pushing the limits of tropical gardening

TROPICAL TREASURES

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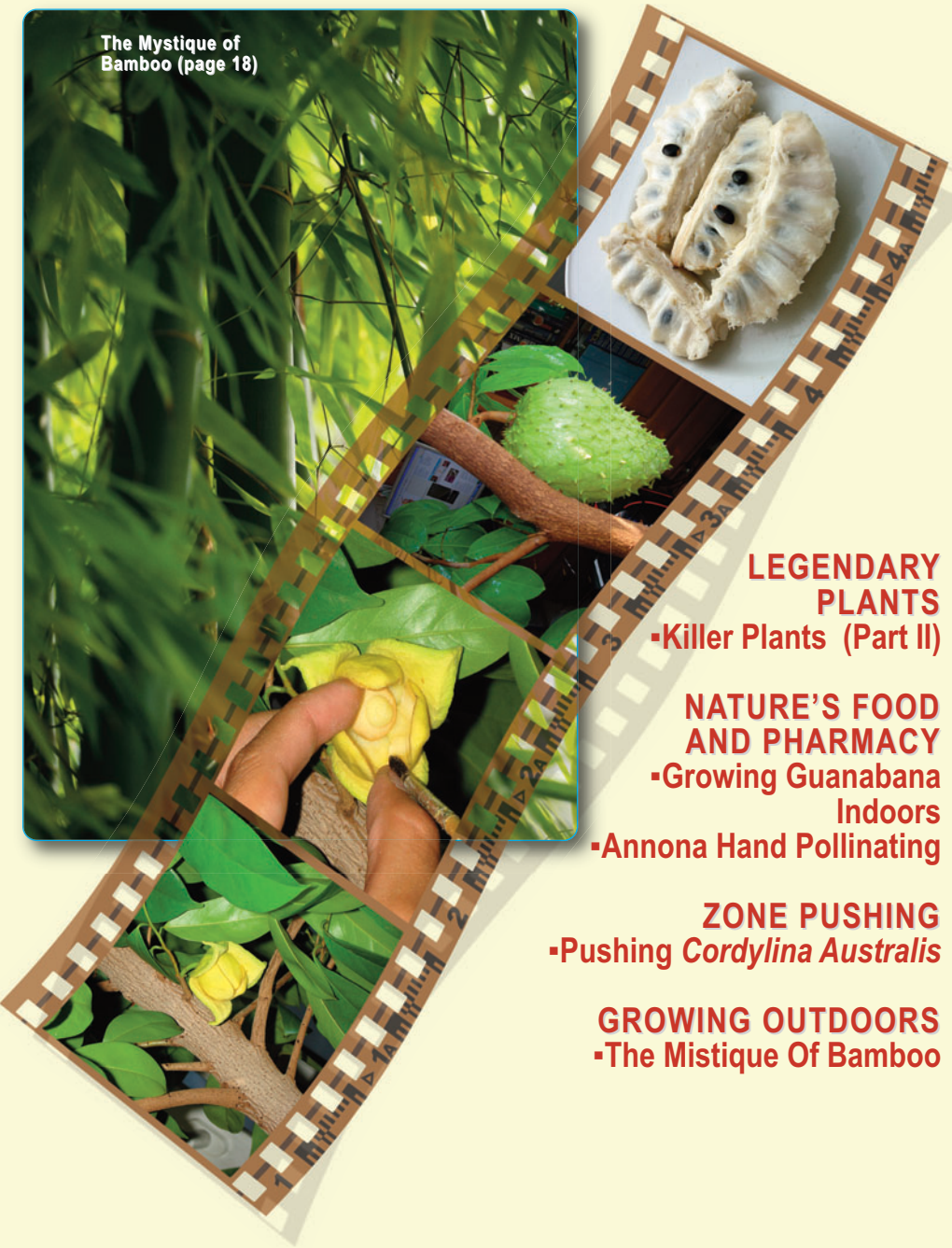

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GROWING GUANABANA INDOORS. PART I: FROM VIETNAMESE JUNGLES TO A MOSCOW APARTMENT

BY PAVEL ALDOSHIN (RUSSIA), PHOTOS BY AUTHOR

Nature's Food and Pharmacy

In this article, I'm going to share my experience growing *Annona muricata* (Soursop) in the conditions of a typical Moscow (Russia) apartment: hardly an environment situable to growing tropical plants, to say the least. I became an Annona grower by chance. One of my relatives had brought us a variety of exotic fruits from his trip to Vietnam. Some of the fruits impressed us with their forms and flavors, and after we had admired them, we quickly ate them. Once all the fruits were eaten, I planted the seeds, including some Annona seeds, just for fun: to see what would happen. It was the very first time in my life I saw Annona.

See also: *Cold Seed of the Inca: Exotic fruits of the Annonaceae family* article in Summer 2008 Treasures about indoor annona cultivation.

I sowed the seeds at the beginning of 1993, and they had germinated by March. The seedlings were attractive, somewhat resembling Ficus with their glossy, showy leaflets. Two of them survived plant infancy and began to develop into fine young specimens. For the first two years both of them grew fast, gaining approximately two feet in height. Unfortunately, during their third year, an oversight on my part caused the demise of one of the plants. We will leave it at that.

Nature's Food and Pharmacy:
You can either eat it, smell it, or treat with it. It is good for you, and yet, you can grow it.

Scientific name: *Annona muricata*
Family: Annonaceae
Common name: Guanabana, Graviola, Soursop
Origin: Tropical America

The plant with a mind of its own

The remaining plant continued to grow well. By the third year, I had decided it was time to do some shaping of its crown. First, I cut off the top at a height of three feet, since I thought that its straight tall form was pretty humdrum. It responded well to my direction and soon had grown into a lovely V-shape. By the end of the third year, it had reached an impressive height of almost five feet.

At this point, my Annona developed a mind of its own. First, one of the two large branches started growing quicker than the other. It was about to bloom, and I did not want to cut it, so I decided to slightly bend it to provide more light to other branches. My efforts didn't work. Second, the smaller branch suddenly dried up and died, so now the remaining branch started to form the crown. After that, I no longer attempted to shape the crown, but just let the plant have its own way.

Like the worried parent of a misguided teenager, I watched as my plant made some bewildering decisions about its future. Many promising new branches would suddenly dry up within couple of days— and beautiful, healthy looking branches would die almost before my eyes. The leaves on these branches did not

even have time to turn yellow; they simply shriveled up green, but the sapling continued to grow vigorously.

I had no idea what I could be doing wrong— was it the soil, the fertilizer, the light? I was trying to follow all the rules— still my Annona was as obstinate as it could be. Then, some of the horizontal branches also began to dry and die off. By the fifth year, I was resigned to just cutting off dead branches as they appeared, all while trying to maintain some semblance of shape to the plant. By now, I had decided


Five month old fruit

that my Annona just had an attitude. I had done everything possible to make it comfortable; I misted it regularly, since the air was pretty dry. The apartment was plenty warm enough, up to 75°F in the winter and 85-90°F in the summer, where the tree was located. I fed it only as needed, but that was still fairly regularly. I gave up wondering why and just tried to keep up with my crazy plant.

Blooming

The first bud appeared in April 2006. Yes, it was 13 years after I planted the seed. Blooms took about a month and a half to develop. Single flowers initially appeared either on the main stem or on any branch. A little growth appeared first, like the pedicels on an apple tree, and then it formed into a new bud.

Pollination turned out to be a complicated task— the outer petals of the

flower were very tough, thick, and almost woody, scarcely allowing me to pry it open to pollinate by hand. The flower slams shut like a trap and can be easily broken during the pollination process. I tried to be as gentle as possible could, but even so, I inflicted some superficial scratches.

I used a soft paintbrush to do the actual pollination— but the first time I tried it, I could not even tell where to pollinate what! I did not see anything resembling the conventional stamens and pistils. I had only sorted it out by the time the flower had died. Fortunately, throughout that summer and autumn, three more flowers appeared.

The pollen itself was finicky too, since it is very short-lived, refrigeration was useless, and it needed to be used within twenty-four hours. Moreover, the mature flower preferred to be pollinated at a very inconvenient time of day for a working person, at between four and six in the evening.

First Harvest

Success finally came in November of 2006. Two buds appeared almost simultaneously on the tree. I had time to gather pollen on the first, and the second bloomed immediately afterwards. Luckily this happened on a day I had off from work, so I was able to follow the blossom's opening and pollinate it properly. The results were not obvious immediately— the ovary of the first bud simply dropped off, and the second seemed to remain stationary on its twig. Nonetheless, there was life within as I discovered in January when I decided to augment the natural window light with a grow light on a timer. With the help of the extra light, the fruit began to grow. By February of 2007, the blossom remainders had transformed into what looked like a small green, hedgehog. In a couple more weeks, my hopes were confirmed when I recognized a small but real fruit.

It continued to grow and change shape. The prickly appearance became more pronounced, and it took on the characteristic Annona form.

During the time it took to ripen, I have made a trip to Vietnam and tried the fruit in its native habitat.

It is May 31, 2007. Outside temperature in Moscow is 90°F. My pioneer plant was doing its best on a windowsill. The event finally came. My Annona had at long last produced its first fruit on its 14th birthday!

When the fruit ripens, it begins to give off a pleasant aroma, and the green skin acquires a whitish tone. If it is not picked quickly, the stem begins to grow dark and spots appear under the spines of the fruit. Thus, long months of waiting can vanish in a few hour's negligence. Ripeness can also be determined by the state of the pedicle; when it is no longer nourishing the fruit, a visible ring forms on the twig, which is a signal that at any minute the fruit will fall off. Picking the fruit is necessary once the spines begin to darken, if you do not want to lose it. The fruits of Annona are not meant to be stored, but rather must be enjoyed immediately— at most, they may last up to five days. Luckily, they freeze well and last for a long time in the freezer.

During my Annona's long ripening time, of approximately four and a half months, I went through a lot of work and worries, but it paid off with a great feeling of success!

Based on my experience, here is some advice to home Annona growers:

Do not bother trying to prune and shape your plant too much— rather, just trim it as needed.

Concerning long branches— when one becomes very long and stretches out beyond the limits of the crown, it is best to cut it down to half of its original length. If you let it get too long, the plant will not be able to supply all the leaves at the ends, and the whole branch will likely dry up.

If you cut a green branch, it will begin to branch out.

Cut off young branches near the bases of old, established branches— otherwise the load can kill the whole branch, and it will dry up.

It is best to trim in June-July, when Annona is at its yearly growth peak.

Do not bother trimming to help Annona form a good crown— it is quite capable of doing this on its own

If, however, you do want a branch to form in a certain place, simply break off a leaf there. Soon a twig will sprout and will grow eminently.

Annona needs to be placed near South window. It requires extra light during winter. Period. No exception.

If the plant starts to get "bald", simply turn it around so that the greener side faces the room. This is all that is needed to develop an even crown on all sides.

My Annona seems to do best when its crown is full, so I rarely tamper with the upper part, only occasionally bending a branch to the side.

The weak point in most Annona plants is the root system. Hardened soil causes a lot of stress, with subsequent leaf dropping. Flooding is also damaging— you have to be most careful in the winter, when the plant is at rest. You need to water then, being careful not to overwater.

Propagating

Until recently, I never attempted to propagate my Annona by cuttings of grafting, since I had assumed that it is done by seed only. As I know now from experience, the usual bud-grafting method proves unsuccessful. Top-grafting using green soft scions gives better results; I have already had one of these grow well. For success, the plant after grafting should be placed in shade, covered with plastic wrap, and constantly misted for the first three to five days. High temperatures are harmful. If new leaves begin to sprout, this is a sign that the cutting is alive and well.

Green softwood cuttings also may root, although these take about three to four months to start rooting. I found that it is best to plant the cuttings in vermiculite or a vermiculite-sand mixture.●

I brought this Praying Mantis back from my recent Black Sea vacation. It happily lives on my Annona never leaving it.

GROWING GUANABANA INDOORS. PART II: HAND POLLINATING ANNONA.

BY PAVEL ALDOSHIN (RUSSIA), PHOTOS BY AUTHOR

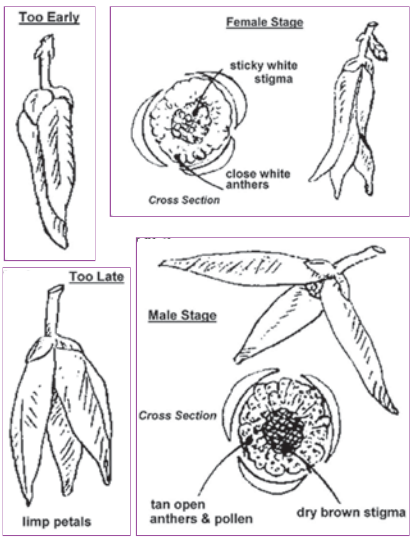
Nature's Food and Pharmacy

Annona is a very interesting and unpretentious plant genus, which deserves a place in the collection of anyexotic fruit grower. One plant especially stands out— *Annona Muricata* (Guanabana, Soursop), one of the few Annonas, which does not have a dormant period. This makes it more attractive to home growers; it boasts beautiful shiny leaves and flowers almost year round.

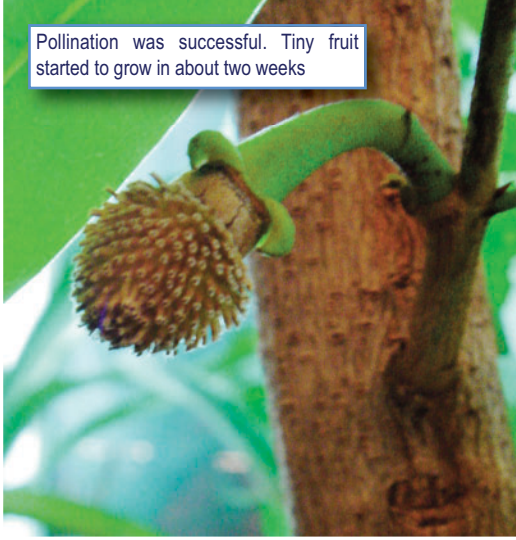
This Annona has gorgeous flowers with a faint but pleasant fragrance. They resemble elegant yellow-green bells and look like jewels set into the lush foliage of the tree. With *Annona muricata*, just as in *Myrciaria cauliflora* (Jaboticaba) and *Theobroma cacao* (Cocoa, Chocolate), the flowers can appear anywhere on the plant, cauliflower-style. The number of flowers can vary at any one time, but generally after a bud appears once in a certain location, more tend to follow at the same spot.

In spite of its relative ease of cultivation, one problem home growers always face with Annona is pollination. In spite of their simple design, the flower seems to do everything possible to ensure that it never gets pollinated. The bud is formed so that only the smallest, thinnest, or strongest insects can penetrate or pry open its jaw-like lobes. Therefore, bees are ineffective pollinators for Annona. In South America, it is frequently pollinated by small beetles of the family Nitidulidae. They are capable of infiltrating barely noticeable slits in the bud. In California, there are no reliable pollinators for this plant. Also, in some places, lack of pollination is not the only problem; growers also have to deal with low humidity, especially in combination with high temperatures. The pistils dry up in these conditions, and the heavy pollen falls off without being able to germinate.

For reliable fruiting, hand pollination is necessary. This procedure is labor intensive and time consuming. Worse still, it frequently fails after all efforts have been made. The reason for most of the failures is simple; although the flowers are bisexual , this duality is expressed at different stages of blooming. Moreover, the order differs from the normal sequence. First, the female part develops, which can be pollinated, although if it is the only flower on the



Different stages of flower development. Images courtesy of California Rare Fruit Growers (www.crfg.org)



Pollination was successful. Tiny fruit started to grow in about two weeks

tree, there is nothing to pollinate it. Next comes the male stage of flowering, in which the anthers are revealed, and the pollen crumbles and falls off the anthers. In essence, the pollen ripens in the morning, and the eligible flowers can only be pollinated in the second half of the day. Attempts to use pollen from previous flowers often are not successful, as the pollen does not store well for more than 24 hour period. As you can see, there is a very small window of opportunity for success. The flower takes about a month and a half to develop. It

Five month after the pollination: my first fruit is ready

happens very often at the moment when it blooms, the pollen, collected from previous flower, is already lost most of its potency.

The Nature has created a mechanism to prevent self-pollinating. Unfortunately, it made pollination process difficult to complete even in climates where Annona is at home and much more so in northern latitudes where it is grown indoors. I had to wait until two flowers happened to bloom right in sequence. I gathered the pollen from one that was finishing blooming and transferred it to the open second one, using a soft brush and a small paper envelope to collect the pollen. I shook all the pollen into the envelope and put it in the refrigerator for several hours, until the second flower was ready to accept the pollen.

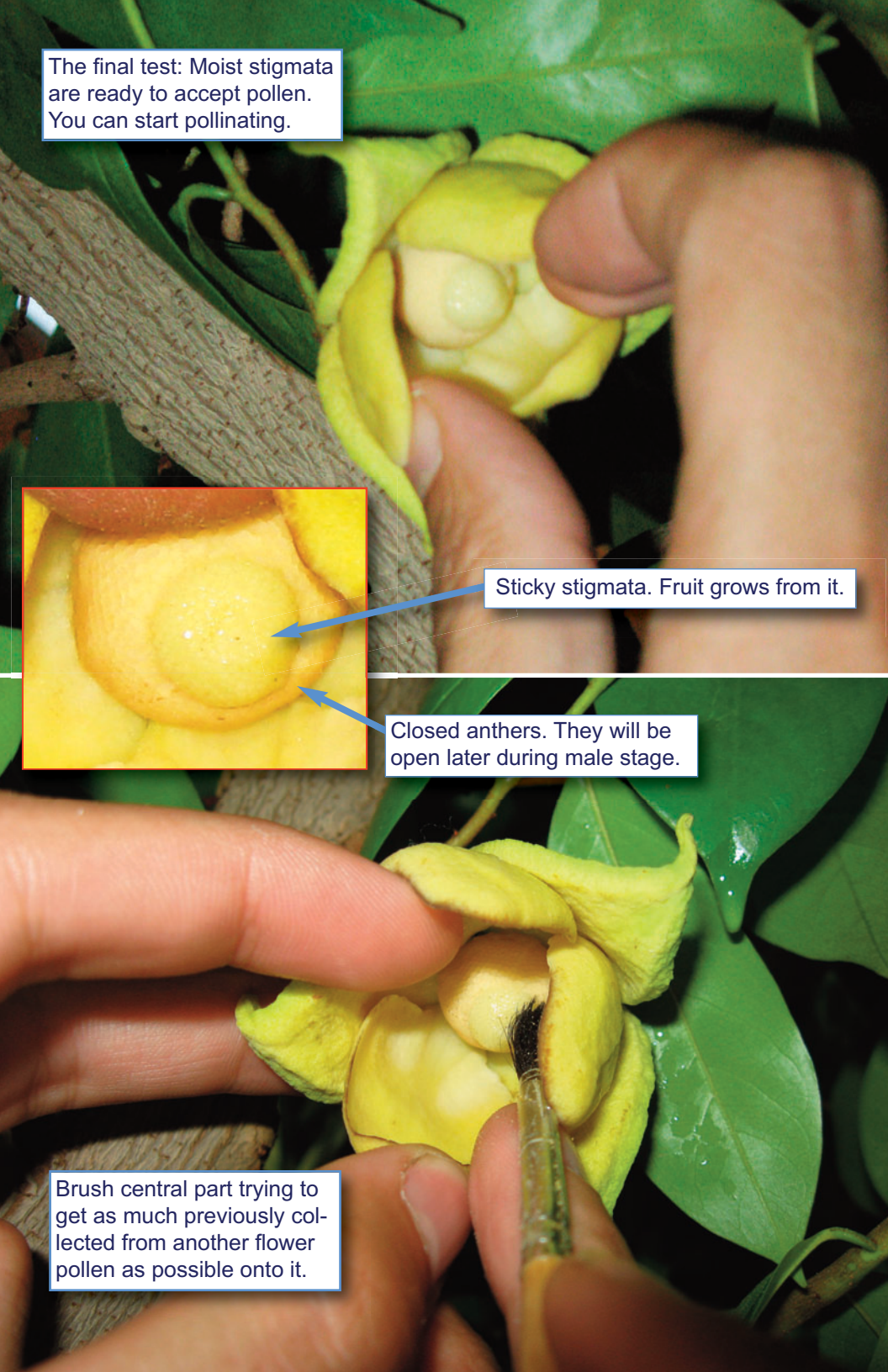
The pollination process in details is illustrated on next three pages.●

Pavel Aldoshin is a computer engineer living in Moscow (Russia). Exotic plants have been his passion since childhood. Always fascinated by unusual flora, he likes the challenge. "You never know where the next surprise awaits you", he says, "In case of success, the reward of accomplishment is the most enjoyable". He created a collection of rare plants that amazingly thrive indoors! Some of them are not easy to grow even for experienced gardener in real tropics.

Male stage: Flower is wide open and petals look “old”. Too late for pollination.

Female stage: The flower is ready for pollination. One can tell when it is ready by both sight and by smell. It has yellow-green color. Outer petals started to open, but inner are still closed. It emits a weak, pleasant fragrance.

The flower is opened using fingers and a small brush. You have to be very careful not to break flower off.


The final test: Moist stigmata are ready to accept pollen. You can start pollinating.
Sticky stigmata. Fruit grows from it.
Closed anthers. They will be open later during male stage.
Brush central part trying to get as much previously collected from another flower pollen as possible onto it.


Male stage. Flower is open. Anthers are well developed and full of pollen.


Collecting pollen for the next flower. The pollen can be stored for 24 hour period.

photo by TopTropicals.com

Soursop *(A. muricata)* fruit

Annona cookbook by TopTropicals.com

Annona fruit flesh is white with buttery texture, moderately juicy, mildly acidic, sweet, and very aromatic. This fruit is essentialy a dessert fruit with unique flavor. It is also may be used in fruit salad, baked in pudding, made into a jam, jelly or even wine.

The Guanabana's *(A. muricata)* Indonesian name, *sirsak*, is derived from Dutch *zuur zak* meaning 'sour sak'. In Indonesia, *dodol sirsak*, a sweetmeat, is made by boiling soursop pulp in water and adding sugar until the mixture hardens. In Philippines, a young soursop, where the seeds are still soft, is used as a vegetable. The delicate flavor and aroma make it an ideal ingredient for making candies.

The best way to eat the delicious fruit of Annona is to split chilled fruit, scoop a spoonful of pulp into the mouth, and enjoy the fleshy segments. The seeds naturally will have to be spit out. Enjoy!

Soursop Sorbet

2 ripe fruits.
2.5 cups sugar.
2 cups water.
1 tsp nutmeg, clove.
Remove seeds from the fruit. Puree the flesh. Add sugar to boiled water and stir until it has dissolved. Remove from heat and add spices. Stir and strain. Pour syrup into puree and chill before serving.

Annona Milk Shake

Equal amount of annona and milk. Add sugar or honey to taste. Small pinch of ginger or vanilla can be added. Process in blender until smooth.

Soursop Ice Cream

2 ripre fruits.
1/4 cup sugar.
1 can sweetened condensed milk.
1 cup evaporated milk.
2 tsp of vanilla.
Remove seeds and mix everything together. Blend, cover and freeze for about two hours. Beat well and refreeze.

Annona Fruit Salad

1 Annona fruit, peeled and sliced.
1 banana, sliced.
2 cups cubed watermelon.
1 kiwifruit, peeled and sliced.
1/2 cup pineapple juice.
1 Tbs fresh lime juice.
Combine all fruits in a bowl. Add juices and toss. Cover and chill.

Soursop Bread

1 cup sugar.
2 eggs.
1 tsp baking soda.
1/2 tsp salt.
1 Tbs butter or margarine.
1.5 cup soursop puree.
1.5 cup sifted flour.
1/2 cup chopped walnuts.
Cream sugar and butter. Add eggs and remaining igredients. Bake in greased loaf pan at 350F for one hour. Cool on rack.●