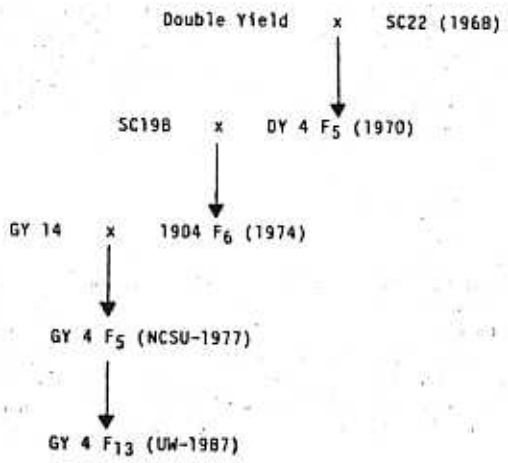

Fig. 1. History of breeding and development of Gy 4.

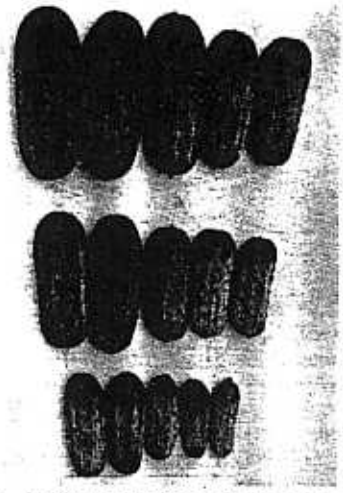

Fig. 2. Typical fruits of Gy 4 pickling cucumber inbred.

Table 3. Diseases for which Gy 4 has been evaluated in field and greenhouse tests.

Pathogen	Common name	Test[z]	Reaction[y]
Cladosporium cucumerinum Ell. & Arth.	Scab (spot rot)	GH + F	R
Cucumber mosaic virus	CMV	GH + F	M
Pseudomonas syringae pv. *lachrymans* (Smith & Bryan) Young et al.	Angular leafspot	GH	R
Colletotrichum orbiculare (Berk. & Mont.) von Arx	Anthracnose	GH + F	R
Pseudoperonospora cubensis (Berk. & Curt.) Rostow	Downy mildew	GH + F	R
Sphaerotheca fuliginea (Schlecht.: Fr.) Poll.	Powdery mildew	GH	R
Fusarium oxysporum (Schlecht.) Snyd. & Hans f. sp. cucumerinum Owen	Fusarium wilt		R
Didymella bryoniae (Auersw.) Rehm	Gummy stem blight	F	I
Rhizoctonia solani Kuhn	Belly rot	F	I

[z]Tests were on mature plants in the field (F), or on seedlings in the greenhouse (GH).
[y]Host reaction was resistant (R), moderately resistant (M), or intermediate (I).

Description

Vines. Gy 4 has moderate size, medium-green vines with an indeterminate, branched plant type or habit. Leaves are medium size. Vine growth is less than Gy 14 under hot, humid conditions common to the spring and summer production seasons of the southeastern United States and in the more temperate midwest production areas.

Flowering habit. The plants are gynoecious, nonparthenocarpic, and reach 50% flowering when plants are ≈30 days old (when grown under controlled 30/20C day/night conditions). Flowering is sequential and usually begins at the first node.

Fruits. Gy 4 is a pickling cucumber with short, dark-green fruits and white spines (Fig. 2). The fruits are coarse-spined (moderately warted), and have a slight speckling and striping (not uniform green), as is typical of American pickling cucumbers. Gy 4 has a L : D ratio of ≈2.8 for 35-mm-diameter fruits.

Resistance. Gy 4 has field resistance to seven diseases common in the United States (Table 3): scab, cucumber mosaic virus, downy mildew, powdery mildew, anthracnose, angular leaf spot, and fusarium wilt. It has moderate tolerance to gummy stem blight and Rhizoctonia fruit rot. Gy 4 is susceptible to or untested for reaction to target leaf spot, bacterial wilt, zucchini yellows mosaic virus, and watermelon mosaic virus.

Seeds. Mature seeds of Gy 4 are smaller than those of Gy 14 (produced in North Carolina or Wisconsin), although germination is similar in the two lines.

Availability

Small amounts of breeder seed may be obtained from R.L.L.

HortScience 26(1):77–78. 1991.

Gy 5 Cucumber Inbred and 'Johnston' Hybrid Pickling Cucumber

Todd C. Wehner[1] and Samuel F. Jenkins, Jr.[2]
North Carolina State University, Raleigh, NC 27695-7609

Richard L. Lower[3]
University of Wisconsin, Madison, WI 53706

Additional index words. *Cucumis sativus*, vegetable breeding

Gy 5 is a multiple disease-resistant, gynoecious cucumber (*Cucumis sativus L.*) inbred. It has high combining ability for multiple harvest yield, producing high-yielding hybrids when crossed to monoecious inbred lines. In addition, it has a high level of resistance to anthracnose (*Colletotrichum orbiculare*) under North Carolina field conditions.

Gy 5, in hybrid combination with the monoecious inbred, NCSU M 21, makes the hybrid 'Johnston'. 'Johnston' has about the same yield ($/ha) as 'Regal', a popular, long-fruited cultivar in North Carolina (Table 1). Fruit quality (shape, color, and seed cell size), length : diameter ratio, firmness, bloater resistance, and early yield were about the same for 'Johnston' as for 'Regal'. Anthracnose resistance for 'Johnston' is higher than in

Received for publication 5 Sept. 1989. The use of trade names in this publication does not imply endorsement by the NCARS of the products named, nor criticism of similar ones not mentioned. Research funded in part by a grant from the North Carolina Pickle Producers Assn. We gratefully acknowledge the technical assistance of R.R. Horton, Jr. and J.C. Mather. The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked *advertisement* solely to indicate this fact.

[1]Professor of Horticultural Sciences.
[2]Professor of Plant Pathology (deceased).
[3]Professor of Horticulture.

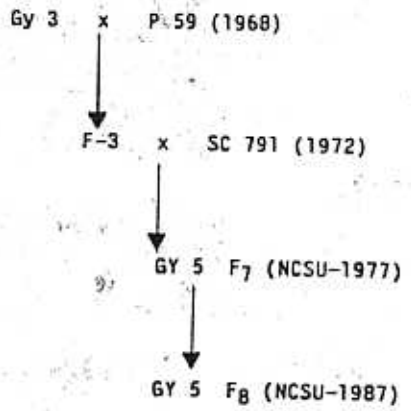

Fig. 1. History of breeding and development of Gy 5.

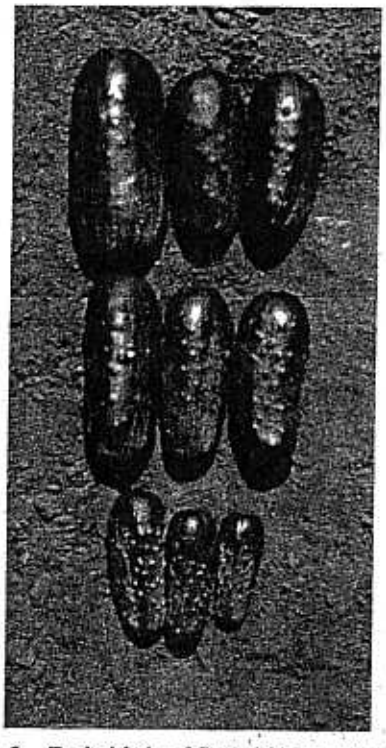

Fig. 2. Typical fruits of Gy 5 pickling cucumber inbred.

cultivars with moderate resistance like 'Carolina' and 'Regal'.

Origin

Gy 5 originated from the cross of the multiple disease-resistant gynoecious inbred SC 791 with the high fruit quality inbred NCSU Gy 1 (Fig. 1). Segregating populations were tested for disease resistance in the seedling stage, and for yield, earliness, quality, gynoecious expression, bloater resistance, and disease resistance in the field. Lines inbred to the F_8 were tested for disease resistance and gynoecious expression before being selected for final increase. Final increase was made by self-pollinating a single F_8 plant in the greenhouse and then intercrossing the resulting F_9 progeny in an isolation block in the greenhouse.

Table 1. Performance of 'Johnston' hybrid (Gy 5 x M 21) compared with a set of standard pickling cucumber cultivars for the southeastern United States.[z]

Cultivar	Yield ($/ha)	Earliness ($/ha)	Quality 1–9	Anthracnose 0–9	Firmness (kg)	L : D ratio	Balloon (%)
Johnston	4610	1740	6.8	3.4	8.6	3.4	3
Explorer	3710	1380	6.2	4.4	9.1	2.9	4
Carolina	3980	1590	6.3	4.8	9.1	3.0	5
Calypso	4310	1640	6.3	3.8	9.1	3.1	3
Regal	4960	1740	5.6	4.4	8.2	3.2	3
LSD (5%)	519	393	1.0	0.9	0.5	0.1	2

[z]Data are means over 3 years (1983, 1984, 1985), two seasons (spring, summer) and three replications. Yield data are summed over six harvests. Dollar values based on North Carolina processor prices for grades one through four. Earliness is the yield in harvests one and two. For quality, 1 = poor, 9 = excellent; for anthracnose, 0 = no disease, 9 = plant dead. Firmness is the force required to punch a hole in 45-mm-diameter fruits (10-fruit samples) with a Magness-Taylor tester having an 8-mm tip. L : D is the length : diameter ratio of 35-mm-diameter fruits (10-fruit samples). Balloon is the percentage of the fruit tissue damaged by balloon bloating in a brine tank purged with 100% CO_2 gas.

Table 2. Diseases for which Gy 5 has been evaluated in field and greenhouse tests.

Pathogen	Common name	Test[z]	Reaction[y]
Cladosporium cucumerinum Ell. & Arth.	Scab (spot rot)	GH	R
Cucumber mosaic virus	CMV	GH	M
Pseudomonas syringae pv. *lachrymans* (Smith & Bryan) Young et al.	Angular leafspot	GH	R
Colletotrichum orbiculare (Berk. & Mont.) von Arx	Anthracnose	GH+F	R
Pseudoperonospora cubensis (Berk. & Curt.) Rostow	Downy mildew	GH	R
Sphaerotheca fuliginea (Schlecht.: Fr.) Poll.	Powdery mildew	GH	R
Fusarium oxysporum (Schlecht.) Snyd. & Hans. f. sp. cucumerinum Owen	Fusarium wilt		R
Didymella bryoniae (Auersw.) Rehm	Gummy stem blight	F	I
Rhizoctonia solani Kuhn	Belly rot	F	I

[z]Tests were on mature plants in the field (F) or on seedlings in the greenhouse (GH).
[y]Host reaction was resistant (R), moderately resistant (M), or intermediate (I).

Description

Vines. Gy 5 has moderately long, medium-green vines with an indeterminate branched plant habit. Leaves are medium size. Vine growth is vigorous under hot, humid conditions common to the spring and summer production seasons of the southeastern United States, and in the Midwest.

Flowering habit. The plants are gynoecious, nonparthenocarpic, and reach 50% flowering when plants are ≈30 days old (when grown under controlled 30/20C day/night conditions). Flowering is sequential and usually begins at the first node.

Fruits. Gy 5 is a pickling cucumber with medium-long, light green fruits, and white spines (Fig. 2). The fruits are coarse-spined (moderately warted), and have a slight speckling and striping (not uniform green). Gy 5 has a length : diameter (L : D) ratio of 3.1 for 35-mm-diameter fruits.

Resistance. Gy 5 has field resistance to seven diseases common in the United States (Table 2): scab, cucumber mosaic virus, downy mildew, powdery mildew, anthracnose, angular leaf spot, and fusarium wilt. It has moderate tolerance to gummy stem blight and Rhizoctonia fruit rot. Gy 5 is susceptible or untested for reaction to target leaf spot, bacterial wilt, zucchini yellows mosaic virus, and watermelon mosaic virus.

Availability

Small amounts of breeder's seed may be obtained from T.C.W.