



Quantum Growth® Results with Dragon Fruits In Vietnam - 2018

Location: Vietnam

The **Quantum Growth**® Series

About Dragon Fruits:

Dragon Fruit (*Hylocereus undatus*) is a spiny, red or white flesh fruit.



Figure 1: White flesh



Figure 2: Red flesh



Figure 3: Dragon fruit free

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Young trees are normally planted from old branches with four to five trees attached to a 1.6m high concrete pole to support the plant to form one bush of dragon fruit tree.



Figure 4: Although a cactus, it grows and produces best when its soil remains moderately moist and cannot completely dry out. Wet or soggy soil can cause cactus and root rot and plant affected by foxy disease.



Young plants take twelve months growth to start bearing fruits. It takes the fruits about fifty days to reach maturity after flowering and pollination occurs. The tree can continue to bear fruits up to fifteen to twenty years before fruit yield begins to decline. Warm weather like southern Vietnam is very suitable for dragon fruit planting.

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Vietnam is a major exporter of dragon fruits to over forty countries. Dragon fruits have dominated Vietnamese fruit exports in the first four months of 2018 with total exports reaching USD 427 million. The retail price of white flesh dragon fruit currently stands at about VND 20,000 (USD 0.87) per kilo while red flesh dragon fruits sells for VND 40,000 to VND 70,000 per kg.

One hectare plants about 1,400 bushes, each bush makes up of four to five plants and bear about forty to fifty fruits with about three fruits to a kilo, three to four harvests per year. Artificial lighting is used at night to increase fruit yield. Long An and Tien Giang are two major place where dragon fruits are planted in Vietnam



Figure 5: A typical dragon fruit plantation in Long An

Quantum Growth Experience in Long An, Vietnam

In late 2017, Dat Hop Co. Ltd sponsored **Quantum Light®** and **Quantum VSC®** to three farmers in **Long An** to conduct trials on red and white dragon fruits.

Anh Toan



Red Dragon Fruit

Chu Bay Hoang



Red Dragon Fruit

Na Anh Truyen



White Dragon Fruit



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Trials were conducted on both newly grown young plants and mature fruit bearing plants.

3 mL of **Quantum Light®** and 3 mL of **Quantum VSC®** diluted with 1L of ground water and spray over one bush and the ground. One hectare has 1,400 bushes, that is 4.2L (1.1 gallon) **Quantum Light®** and 1.1 gallon **Quantum VSC®** is used per hectare of land. For the young plants, application was done once per month.



For fruit bearing plants, three applications per season were applied.

- 1st application was done 7 to 10 days before artificial photosynthesis stop to force the concurrent flowering;
- 2nd application was done on the onset of flowering; and
- 3rd application was done after pollination.



Effect of Quantum Growth on Dragon Fruits

Old damaged and rotten roots were restored and significant amounts of new roots were seen within 12 days of application.

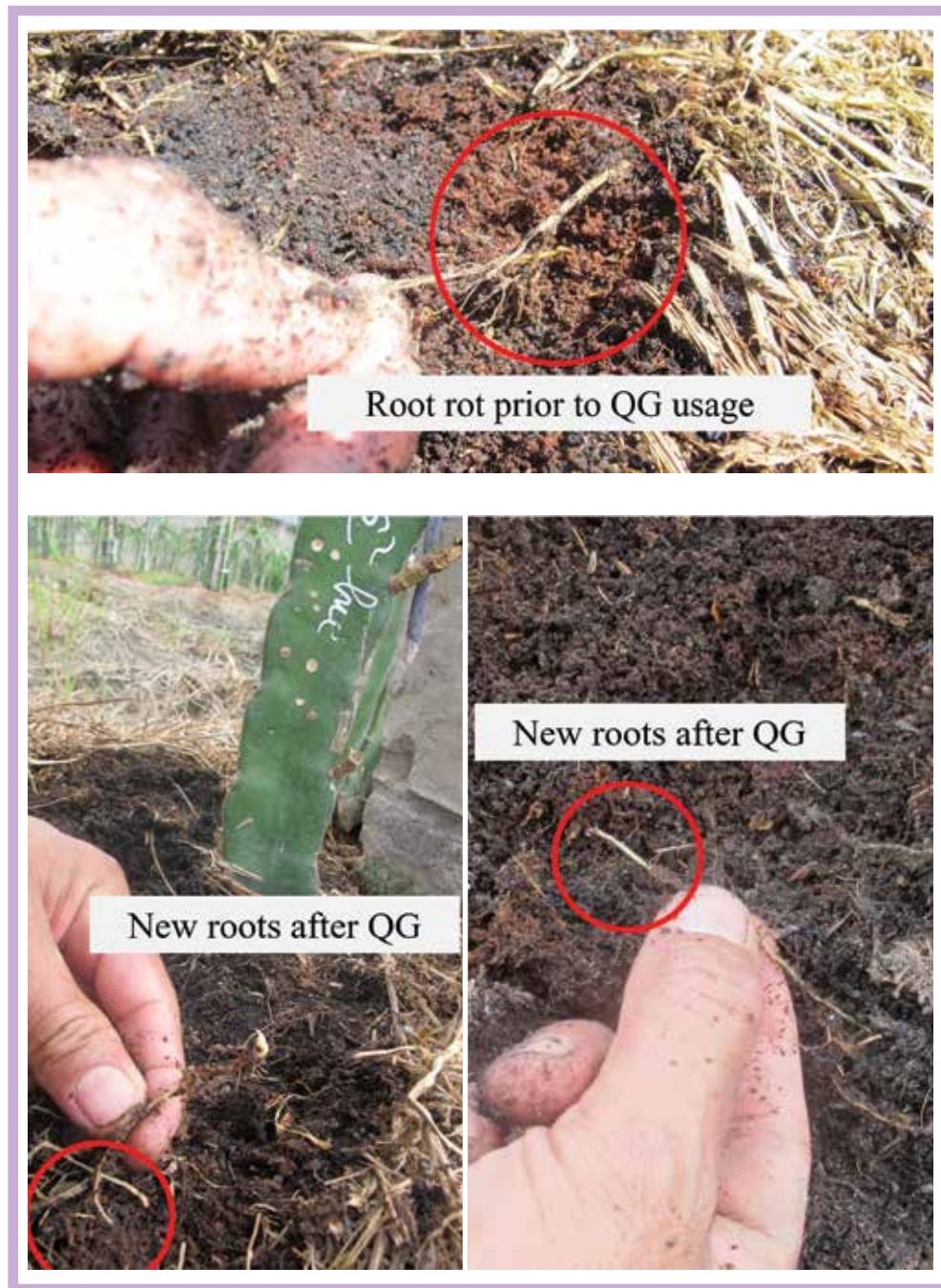


Figure 6: A common disease known as foxy, a disease that causes black spots on the stem and eventually develop holes was drastically reduced. As a result, pesticides for the treatment of foxy disease were significantly reduced after **Quantum®** treatment protocols.

Effect of Quantum Growth® on Dragon Fruits



Figure 1: Control plant



Figure 1: QG treated plant

- **Significant Cost Savings for Farmers**
- **Resulting Pesticide Free Fruit**
- **Improved Health and Quality of Fruit**
- **Increased Dollar Value of Fruit**



Effect of Quantum Growth® on Dragon Fruits

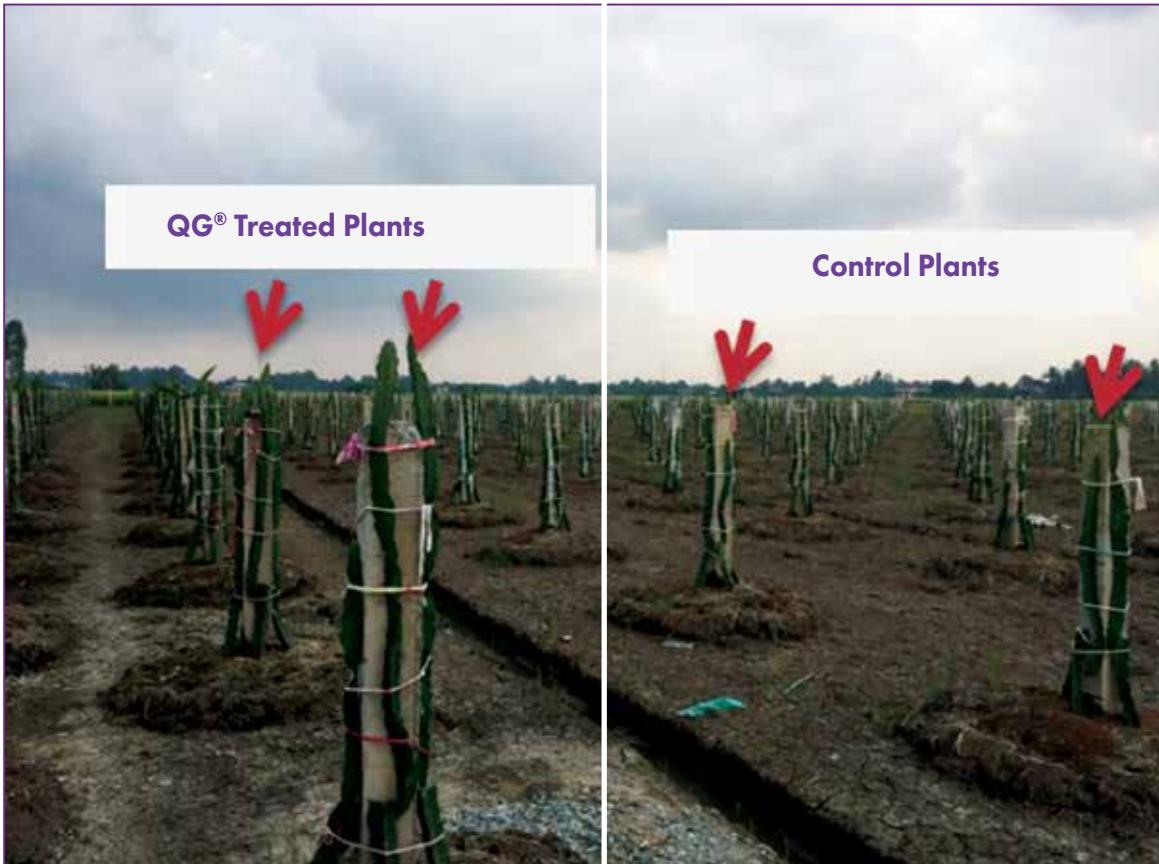


Figure 1: QG treated plants

Figure 1: Control Plants

Quantum® treated young dragon fruits trees grow about 25% faster than control plot despite no pesticides being used for the QG® treated trees. Although there is no data available on how fast the QG® treated trees will start bearing fruits, the farmers expect to achieve first fruit harvest in less than 10 months instead of the normal one year period.

The fruits harvested were categorized into two grades.

1. Grade 1 are of the better quality that command higher market price,
2. Grade 2 does not have good skin colour, size and shapes command 75% of grade 1 price. All tree farmers conduct harvest evaluation based on five plant bushes after first season of using QG® treatment.

Effect of Quantum Growth® on Dragon Fruits



Figure 1: Control fruit

Figure 1: QG treated fruits

Results from Mr An Toan farm (red dragon fruits)

	Harvest Based on 5 Bushes		
	Grade 1	Grade 2	Total
Control	39.37 kg	8.08 kg	47.81 kg
Quantum	62.16 kg	1.92 kg	64.08 kg
Difference	+22.79 kg	-6.16 kg	+16.27 kg
Price/kg (USD)	1.73	1.30	
Additional Income USD	39.43	-8.01	31.42

Additional income per hectare (1,400 bushes) = USD 8,797.60

Results from Mr Chu Bay Hoang farm (red dragon fruits)

	Harvest Based on 5 Bushes		
	Grade 1	Grade 2	Total
Control	35.28 kg	15.31 kg	50.59 kg
Quantum	49.27 kg	3.37 kg	52.64 kg
Difference	+13.99 kg	-11.94 kg	+2.05 kg
Price/kg (USD)	1.73	1.30	
Additional Income USD	24.20	-15.52	8.68

Additional income per hectare (1,400 bushes) = USD 2,430.40

Effect of Quantum Growth® on Dragon Fruits

Results from Mr Anh Truyen farm (white dragon fruits)

	Harvest Based on 5 Bushes		
	Grade 1	Grade 2	Total
Control	49.28 kg	9.31 kg	58.59 kg
Quantum	66.25 kg	1.27 kg	67.52 kg
Difference	+16.97 kg	-8.04 kg	+8.93 kg
Price/kg (USD)	0.64	0.32	
Additional Income USD	10.86	-2.57	8.29

Additional income per hectare (1,400 bushes) = USD 2,321.20

Note that red fruit is more difficult to grow and has lower yield compare to white fruits but has a higher market value. Many farmers are switching to red fruits where use of **Quantum®** will bring in more benefits to farmers. The above shows the use of **Quantum Growth®** increase revenue from improve yield range from USD 2,300 to USD 8,700. In addition, there is significant cost savings of pesticides and less plant loss due to foxy disease.

Each fruit harvest season use three **Quantum®** Applications of 1.1 gallon **Light** and 1.1 gallon **VSC** per application per hectare. Total product use per season per hectare is 6.6 gallons. Based on current retail price in Vietnam for **Quantum®** at USD 60.00 per gallon, cost of **Quantum®** per season is USD 396 per hectare. This gives an ROI of about 5 to 20 times in addition to better disease control and healthier plants.

We also anticipate that continue use of **Quantum Growth®** can extend the fruit bearing period from current 15 to 20 years.

Market Evaluation

The news of successful trials by the three farmers soon spread to other farmers in Long An district. As of Aug 2018, there are more than 100 farmers joined together to make bulk product purchases directly from Dat Hop Co., Ltd to apply **Quantum Growth®** on their dragon fruit farms. This is a very encouraging development.

There are more than 40,000 hectares of dragon fruit farms in south Vietnam. 30% of the farms using **Quantum Growth®** for 3 seasons per year will translate into market sales of 250,000 gallon per year. Dat Hop Co., has set this as their sales target in 5 years.

For more information on ^{THE} **QUANTUM GROWTH®** Series Technology contact
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