Flower production in Martinique

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ABSTRACT
The flower production subsector is a dynamic area. Research on crop management sequences, conservation of cut flowers and widening the range of exportable flower varieties will allow Martinique to meet the increased market demand for flowers.

Cultures florales à la Martinique.

RÉSUMÉ
La filière des cultures florales est un secteur dynamique. Des recherches menées sur les itinéraires techniques, la conservation des fleurs coupées et l'élargissement de la gamme des variétés de fleurs exportables permettront à la Martinique de faire face aux demandes croissantes du marché.

Cultivos florales en la Martinica.

RESUMEN
El sector de los cultivos florales es un sector dinámico. Unas investigaciones sobre los itinerarios técnicos, la conservación de las flores cortadas y la extensión de la gama de las variedades de flores exportables permitirán a la Martinica enfrentarse a las demandas crecientes del mercado.

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KEYWORDS
Martinique, cut flowers, production data, storage, choice of species, research.

MOTS CLÉS
Martinique, fleur coupée, donnée de production, stockage, choix des espèces, recherche.

PALABRAS CLAVES
Martinica, flor cortada, datos de producción, almacenamiento, selección de especies, investigación.

the subsector and producers

In 1991, plant production represented 84% of the total value of agricultural production for Martinique – it is still the key agricultural subsector of this French department.

Commercial flower production has existed for 25 years in Martinique, where:
– in 1991, gross proceeds from the flower and plant subsector were 46.3 million FF. This indicates marked growth for this product, with a four-fold increase in 10 years (table I);
– flowers represent only a small portion of the overall plant production (3%).

In 1973, there was about 200 ha of area allocated to flower and ornamental plant production. This has doubled to 400 ha over the last 20 years (table II). In 1992, the export volume of cut flowers, mainly towards Europe, was low: 138 t, while 25 t of foliage was exported. In 1993, exports reached 134.5 t with 10.5 t of flamingo flowers and 72.5 t of red ginger flowers (source: Répression des fraudes). Red ginger flower exports have increased considerably (fig 1), from 7 t in 1981 to 94 t in 1991, to the detriment of flamingo flower exports, which decreased from 68 t in 1981 to 24 t in 1991.

In domestic markets, the most popular flowers, in terms of overall sales, are flamingo flowers and so-called temperate environment flowers, ie rose, chrysanthemum, gladiolus, gerbera (5 ha of protected crops).

There has also been a noticeable increase in other areas, such as foliage plants (photo 1): foliage of *Anthurium*, *Alpinia sanderae*, *A zerumbet variegata*, *Philodendron*, cordyline, *Alocasia macrorrhizos variegata, Sindapsus aureus*, etc.

flower cropping area

On the basis of a quick survey, current flower producers were roughly classified according to surface area cropped and ultimate goals:
– approximately 1 000 growers own small 1 000-5 000 m^2 plots; flower crops are often sold on domestic markets, complementing other farming activities;
– two hundred 0.5 to 1.5 ha holdings are essentially devoted to ornamental horticulture, for domestic and export markets;
– on a dozen large holdings, considerable financial and human resources are allocated to ornamental horticulture:
. shaded nurseries and glasshouses (15% of protected crop areas are devoted to flowers);
. packing sheds;
. mechanization and irrigation;
. tourist reception facilities;

Table I
Economic importance of plant production in Martinique (Source: Direction de l'agriculture et de la forêt [DAF]).

	1981		*1991*	
	FF (thousands)	*in %*	*FF (thousands)*	*in %*
Vegetables	245 383	30.7	426 870	26.3
Fruits	333 633	41.7	818 544	51.4
Bananas	277 104	34.6	721 805	45.3
Pineapple	30 123	3.8	59 800	3.7
Sugarcane	45 171	5.6	72 463	4.6
Flowers and plants	11 263	1.4	46 320	2.9
Total plant production	637 828	80.0	1 363 240	84.0
Total livestock production	163 634	20.0	257 357	16.0
Total agricultural production	801 192	100	1 620 597	100

Table II
Growth of flower cropping areas in Martinique in hectares (Source: DAF).

	1981	*1990*	*1991*
Flamingo	280	315	316
Red ginger flowers	11	62	62
Heliconias	6	5	15
Others	13	40	28
Total	310	422	421
N° of holdings	1 110	1 580	1 580
Average area (ha)	0.28	0.26	0.27

. local shops and sales outlets (airport);
. facilities in the Paris area;
. direct sales to private individuals *via* Chronopost mailing;
. technical and commercial staff.

phytosanitary problems

Phytosanitary problems affecting flamingo and red ginger flower crops in Martinique are summarized in table III. They are due to fungi, bacteria, nematodes, insects and viruses.

ongoing research in the French overseas departments

Scientific publications on tropical flowers have mainly focused on flamingo flowers, especially the bacteriological aspect (INRA[1], GRISP[2], SPV[3]). ORSTOM[4] and the Martinique SPV (crop protection service) have drawn up an exhaustive inventory of nematodes affecting red

Notes:
1) INRA: Institut national de la recherche agronomique, France.
2) GRISP: Groupement de recherches et d'intérêt phytosanitaire, France.
3) SPV: Service de la protection des végétaux, France.
4) ORSTOM: Institut français de recherche scientifique pour le développement en coopération, France.

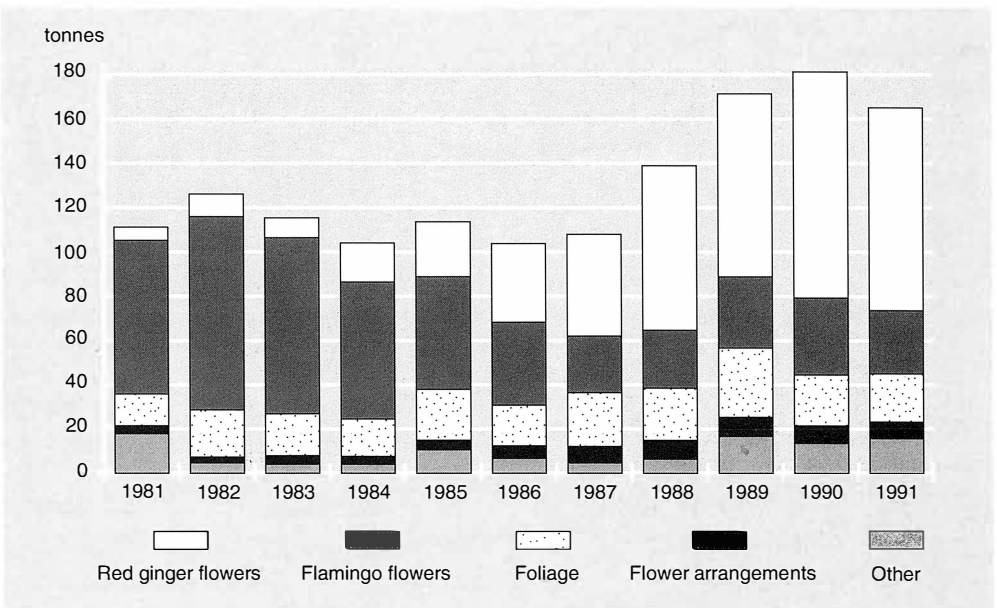

Figure 1
Flower export patterns in Martinique (tonnes) from 1981 to 1991.

Photo 1
Production of Areca palm trees, Chrysalidocarpus lutescens, *Palmeae, for the export of foliage and large trees to Holland; Soufrière, Saint Lucia.*

Notes:
5) UE: Union européenne.
6) CNIH became IFHP: Institut français de l'horticulture et du paysage, France.

ginger and flamingo flowers (1992-1993). The Martinique SPV has also established an inventory of diseases of all tropical and temperate flowers (1993).

In Guadeloupe, CIRAD-CA has launched a research programme on flower crops involving development of techniques to micropropagate hybrid flamingo flowers, red ginger flowers and foliage plants, eg, *Alpinias zerumbet variegata* and *Alocasia macrorrhyzos variegata.*

Moreover, INRA and CIRAD-FLHOR have set up two programmes:
– research on new colours for *Alpinia purpurata*, which is currently only found in red or pink tones (photo 2);
– study on pollination and hybridization parameters for *Alpinia purpurata.*

INRA has tested several hydroponic solutions and substrates on *Anthurium andreanum* hybrids (1990-1993).

CIRAD-FLHOR research in Martinique

Flower growers in Martinique have long been hoping that a flower crop research programme would be set up. For various administrative reasons, this phytotechnical programme, supported by subsector operators, was only set up in 1993. It is mainly funded by the Martinique Conseil régional, the French ministère de la Recherche and the UE[5] (Stride programme, measure 5-1).

Within the Comité d'orientation de la recherche en horticulture à la Martinique (CORHAM),

Table III
Phytosanitary problems concerning flower crops in Martinique.

	Flamingo flower	*Red ginger flower*
Fungi	Anthracnose irregularly controlled *Phythium* sp: soil-borne fungus	
Bacteria	*Xanthomonas campestris* pv *Diffenbachiae*: identified on a few northern holdings: plague scale *Pseudomonas* sp: not very virulent	*Erwinia carotovora* *E chrysanthemi*: irregular development
Nematodes	*Meloidogyne* sp *Radopholus similis* *Helicotylenchus* sp *Rotylenchulus reniformis* *Aorolaimus* sp	*Meloidogyne* sp *Rotylenchulus reniformis* *Helicotylenchus* sp often linked with previous vegetable cropping
Insects	Whitefly, aphid, scale	Whitefly, aphid, scale
Viruses	CMV, uncommon	
Unicellular organisms		Probably a *Phytomonas* trypanosome, causing serious damage (+ than 30% of holdings)

reestablished in 1993, producers have delineated a wide-ranging three-phase study programme: survey of crop management sequences, conservation of cut flowers and extension of the flower variety range.

survey of crop management sequences

A study is presently being conducted on the main producers' farms to identify the different crop management sequences used. It should be noted that various producers use different fertilizers and, moreover, applications are irregular. The development of efficient fertilization methods is a CIRAD-FLHOR research priority.

Studies to develop new crop management sequences, or to confirm existing ones (for flamingo and red ginger flowers, the two most commonly-grown flowers), will be carried out through research on glasshouse and shaded nursery crops and on hydroponics (for flamingo flowers).

conservation of cut flowers

Studies on different parameters affecting the conservation of cut flamingo flowers and red ginger flowers and their vase-life have focused on: temperature, pre-cooling, water-treatment solutions (STE) and cooling, fresheners and sugar-based chemical compounds, silver salt-based anti-ethylene treatment, hygrometry and packaging.

CNIH[6], CNRS and the International Institute of Refrigeration have already carried out similar studies on temperate flowers.

The research under way in Martinique primarily aims at providing regional producers with better advice on ways to obtain very high quality cut flowers.

The second goal is to improve the response to market demand. The export sales campaign extends from November to June, and flowers do not sell well outside of this period. Flower sale peaks occur during the Christmas and New Year's celebrations and around Mother's Day in May; demand is thus very high and the Martinique supply is insufficient. Producers would be better prepared to meet the high market demand if they could store flowers from one to several harvests without altering their vase-life.

Photo 2
Alpinia purpurata *(fuchsia hybrid),* Zingiberaceae; *Saint-Joseph, Martinique.*

An inexhaustible range of studies has been planned to address these important challenges:
– refrigerated storage;
– refrigerated storage combined with the use of polybags to limit flower respiratory activity (tests are being conducted under modified atmospheric conditions);
– storage under controlled atmospheric conditions.

Photo 3
Bouquet of Protea repens, Proteaceae, *from Australia, Rungis national interest market.*

Some flowers could be exported by sea freight if fresh flowers could be conserved, thus considerably reducing shipping charges.

extension of the flower variety range

There is a clear need to widen the range of flower varieties produced in Martinique in order to confirm existing markets and capture new ones. Two flower families are therefore being bred, Musaceae and Proteaceae, for innovative purposes:

– within Musaceae, *Heliconia* sp that meet export criteria can be found on islands in the vicinity of Martinique, but are not yet part of the local flora;

– the Protaceae family is native to South Africa and Australia (photo 3), and includes species that would be highly interesting for export, but they are still totally unknown in the West Indies.

The adaptation potential of these introduced species should be studied. Moreover, new products have appeared on the market, such as flowered and leafy shoots, which could, with some presentation innovations, be sold as finished products, eg, as bouquets in kit-form or blister-paks.

conclusion

The flower subsector is dynamic in Martinique, with high quality and high added value products. The new flower research programme addresses the needs of operators in this subsector which is currently being restructured. This diversification support should, for efficiency purposes, be combined with detailed market analyses.