MAKING PINEAPPLES FRUIT

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In PNG pineapples flower and fruit only at certain times of the year. Farmers can control flowering very easily and cheaply by putting a chemical on the plants and have fruit when there are few on the market and prices are high. Because flowering occurs naturally when the nights are cold, the hormone should be put on when the nights are warm.

All that is needed is a bottle of hormone called Phyomone and an empty fish tin. A few drops of hormone are mixed with water and this solution placed in the middle of the plant. A flower will then form and about five months later the fruit from this flower will be ripe. The hormone has no bad effect on the fruit. It works much better on rough leaf than on smooth leaf pineapples.

Smoke and chemicals such as carbide and B.O.H. can also be used to make pineapples flower. Carbide works very well on both rough leaf and smooth leaf pineapples.

Pineapple fruit do not ripen all year but only in some months. In many places in PNG fruit usually ripen between November and February in a flush, that is, a lot of fruit are ripe about the same time. In some places there is often another flush a few months later in the first half of the next year and then not so many fruit for the rest of the year. The time of the flushes varies from year to year. The fruiting pattern for a block at Keravat for 1973 to 1976 and a block at Popondetta for 1969 to 1971 is given below to show this.

When night temperatures are low, the flowers start to form inside the plant. This means that all the farmers in one area have their fruit ripening about the same time and prices in the markets are low. However smoke and certain chemicals can be used to make plants flower and carry fruit out of season. By using one of these chemicals a farmer can make plants fruit out of season and take advantage of high prices. He can also obtain fruit right throughout the year. Normally once a plant reaches a certain size, flowers are formed during the next natural flowering period. But by applying a flowering chemical, fruit can be made to form at any time.

In Papua New Guinea pineapples sometimes grow for many years without producing a fruit. This is because there are not very large seasonal differences like winter and summer. But if a farmer makes his pineapples fruit quickly with a chemical, he can make more money from selling them earlier.

Flowering hormone

The chemical most commonly used is A.N.A. (alpha napthalene acetic acid) which is a hormone or natural growth substance. This is sold under the ICI trade name Phyomone. It is very cheap and easy to use. All the farmer has to do is to mix a little hormone with water, stir it and pour the solution into the heart of a pineapple plant.

Six to eight weeks later a red colour will appear in the heart of the plant. This is the start of the flower. The fruit that forms from this flower will be ripe 20 to 24 weeks (4½ to 5½ months) after putting on the hormone for rough leaf pineapples. For smooth leaf it

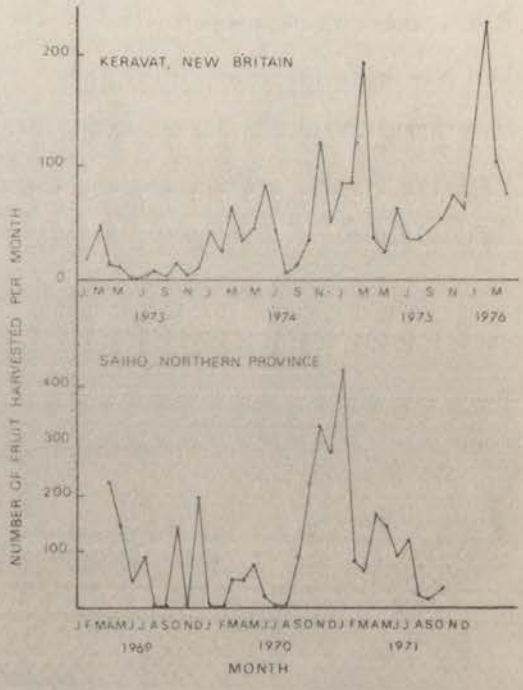

Figure 1.—Monthly pineapple yields from Saiho and Keravat. Note how production is highest in the months either before or after Christmas, but the pattern varies a lot from year to year. Flowering is caused naturally by periods of weather when the night temperatures are low and there is a lot of sunshine in the day.

Mixing up the flowering hormone. Twenty-five drops of hormone are needed for an ice cream container of water. This is enough for about 40 plants. The fish tin is used to pour the solution on to the plants. One fish tin holds enough solution for 7 plants.

Pouring the flowering hormone solution into the heart of the pineapple plant. It takes 20 to 24 weeks from putting on the hormone until the fruit is ripe for rough leaf pineapples.

Amount of hormone for different containers

Container	*Approximate volume*	*Amount of hormone needed*	*Approximate number of plants*
Fish tin	430 ml	4 drops	7 plants
Ice cream container	2.5 litre	25 drops (about 1 ml)	40 plants
2 gallon bucket	9 litre	5 ml (100 drops)	155 plants
44 gallon drum	200 litre	100 ml	3 500 plants

takes 26 to 30 weeks from putting on the hormone till the fruit is ripe.

The farmer makes a 1:2000 solution of hormone in water.* So 1 ml of hormone would be mixed with 2 litres of water. Sixty millilitres of solution are applied to each plant. A breakfast cup of solution is enough for three plants or a fish tin will do seven plants. In the *Table* below the amounts of hormone for certain size containers are given.

If the hormone is applied to small plants the fruit will be below average size. To obtain a normal size fruit you must wait until the plant is about the same size as plants that normally bear large fruit under natural conditions. In a recent experiment at Keravat, it was found that hormone could be applied from about 12 months after planting without reducing fruit size, but earlier than this fruit size was reduced. In this experiment medium-sized suckers of the rough leaf Queen variety were used (see *Figure* 2). In the control treatment, no hormone was applied and the flowering occurred naturally.

It is best to apply the hormone when the nights are warm. This is because the flowers are formed naturally when the nights are cold, so there is no need to put the hormone on then. If a farmer puts the hormone on a few plants when the nights are warm, he can have fruit ripening for most of the year. If he wants a lot of fruit when no other farmer has them, he should treat a lot of plants when the nights are warm.

You can buy Phyomone from agricultural stores such as Elvee Training Company in Rabaul or New Guinea Pastoral Supplies in Lae or other retail outlets for ICI chemicals.

* 10 ppm active ingredient.

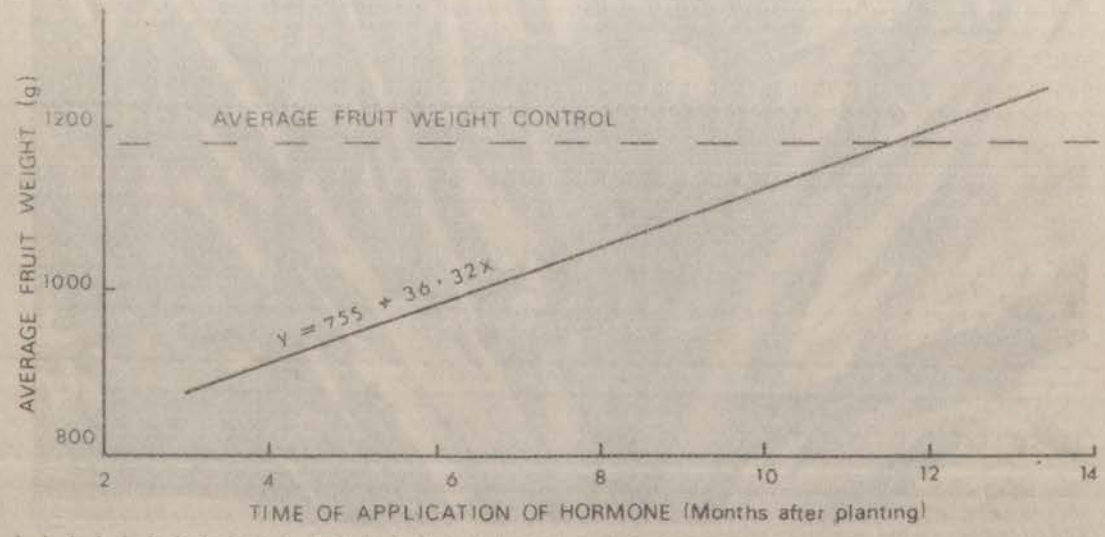

Figure 2.—Pineapple Hormone Trial, Keravat. Average fruit weight v. time of application of hormone. The later the hormone was applied, the larger was the average fruit. Plants treated 12 months after planting had an average fruit weight the same as plants that flowered naturally.

The result. A crop of fruit almost ready for harvest. If the hormone is applied when the nights are warm, fruit will be ripening when none are available from natural flowering and the farmer can sell at the higher prices. The hormone has no bad effect on the fruit.

The retail prices are as follows*—

40 oz	K6.60
8 oz	K2.10

An 8 oz bottle is enough to treat about 8 000 plants, so the treatment is very cheap. The extra money a farmer can make from selling out-of-season fruit will be many times the cost of the hormone.

Treatment will not affect the flavour of the fruit. It might make the fruit stalk a bit thinner and the fruit a bit longer and more tapering. The fruit will be small only if the hormone is applied before the plant is big enough.

Sometimes when the hormone is put on to a block of plants not all of them will flower and fruit. For the rough leaf Queen variety only about half the plants might flower. In PNG the smooth leaf Cayenne variety is much more difficult to make flower. In Queensland when the plants are growing quickly and there are problems getting the hormone to work, the plants receive two treatments of the hormone 10 to 14 days apart. This works very well in Queensland although it has not worked any better than a single application in trials by Mr Bongbong at Keravat. The same strength solution is used both times. The chemical B.O.H. (beta hydroxy ethyl hydrazine) has been found more effective than A.N.A. in Queensland when this problem occurs.

In several pineapple-growing countries it has been found that size, weight and the growing period of the fruit can be increased by putting the hormone solution on to the plants after they have flowered. This happens whether the flowers occur naturally or following hormone treatment. In an experiment in the Philippines it was found that treatment of the flowers of smooth leaf Cayenne pineapples with A.N.A. at 100 ppm eight days after flower bloom greatly increased fruit yield. As well as increasing fruit size and time to maturity this treatment is reported to make the fruit stalk stronger so that there is less chance of the fruit bending over and becoming sunburnt. A 100 ppm solution is ten times as strong as the one used to make the plants flower, so ten times as much hormone should be used for the same amount of water. This has been tried at Keravat but has not given larger fruit.

* Prices in October, 1976.

Other chemicals

As well as A.N.A. there are a number of other chemicals that can be used to make pineapples flower. These are calcium carbide, B.O.H., ethylene and Ethrel. Of these only carbide has been tried in PNG. Smoke also makes pineapples flower.

To make pineapples flower with calcium carbide, first drop a few pieces of carbide into a bucket of water. Acetylene gas is given off and some gas is dissolved in the water. When the bubbling stops, pour some of the water into the heart of the pineapple plant. The acetylene makes the plant form a flower and fruit. At Keravat this method has been found to work very well on both rough leaf and smooth leaf pineapples. Carbide is cheap but it is difficult to obtain in PNG. ICI in Lae can obtain it if requested.

Carbide can also be used by dropping a piece about 1 cm across into the heart of the plant. However we have found that this often burns the heart leaves and do not recommend it.

B.O.H. (beta hydroxy ethyl hydrazine) is another chemical that can be used. In Queensland it has been found useful when A.N.A. does not work well because of vigorous growing conditions. Shell markets B.O.H. as "Pine Set".

About 30 ml of a 2 500 ppm solution is applied to the heart of each plant. The resultant fruit are square-shouldered.

The chemical that is used to make rubber latex flow better, Ethrel, can also be used to make pineapples flower. The rate is 30 ml of a 2 000 ppm solution applied to the heart of the pineapple. Tutt Bryant at Badili in Port Moresby sells Ethrel.

Smoking plants was the first method discovered that caused flowering in pineapples. Smoky fires are lit along the edge of the field so that the smoke blows over the plants. However chemicals are much easier to use than this method.

NORTHERN PROVINCE OIL PALM DEVELOPMENT

The Commonwealth Development Corporation will invest up to K11 million in the new oil palm project at Popondetta and will be corporate manager of the scheme.

The CDC, established in 1948 in the United Kingdom by Act of Parliament, works as a commercial organization investing its funds, drawn from the United Kingdom Exchequer, in development schemes for the promotion or expansion of economic projects which will help to increase the wealth of the host country and yield a reasonable return on the money invested.

Mr Richard Beacham has been appointed General Manager of the Estate Company, Higaturu Oil Palm Pty Ltd and Higaturu Processing Pty Ltd, the factory company.

A large 60 tonne per hour mill, designed and constructed under the direction of CDC, will be built. This factory will also provide processing and marketing facilities for smallholders.

The estate run by the Company will provide the smallholders with oil palms from the nursery and technical assistance.

A training scheme will also be started to train nationals to take over, progressively, from expatriates in technical and professional jobs.

There will be 1 400 smallholder families on the scheme.

Foreign exchange earnings from the sale of palm oil and kernels should exceed K10 million a year at full production.