

LAYING OUT A TRICKLE IRRIGATION SYSTEM

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To design a drip irrigation system we need to know a few things about the field:

1. Crop
2. Row Length
3. Row Spacing
4. Predominant Soil Type
5. Elevation Changes in Field
6. Water Source
7. Distance From Water Source
8. Elevation From Water Source
9. Type of Pump and Power Source

EXAMPLE:
1 ACRE OF
TOMATOES

FIRST, find the drip
tape footage:

35 rows
 $\times 210$ feet per row
7350 feet of drip tape

SECOND, find the
flow rate:

In this case we will
use tape with 12 inch
spacing between
emitters and 0.450
GPM PER 100 FEET.

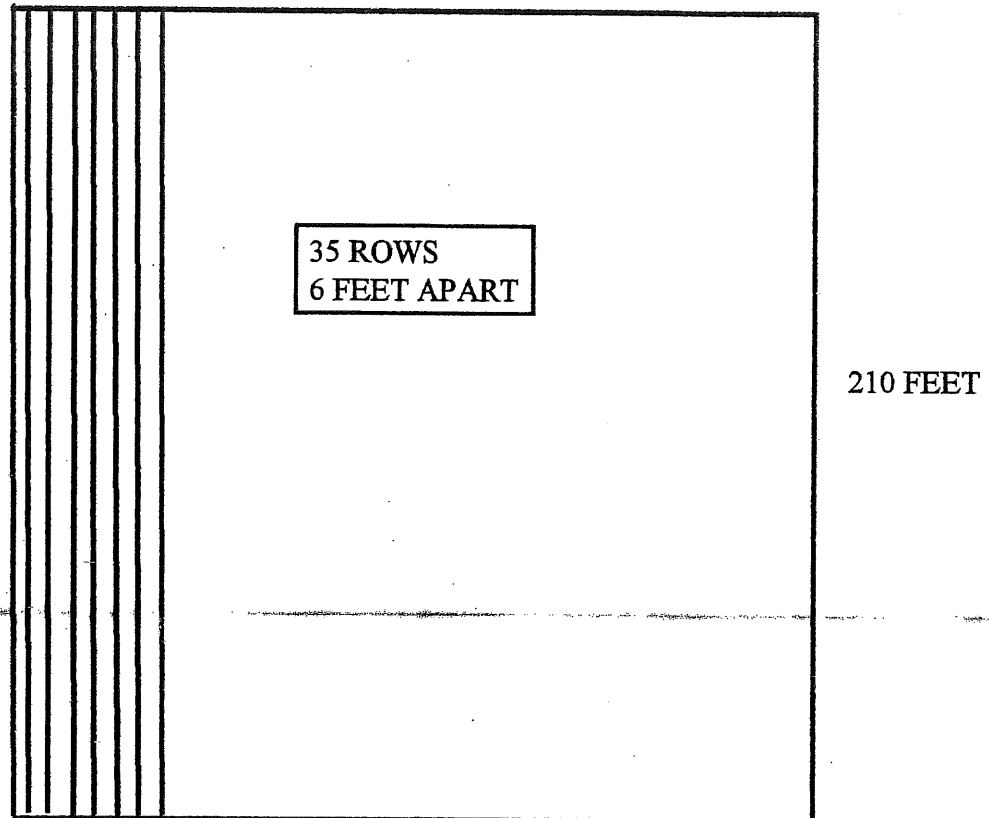
73.5 (hundred feet)
 $\times 0.450$ GPM per 100 ft
33 GPM

33 GPM is less than the capacity of the
well, so we can irrigate the entire field at
once.

THIRD, find the supply
hose diameter:
Check the size selection
chart.

33 GPM is above the limit for 1 1/2 in.,
so we must use 2 in.
Be sure to buy hose rated for the pressure
your pump produces.

FOURTH, select a pressure
regulator:
A 1 1/2 in, 12 psi pressure regulator is
appropriate here. Most drip tapes are
designed to operate between 7 and 10 psi.
A 12 psi pressure regulator allows for
some pressure loss in the line.



210 FEET

210 FEET

150 FEET

WELL:
50 GPM
40 PSI

No more decisions...

1	roll TSX 508-12-220 (7546 ft.) drip tape	\$149.00
1	roll 2" SF 10 layflat hose (300 ft)	180.00
35	0.400" barb x Tape Loc connectors	17.50
1	0.400" punch	19.00
1	1 1/2" 12 psi pressure regulator	24.21
1	1 1/2" 150 mesh screen filter	120.00
1	2" brass gate valve	11.77
2	3/4" pvc ball valves	10.72
1	Mazzei 584	44.50
	Assorted pipe fittings	<u>30.00</u>
Total Initial Cost.....		506.70
Annual Cost.....		149.00

WHAT IF THE WELL ONLY PRODUCES 12 GPM?

You have several options that can affect the total flow rate:

-Increase the emitter spacing to 16 inches.

This decreases the total flow rate to 25 GPM.

-Use drip tape with lower flow rate emitters:

16 inch spacing tape comes in either **0.340 GPM PER 100 FEET**

or

0.170 GPM PER 100 FEET

The lower flow rate decreases the total flow rate to 12.5 GPM, not quite low enough.

-Divide the field into irrigation zones:

With 2 zones, 12 inches between emitters and the lower flow rate of 0.220 GPM per 100 feet, the total flow rate is 8 GPM.