The greenhouse industry has experienced many changes over the past decade. Most recently the margins and the demand for certain ornamental crops has begun to diminish. This leaves many greenhouses that were once booming looking for ways to diversify their crop, or utilize the empty greenhouse space. Why not tap into the expanding market of locally grown pesticide-free vegetables? Leafy greens such as Bibb lettuce, kale, Swiss chards, arugula and basil as well as vining crops such as tomatoes and cucumbers can be sold in numerous venues ranging from farmer’s markets to grocery stores to high end restaurants. Single heads of lettuce fetch on average $1.50-$2 and even as high as $4 a head at farmer’s markets.

Reaching Out to Current Customers

Some ornamental growers may even have an existing on-site market or store that would allow for the easy sale of vegetable crops to current customers. Introducing vegetable crops to existing customers can be a great way to extend sales past the spring bedding plant rush.

There are successful growers like Yarnick Family Farm in Indiana, Pennsylvania, who produce a combination of field vegetables and hydroponically produced tomatoes and lettuce in a controlled-environment greenhouse. They have actually developed their farm into a tourist destination. Yarnicks have found that not only will people travel longer distances to visit an authentic farm, but will also pay a premium price for local products from a farmer that they know and trust. The Yarnicks have been in business for more than 30 years and attribute much of their success to the fact that they are so diversified — from vegetable plant starts, to hydroponically grown tomatoes, cucumbers and beans — and their customers enjoy the shopping experience at the Yarnick Farm Market.

Advantages of Controlled Environments

It is more expensive to grow in a controlled environment greenhouse than outside in the soil, but there can also be many advantages — stable crop rotations, pest reduction and increased growth rates, just to name a few. With hydroponic growing, the nutrients needed for growth are readily available to the root so the plants do not need to spend any extra energy developing large root systems searching for food; instead, this energy can be spent producing foliage or fruit. Two tomato plants can be grown in one 3-gallon Dutch Bucket for almost ten months without the roots filling the entire bucket. Applying nutrient-rich water directly to the root of the tomato or cucumber plant helps to avoid a lot of run-off and water waste that is often associated with field vegetable production. As water becomes a more scarce resource we see the need to closely monitor water waste moving to the forefront of a lot of growers’ minds.

Another advantage over field-grown veggies can be the cleanliness factor. Field-grown lettuce can require a lot of trimming off of yellowing leaves and washing off of grit and dirt. Because of the hospital-like setting where hydroponic lettuce is grown, the cleanliness factor can be much higher.
grown, little or no cleaning is needed by the con-
sumer. Another distinct advantage of hydroponic
lettuce production is the increased shelf-life. Many
hydroponic farmers leave the root cube with the
plant when it is marketed. When refrigerated these
plants go into a state of stasis and will last for much
longer than a fully harvested crop. I know of a cus-
tomer who went on a two-week trip
to Europe, and when they returned
the lettuce was just as crisp as when they left.

Types of Systems

The two main types of hydro-
ponic systems that we see used in a
greenhouse are NFT for leafy crops
and Dutch Bucket or Slab produc-
tion for vining crops. NFT systems
are a series of specially designed PVC
channels with nutrient solution con-
stantly flowing over the plant’s roots.
This allows for the perfect amount of
fertilizer solution to always be avail-
able to the plant’s roots, but also cre-
ates the necessity for a dependable
power supply. Dutch Bucket and
Slab production is often irrigated on
an hourly or bi-hourly basis and the
nutrient solution is only used once.

Retrofitting a greenhouse to veg-
etable production will often require
some modifications to the orna-
mental greenhouse. Making certain
that a lettuce crop is pest free is more
important than with a normal orna-
mental crop, and pets can lead to an
unsalable food product quite quickly.
Often an extra level of insect exclusion
such as thrip-screening is necessary to
prevent large pest populations from
establishing. Lettuce and other leafy
greens need some type of cooling and
heating in the greenhouse if they are
to be grown year-round. The addition
of fans and a wet wall may be nec-
essary along with heaters to protect
the crop when the temperatures drop
below an acceptable level.

An obstacle to converting an
existing greenhouse to hydroponic
production is the initial investment
of the equipment. In the ornamental
industry changing crops is often
as easy as just changing pot size or
media. In order to start a hydroponic
system pumps, growing containers,
fertilizer and specialized control
equipment are needed.

With locally produced food
becoming incredibly popular and
Growing resources becoming scarcer,
hydroponics fills a unique demand.

The high quality nature of the produce makes
it an easy sell, especially when coupled with an
existing consumer relationship. Although the
initial investment of the systems is sometimes a
little high, the return will often justify it. It is
widely known that diversification is a huge part
of running a successful greenhouse operation and
whether big or small a hydroponic system can be
a perfect fit. 

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