

# Growing Medicinal Beans

Summer of 2006

Levodopa (L-dopa) is the medicine of choice for relieving PD symptoms. A year ago, I discovered that levodopa occurs naturally in two bean species: fava beans (broad beans), and a tropical bean called mucuna. This summer I had big plans for both species. Favas are the more obvious beans for me to grow (in my garden near Kingston, Ontario, Canada) because favas grow quickly and can survive a light frost. By planting time in early May, I had acquired 30 different fava varieties to evaluate for productivity, flavour and levodopa content. On the other hand, mucuna has a long history as a medicine, including use for health problems that bear a distinct resemblance to Parkinson's Disease; so I wanted to give mucuna a try as well.

I was hopeful that some of the techniques I have employed over the past 20 years for growing sweet potatoes would allow me to grow mucuna. I was moderately successful and now have mucuna beans in the freezer

Though I have had a big vegetable garden for 30 years, I knew nothing about favas. I may have grown a row of favas 20 years ago but my memory is such that I was pretty much starting with a clean slate. I ran into problems with both species but, surprisingly, the favas were the most difficult.

## Fava Trial

I knew from reading up on the subject that fava blossoms don't always grow into fava pods. This turned out to be much more of a problem than I expected. In fact, in my variety evaluations, reliability of pod set has gone to the top of my list.

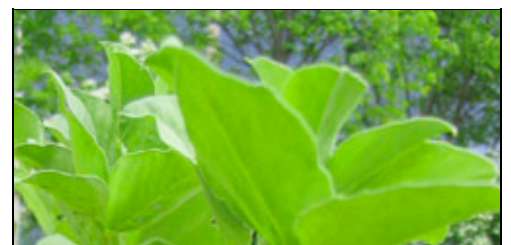


*Figure 1 Fava test plot*



Most fava blossoms are white with black spots. I had one colourful exception in my trial bed.

I also knew that support is sometimes required to keep plants from toppling over. This has





*Figure 2 Typical fava blossoms*

created a dilemma in my plans for next year. In my evaluation patch, the soil was a little rundown but since favas are a legume sometimes used for soil rejuvenation, I did not think this a problem. The plants were sturdy, not very tall, and none of them toppled over. I grew one of the varieties in another plot with lots of compost. These plants grew twice as tall as the same variety in the main plot and they had to be supported. The plants that got the compost and needed support also set more pods. I would like to encourage pod set but don't want to fool around with supports so will probably try for a compromise.



*Figure 3 Cambridge Scarlet*



*Figure 4 Aphids*

Aphids have never been a problem for me – I can usually just leave them to be controlled by their natural predators. These dark brown aphids sucked the life out of a few plants.

The plants were just getting to the stage for doing comparisons when I got sick. I lost a week which put me behind in other garden duties and by the time I got back to the favas, hot dry weather had hurried them past their prime. I will grow most of the varieties again next summer and try to do proper comparisons. In the meantime, I did make some interesting discoveries.



*Figure 5 Large aphid*





*Figure 6 Fava pods*

Most of the levodopa is in the shell of the pod. The levodopa content of the green beans inside the pod is negligible. That much I knew before I started measuring. The interesting discovery was that the levodopa content of the pod levels out by the time the pod is half size by weight (about  $\frac{3}{4}$  of its final length). Hence, from a medicinal point of view, it doesn't matter whether you eat a tender stringless half grown pod or a stringy, still edible but not as tasty, full-sized pod – from either pod you get the same amount of levodopa. And that amount, for most of the vegetable types of fava, is roughly 50 mg levodopa per pod.

Of the few varieties I tested, the standout best was Threefold White. I understand that this is a heritage variety of Dutch origin. Threefold White was fairly productive with the tender immature pods containing 80 to 90 mg levodopa. My plan for next summer (in addition to test plots) is to grow enough Threefold White to freeze a few hundred pods – I will steam blanch the pods, dry them, freeze them on a cookie sheet and then bag them. Then I will take one or two out of the freezer at medication time and eat them before they have fully defrosted.



*Figure 7 Threefold White*

## Mucuna Trial



Obtaining mucuna seeds was somewhat more difficult than obtaining fava seeds, but I got lucky. Mucuna was widely grown in Florida as a soil improving crop before the advent of chemical fertilizers. They had discovered a short season mucuna called 90 Day. One might think that 90 days referred to the time from planting to maturity but I didn't have much hope for that.



*Figure 8 Mucuna transplants, May 5/06*

for good growth until late June. So for plants like sweet potatoes, peppers, tomatoes, cantaloupes and watermelons I make slightly raised beds and cover them with a clear plastic mulch (to warm the soil), then set out plants in late May or early June.

It turned out that '90 days' refers to the time from planting to the beginning of blossoming, after which the plant produces beans in abundance but matures them at a leisurely pace. Mucuna is no longer widely grown in Florida, but the [ECHO seed bank](#) has both it and a related variety called Bush mucuna and they supplied me with seeds. I am especially grateful to Martin Price and the rest of the people at ECHO for maintaining these mucuna varieties and making them available. Indeed, from these two varieties I was able to get mature beans. Whereas a third variety that I obtained from Richters didn't get to the blossoming stage despite lots of coddling on my part.

I started all my mucunas inside in March. Mucuna seed coats are highly water resistant so the coats have to be scored before they will take up water – a necessary first step before germination. The seed coats of the seeds from Richters were the hardest – I had to hold the seed with pliers and use a hacksaw to score the coat.

Our spring temperatures don't get warm enough for tropical plants until late May or early June and the soil remains too cool



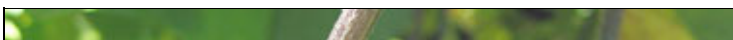
*Figure 9 Hoop frame over mucuna bed*

I have also experimented with a hoop frame above the rows (in addition to the clear plastic mulch) to allow me to plant out in early May. The hoop frame is usually left in place for three or four weeks. The mucunas were set out on May 5.

I thought I had my hoop frames securely tied down, but one week later a strong wind proved me wrong. Remarkably there was no damage to the plants and while mid May was not tropical, it was warm enough that I just cleaned up the mess and left the plants exposed to the elements. Not quite the start I had planned but they survived.



*Figure 10 Two hoop frames commingled by the wind*



When the first mucuna blossoms appeared, I mistook them





*Figure 11 Mucuna blossoms*

for purple pods until I got a closer look.

The pods were abundant but very slow to mature. There was also considerable variation in plant vigour and productivity so it will be worthwhile selecting seeds for next year from the plants that perform best in my conditions.



*Figure 12 90-day mucuna pods*

The shells of mucuna pods are thick and tough. Shelling the beans is something of a chore. The sap from the pods turns black on exposure to the air. After shelling the beans, I had black thumbs and finger tips. From the pods on three good plants (90 Day), I got 500 grams of beans. Each bean weighed between one and two grams and levodopa content varied from 20 to 40 mg per bean. I steam blanched the beans for 8 minutes, rinsed them in cold water, dried them, spread them on a cookie sheet and froze them. Frozen mucuna beans don't have to be defrosted. When fully frozen they chew like hard butter. They have a neutral flavour. I have been eating two or three of them at medication time (plus half a pill of carbidopa/levodopa)

When growing green peas it is very important to harvest before the peas are fully mature for best flavour. This does not appear to be an issue with mucuna beans. They are neither tasty nor objectionable at any stage. The bean is green in the pod for about



*Figure 13 Frozen mucuna beans*

The bean is green in the pod for about

one month and then, when it has reached full size, develops patterns – mottled dark brown on a beige background. Most of the beans I harvested were just starting to show patterns.

## **Beans as Medicine**

My present medication practice is to get half of my levodopa from a pill, which also contains carbidopa, and half from beans. Without the presence of the carbidopa, I would have to eat a lot more beans to get the same benefit and I have reservations about eating that quantity of beans on a regular basis.

I have a 3 month supply of mucuna beans in the freezer. My objective for next summer is to freeze a year's supply of beans (fava and mucuna). In the meantime, this year, I will be purchasing more mucuna powder which I spread with peanut butter on a slice of bread or blend into Rice Krispie squares or chocolate squares.

As for the benefits of getting my medication this way, I feel a little better when I get half of my levodopa from mucuna powder rather than getting all of it from a pill (which I do from time to time for convenience). And I feel even better when I get levodopa from fresh or frozen beans rather than from mucuna powder. But the differences are small and evaluation is subjective. It is not impossible that the satisfaction of growing my own medication is affecting my judgment.

Though if I am kidding myself, I just hope the illusion continues.

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