. Add chopped fresh mint leaves. With processor running drizzle in olive oil until a spreadable consistency is to your liking. Add salt and pepper to taste. Serve on crackers or toasted bread. Will keep in refrigerator for 3 or 4 days.

Fava Bean and Feta Cheese Salad

4 cups of cooked peeled fava beans - chilled

1/2 pound of crumbled feta cheese

1/4 cup fruity extra virgin olive oil

Juice and zest of 1 lemon

Salt and freshly ground black pepper to taste

Butter lettuce leaves

Place fava beans in a bowl and add feta cheese. Toss to combine. Add olive oil, lemon juice and zest and salt and freshly ground pepper to taste. Be careful with the salt as the feta cheese can be salty. Toss well. Divide evenly into 4 lettuce cups that have been placed on a salad plate. Serve immediately.