

GROWERTALKS

Growers Talk Business

2/28/2017

Heating Your Greenhouse— Economically

Bill Swanekamp

For the last three to four years, we've enjoyed relatively low energy prices. In some cases, the cost of fuel has dropped in half. Do you still remember when gasoline cost over \$4.00 per gallon? Today, we can buy regular gas for about \$2.40 per gallon.

Most of us can afford to pay more for gas for our cars, but when it comes to heating our greenhouses, any increase in the cost of fuel can be difficult to swallow. Why? Because we use so much fuel, and with finished prices of plants being stagnant, any small increase has a large impact on our bottom line.

What can you do to keep energy prices affordable? Let's review a few steps that can be beneficial.

1. Select the right fuel
2. Purchase in bulk
3. Monitor temperatures in the greenhouse closely
4. Tighten up your greenhouse

First, let's talk about selecting the best fuel. Although, you may not have a choice of which fuel you can burn, in many cases you do have a choice. For example, you might be heating with #2 fuel oil now, but can easily get natural gas. Or you might be burning propane since that's what you've always burned. How can you determine which fuel is more cost effective? To start, we need to convert the cost of each fuel to a common denominator. This would be a million BTUs.

Let's look at the chart below:

Fuel	Million BTU	BTU / Unit	/MBTU
Wood/ton	1,000,000	15,000,000	0.133
NG/Therm	1,000,000	100,000	10.00
# 2 Oil/gal.	1,000,000	140,000	7.14
Propane/gal.	1,000,000	90,000	11.11

As the chart indicates, there are 140,000 BTU/gal. of # 2 fuel oil. If you divide, 1 million by 140,000 you get 7.14. This is the multiplier to convert the cost of 1 gal. of # 2 fuel oil to MBTU. So the column labeled “/MBTU” is most important to remember and use. You simply take the cost per gallon you paid of # 2 fuel oil and multiply it by 7.14 and now you know how much it costs to purchase an MBTU.

As an example, if you paid \$2.50 for a gallon of fuel oil, it would cost you \$17.85/MBTU. ($\$2.50 \times 7.14 = \17.85 ; see the chart below. Keep in mind, I've accounted for the fact that most wood has about 50% moisture per ton, so I've down rated its BTU output by 50%.)

Fuel	Price	MBTU	\$/MBTU
Wood/ton	\$20.00	0.13	\$2.67
NG/Therm	\$0.65	10.00	\$6.50
# 2 Oil/gal.	\$2.50	7.14	\$17.85
Propane/gal.	\$4.00	11.10	\$44.40

From the chart, it's evident that burning wood is the most economical choice. It's also the most expensive to install. That's why it's important to consider in advance the cost of installing the various types of equipment.

Let's just review some of the extra costs of putting in a wood-burning system. You'll need storage for drying, a moving floor, feeding conveyors, wood-burning boilers, soot collectors, computer controls, possibly full-time employees monitoring the system and electro-static removers. This can all be very expensive. Because of this, it seems only the largest growers can afford to install all of this equipment and monitor it.

Point #2: Purchasing in bulk. Over the past 30 years, we've purchased most of our fuel from third-party suppliers instead of the local utility. This has resulted in significant savings, especially when the price of NG or fuel oil is changing frequently. Our plan is to purchase about two years ahead of our usage. Right now, we have all of our NG needs purchased through December of 2018. Although, we might not get the lowest price possible each month, we avoid the spikes in the open market, which can occur at any time. This gives us peace of mind as well.

Point #3: Make sure you monitor your greenhouse temperatures daily. This can be accomplished with a computer system if one is installed or just use high-low thermometers in each heating area and check them daily. This will reveal any areas that are out of calibration and need your attention.

Point #4: Tighten up your greenhouse. Each fall, we inspect all of the outside walls of the greenhouse to be sure there are no gaping holes. Also, each month throughout the winter, we do another inspection of the same areas to be sure no new holes have developed. Even a small hole can allow a great deal of heat to escape.

Heating our greenhouses economically is important and can have a great impact on your profitability. That's

why it deserves our attention throughout the winter time. **GT**

Bill Swanekamp is president of Kube-Pak Corp., Allentown, New Jersey.