

His Majesty King Bhumibol Adulyadej and Her Royal Highness Princess Maha Chakri Sirindhorn attending the ceremonial opening of the Chitralada milk processing plant.
Royal Chitralada Projects



Thailand's renaissance monarch

To exemplify forest renewal, water conservation and agricultural self-sufficiency, Thailand's revered King Bhumibol Adulyadej, Rama IX, converted his chief residence, Chitralada Villa in Dusit Palace, central Bangkok, into an experimental farm, demonstration forest and showcase of sustainable agriculture and technology. Under His Majesty's expert guidance are also a range of special-purpose agricultural and fisheries projects that are developing throughout the country. **Richard Mogg** visited the facilities.

Countrywide deforestation is increasingly blamed for the severe droughts that are now periodically suffered throughout Thailand, with significant distortion of the country's traditional agriculture and social stability being the consequence. While the country's forest depletion isn't helped by the government's credo of feverish economic development for the much yearned-for status of 'newly industrialised country' (NIC), King Bhumibol of Thailand has remained steadfast in his belief that socio-economic development should focus on self-reliance through sustainable agriculture. His wide-ranging effort to promote it as traditional industry has demonstrated a sublime understanding of the grassroots needs of his people.

Born in the USA and a resident of Switzerland during World War II, the young prince was eventually

enthroned as Thailand's monarch in 1950, following a five-year regency. He succeeded his elder brother, King Ananda Mahidol, who had died in mysterious circumstances in 1945. The regency gave the young man breathing space to complete his studies at University of Lausanne, Switzerland, and his natural inclination was to study technology, but he switched to constitutional law as soon as it became apparent that he would one day become king.

In the 1980s, early morning joggers around the Chitralada Villa perimeter wondered at the changing character of the royal residence. Chitralada Villa, in Bangkok's inner suburb of Dusit, had been created by King Vajiravudh as a royal summer retreat, not too far from the Grand Palace, the traditional royal residence, so a herd of cows and various types of farm equipment seemed rather out of place. But a demonstration forest and agriculture and fisheries areas in the one kilometre-square Chitralada compound had actually been under development since the 1960s. The royal swimming pool in those days was used to breed fish from fingerlings donated by the Crown Prince of Japan.

Word travelled that His Majesty had started an experimental farm, and the King himself soon made it clear that the Chitralada Villa farm was not a showpiece, but a practical and viable enterprise, essentially renewable and sustainable in its design, operation and productivity.

King Bhumibol's belief in sustainable development directly reflects a deep interest in helping less well-off Thais to benefit from innovative technology. For example, the severe countrywide drought suffered by Thailand in early 2005 has turned the King's attention to artificial rainmaking. An internationally acknowledged



Far left: A project workboat at Huai Hong Khrai assists with water hyacinth cultivation. The introduced, noxious weed is now used in Thailand both to cultivate mushrooms and for biofuel.

Richard Mogg



Left: The King's villa at Khao Hin Sorn.

Richard Mogg

expert, he has devised a method of cloud seeding, with special chemicals and dry ice which has drawn world-wide attention. Besides artificial rainmaking, patented royal inventions include a new type of floating mechanical aerator for ponds and waterways, and engineering to produce 'biodiesel' fuel from agricultural waste.

His Majesty's strong right arm and royal emissary in this enterprise is his beloved second daughter, Her Royal Highness Princess Maha Chakri Sirindhorn. During mid-May, the Princess, on behalf of her father, ceremonially opened a new controlled-environment experimental mushroom propagation laboratory at Chitralada Villa – financed by the King himself. Mushroom cultivation is playing a burgeoning role in several Royal Chitralada Projects. The fungi are valued for their medical as well as food applications. Although not yet fully accepted by the medical profession, certain varieties of mushrooms are attracting increasing attention for the treatment of cancer.

A second production line will soon be completed at the Chitralada UHT milk processing plant, more than doubling the production of milk, milk tablets, several types of yogurt and other dairy products, including cheddar- and gouda-style cheeses. Milk is brought in as well as produced directly from the 40-strong herd of cows at the Villa.

Chitralada projects are classified as either 'non-business' or 'semi-business', according to their commercial viability, the main aim being to demonstrate ideas for individuals and groups to develop further. 'We are about demonstrating and encouraging people to take-up our ideas,' affirms Dr Rosarind Smitabhindu, Royal Chitralada Projects' energetic Deputy Director. She adds, 'We focus on the promotion and encouragement of cooperative self-supporting groups.'

Most of the ideas fostered as Chitralada Projects are low-tech and reflect traditional agriculture and cottage industry handicraft. Products range from ceremonial candles to useful and decorative items for home and business. But Chitralada's main focus is on the useful rather than the decorative. Some royal projects even venture towards the outer galaxies of modern science. A particular scientific initiative, under the direction of Princess Sirindhorn, is to develop plant genetics in the interest of agriculture and food production.

As far back as 1961, His Majesty had realised that the rapid deforestation then taking place – which successive governments could or would not hinder – was taking a terrible toll on the country's traditional agriculture and rural society. The young monarch, therefore, established

a demonstration forest at Chitralada Villa, his family home, with the aim of preserving forest species that were under threat.

The Plant Genetic Conservation Project and the associated Germplasm Database Centre and Herbarium play important roles today in the collection, identification and experimentation of plant genetic data. The Chitralada Villa work is in collaboration with the Royal Forestry Department, Prince of Songkhla University, and other scientific institutions. Besides working with a number of Thai research bodies, Chitralada Royal Projects also collaborate with overseas academic institutions such as Hohenheim University, Stuttgart, Germany.

With deep concern for the welfare of his poorer subjects, in August 1979 His Majesty established his first up-country venture, the Khao Hin Sorn Royal Development Study Center (RDSC), at Phanom Sarakam, in Chachoengsao Province, about 100 km east of Bangkok. Since then, five further RDSCs, coordinated by the Royal Development Projects Board, Bangkok, now encompass a wide variety of demonstration studies in forestry, agriculture and fisheries countrywide.

Below left to right: mushroom farming; handicrafts training; ceremonial candles made on site; the royal dairy herd.

Richard Mogg and Royal Chitralada Projects





Inspecting fingerlings at the aquaculture complex Huai Hong Khrai.

Richard Mogg

The first Khao Hin Sorn RDSC exemplifies a holistic approach to sustainable agriculture and cooperative community development – including childcare – with which local people can supplement income. But this year Khao Hin Sorn suffered badly from Thailand's prolonged drought.

'Every year we have enough water, but this year we are very low', explains Ms Suda Swattanakoon, Khao Hin Sorn's Director. In a total area of 10 895 rai (a Thai measure, where one 'rai' equates to 1600 square metres), the multi-faceted RDSC has 600 agricultural technology students to teach, in association with Chachoengsao College of Agriculture. Ms Suda and her staff, stoic about the water shortage, are determined to demonstrate how to preserve the RDSC's forest, pasture and crops, as well as a 15 rai herbal garden with more than 800 varieties. As one of many innovations, the Khao Hin Sorn herbarium, offers a popular herbal massage and bath service to the public at weekends – the revenues from which are reinvested to maintain the teaching facility.

Although deforestation may not be the direct cause of Thailand's drought – and there is some argument about this – wholesale destruction of the trees has eliminated the moisture retention of watersheds. Accelerated runoff is causing widespread desertification in the once heavily forested north and north-east and, as a result, much of the agriculturally essential topsoil has floated away out to sea. This makes the recovery of viability demonstrated by the RDSCs an essential element that will support sustainable agriculture, by extension assisting the country's general recovery.

Huai Hong Khrai RDSC, Doi Saket, Chiangmai, in the Thailand's far north, demonstrates how best to conserve what little water there is. The pristine forest had been ripped-out, and the land destabilised. When villagers lost their forest livelihood, social disintegration set-in. Twenty years ago, His Majesty acquired the land and set about reinstating the forest cover and other amenities. To trap water on the hillside, numerous small check-dams were built out of earth and stone, or even bamboo. Storage dams – the largest impounding two million cubic metres of water – await the benison of rain.

The upland RDSC today is a pleasing vista of young forest in an idyllic setting of low mountain terrain. Of the project's 1300 ha total area, an outer 40 per cent is rain-fed forest. Inside this, 15 per cent is irrigation-fed

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trees, while a core 10 per cent is devoted to market gardening and a further 10 per cent to pasture. The north is suffering drought as much as the rest of the country, but Huai Hong Khrai has long-term water resources in eight reservoirs with a combined capacity of 3.3 million cubic metres.

Mr Sutat Pintasen, Huai Hong Khrai's director of crop cultivation, explains, 'firstly, we teach villagers water management with check dams; secondly, how to conserve the forest. About 10 000 people come here each year for training.'

Financed by the Ministry of Agriculture and Cooperatives, the range of free agricultural technology transfer provided by Huai Hong Khrai includes a one-day crash-course in chemical-free vegetable growing and a three-day tutorial in mushroom cultivation. Annual cost of Huai Hong Khrai demonstrations, development and research, according to Mr Sutat, is about 40 million baht (AU\$1.3 million).

Huai Hong Khrai Study Center staff travel widely throughout the north to teach the gospel of watershed recovery and management technology. According to Mr Sutat, 'an important strategy in highland forest recovery is to build many small dams to collect water. A simple check-dam can be built for only 2000 baht.'

Besides his deep feeling for forestry and watershed recovery, the Huai Hong Khrai agronomist's wide expertise includes market gardening and the development of vetiver grass for restabilisation of eroded land.

Chitralada Royal Projects, in Bangkok, and its outstations, come under His Majesty's direct supervision, while the Office of the Royal Development Projects Board, Bangkok, chaired by the Prime Minister, supervises the RDSC projects for him. The Chaipattana Foundation, a registered charity, fosters independent sustainable development projects that His Majesty believes will benefit the country. Her Majesty Queen Sirikit, meanwhile, oversees a range of projects concerning minority interests and the development of traditional handicrafts. Details of the royal family's social and agricultural development study interests are posted online (see www.kanchanapisek.or.th).

Thailand now stands at a crossroads of socio-economic development. Foreign tourism is diminishing and manufactures are facing increasing problems in major global markets. But while government is committed to development of large and costly projects in technical infrastructure, His Majesty, on the other hand, steadfastly encourages the practice of self-sufficiency and sustainable development. Water and forests are joint keynotes of the royal message to the Thai people. The royal projects – with their ethos of sustainable development in terms of and innovative technology – affirm His Majesty's intent.

More information:

About projects undertaken by His Majesty King Bhumibol Adulyadej:
www.geocities.com/RainForest/Vines/1701/kingm12.htm