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EC69-1216 Cucumber Production Practices for Nebraska

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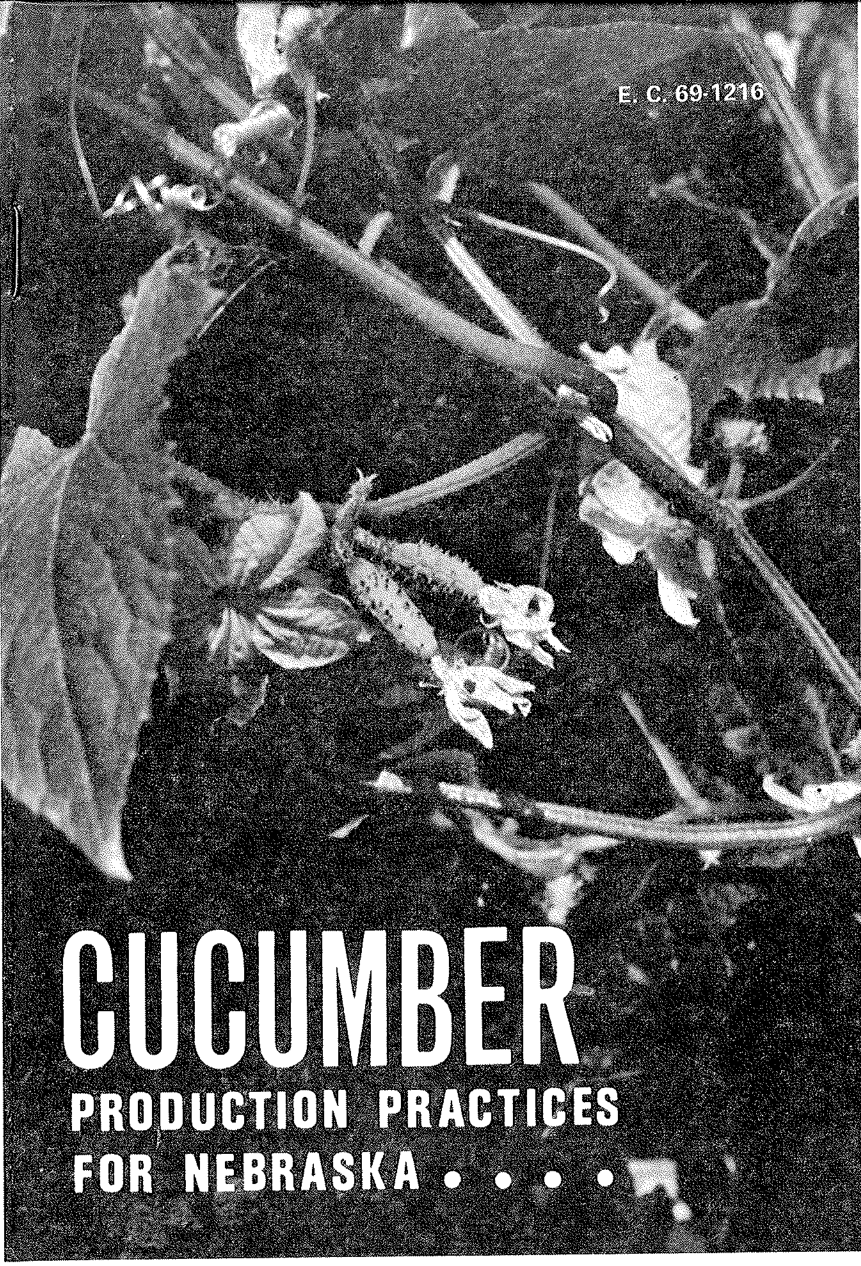

CUCUMBER

PRODUCTION PRACTICES FOR NEBRASKA . . . .

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CUCUMBER Production Practices for Nebraska

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Cucumbers, a promising crop, have recently been produced on a commercial scale in northeast Nebraska, mainly for pickles. Cucumbers are a warm season crop. They are frost sensitive and should have a monthly temperature average of 65-75° F with a minimum of 60° and a maximum of 90°.

Higher temperatures do not hurt the plants as long as moisture content of the soil is adequate. The minimum soil temperature for planting cucumbers is 60° F. The crop requires 45-60 days from planting until harvest, depending on the variety.

Planting dates in different locations in Nebraska, the estimated days for seedling emergence and days from planting to harvest are shown in Table 1.

Table 1. Planting dates, estimated days for seedling emergence; and the days to harvest in different locations in Nebraska.

Location	Planting date	Days to emergence	Days to harvest[a]
Lincoln	5/27	8	52
	6/14	5	52
	6/27	4	44
	7/13	4	45
	7/28	4	49
North Platte	5/24	8	67
	6/5	6	59
	6/19	4	51
	6/28	3	49
	7/30	3	....
Alliance	6/3	11	62
	6/21	8	64
	7/8	7	64
	7/16	6	65
	7/22	5	69
Northeastern Nebr.[b]	5/3	14	56
	5/10	10	....
	5/17	8	....
	5/24	7	....
	5/31	6	....

[a] Based on uniform trials with SMR-58 in 1968.
[b] Based on climatological data.

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Sites and Soils for Cucumbers

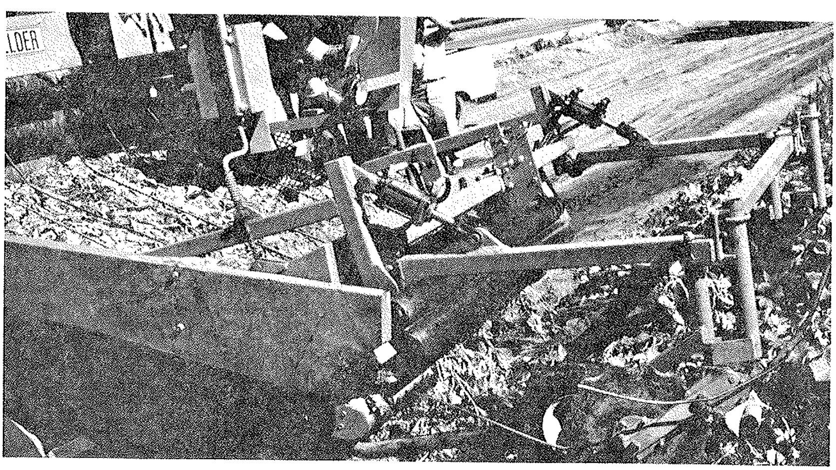
Cucumbers can be grown successfully in most soils in Nebraska. Emphasis should be given to choice of site. For the convenience of management and harvesting, choose a field close to a farm road and a farmstead.

Cucumbers grown for mechanical harvesting—one of the rows already harvested.

If cucumbers are grown where wind is a problem, choose a field protected by a shelterbelt or interplanted with tall growing crops *other than corn.* Corn is the alternate host for the cucumber beetle.

Avoid fields where weeds were a major problem in the previous crop or where Atrazine or other residual herbicides were used.

The seed bed for cucumbers is prepared by plowing to a depth of 5 to 7 inches, disking and harrowing.



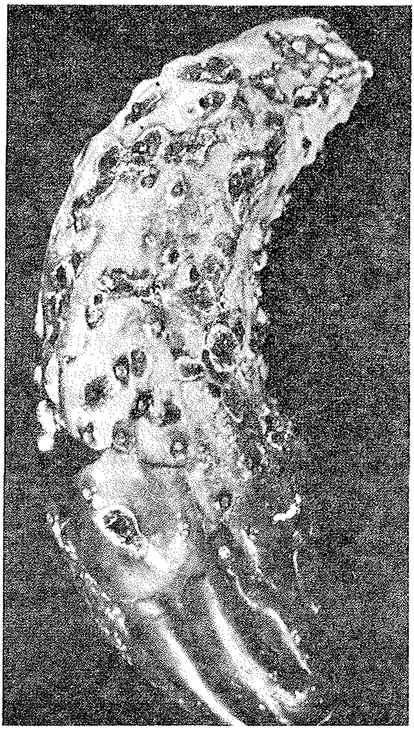
The front part of the cucumber mechanical harvestor.

Varieties

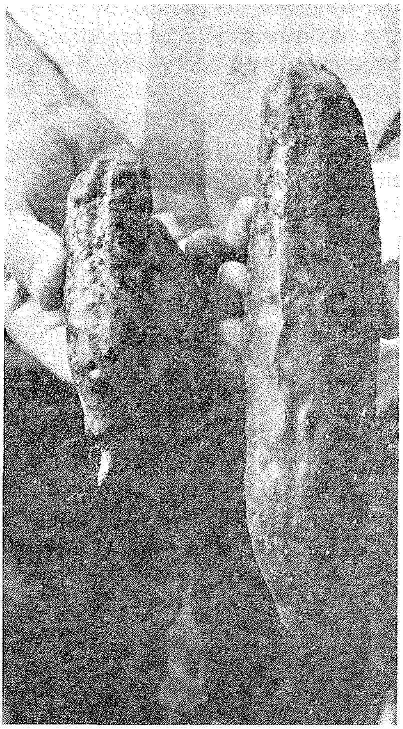
When growing cucumbers for a commercial pickle company, use varieties recommended by the company. Scab and mosaic resistant varieties are essential. There are two types of cucumbers—monoecious and gynoecious. Monoecious types produce male and female flowers on the same plant. Gynoecious types produce only female (fruit) flowers. Monoecious types must be interplanted with gynoecious types for pollination. Ten to fifteen percent of the monoecious type seed is mixed with the gynoecious type.

For *pickling* both varieties SMR 58, and NK 804 or the monoecious type have performed well in Nebraska. Gynoecious hybrid varieties of the pickling type are: Spartan Dawn, Crusader, Piccadilly, Crispy, Pioneer, NK 805 and others. *Slicing types* include varieties such as Tablegreen 65 (SMR) and Marketmore (SMR).

Evaluation of other varieties and hybrids is under investigation.



A cucumber fruit showing scab symptoms.



Healthy and mosaic infected fruits side by side.

Spacing and Seeding

For pickling, rows are usually 40 inches apart and could be less (20 to 30 in.). For convenience in hand picking, space plants 24 to 40 inches apart. For slicers, rows are 5-6 feet apart and the plants 10-15 inches in the row. Mechanical harvesting is in the experimental stage and will have a great impact on spacing for growing pickling cucumbers.

In general, the crop is direct seeded at the rate of 1.5 to 2 lbs. per acre depending on row spacing. For an early crop of slicers, transplanting may be done after starting seed in bands or peat pots which hold the soil around the roots in setting. In this case 0.50-0.75 lb. is needed for growing transplants for an acre.

Fertilizer

Build up the soil before planting cucumbers by plowing down manure (15 to 20 ton/A) or alfalfa, clover or rye. Plow down 30 lbs. N/A with green manure crops.

A pH of 5.5 to 6.8 is optimum for cucumbers. However, cucumbers grow well at higher pH if fertilized properly. Fertilizer rates should be adjusted according to the soil test.

Cucumbers require the following levels of nutrients when grown on mineral soils: 40-100 lbs. of N and P_2O_5/A and 40-100 lbs. of K_2O/A. Half of the fertilizer should be broadcast and the other half applied in bands 2 inches below the seed and 2 inches to the side of the row; or drilled in deep after plowing.

Sidedressing with 30-60 lbs. of N/A when vines begin to spread is important if nitrogen has been leached by frequent rains. It is essential to sidedress the gynoecious types with extra nitrogen to help maintain plant vigor and to reduce the number of "nubbins" later in the season.

Weed Control

Recommended herbicides are:

1. Alanap 3: Apply immediately after planting in warm soils at the rate of 1.5 gal. of the commercial product/A or 3 lbs./A of the active ingredient. Avoid use on extremely early plantings when soil is cold. Alanap is mainly effective for annual broad leaf weed control and incorporation into the soil may be beneficial. Sufficient moisture in the form of rain or irrigation should be supplied for the activation of the chemical.
2. Prefar (bensulide): Apply as preplant at the rate of 1.5 gal./A of the commercial product or 6 lbs. of active ingredient/A. It gives good control of annual grassy weeds but is weak on broadleaf weeds. Its use is beneficial. Certain crops are sensitive to Prefar 4E but can be planted 18 months after application. *Check the label* for the specified crops and frequency of Prefar application.
3. Dyanap: Preliminary tests in 1969 indicate excellent control is obtained with the chemical at 1.5 gal/A.

Cultivation

Thin cucumber plants when they are about 6 inches high. If planted in hills thin to 2 plants per hill. If drilled in rows, thin to 24 to 40 in. between plants depending on row spacing. Cut plants off with a sharp hoe; *do not pull plants.* Pulling plants damages roots of remaining plants.

To avoid root injury never cultivate deeper than 2 inches. Cultivate wherever necessary to control weeds; and use *sweep type* implements, not shovels. One hand weeding may be necessary to remove *in row* weeds if a herbicide has not been used.

Irrigation

Cucumbers and other members of the cucurbitaceous family are sensitive to lack of water. Preplant irrigation to fill the soil profile to a depth of 3 feet is desirable. Cucumbers root to a depth of 3 to 4 feet.

Wilting and flaccid appearance of leaves usually indicates a need for water. Furrow or sprinkler irrigation is desirable for obtaining best yields. Irrigation during hot weather (90° -100° F) should be done frequently, using small amounts of water (1 to 2 inches). A general rule is that cucumbers need 1 to 2 inches of moisture each week in the form of rain or irrigation for maximum growth and production.

Insect Control

The two most troublesome insects are the *spotted and striped cucumber beetles.* Both insects are carriers for the bacterium causing bacterial cucumber wilt. The beetles and the bacterium are intimately related because the bacterium overwinters in the beetles. Eradication of the beetles is the only control for cucumber wilt. Other insects such as aphids and mites may cause problems. One of the following insecticides may be used for controlling insects:

1. Carbaryl (Sevin): In case of spraying, 1.25 lbs./A of 80% WP are used. With dust equipment, use 5% dust over the row or hills. Sevin controls the beetles but *it is very toxic to bees.*
2. Methoxychlor: 2 lbs./A of 50% WP or 5% dust. Methoxychlor provides good control for beetles and vine borers and is less toxic to bees.
3. Malathion: 2 lbs./A of 25% WP or 5% dust. (Effective for aphids and mites but not cucumber beetle.)
4. Kelthane: 18.5% WP at 2-3 lbs./A for control of mites.
5. Tedion: 25% WP at 2-3 lbs./A for control of mites.

Early control is essential to avoid a build-up of insects. Start beetle control at time of field setting or plant emergence and continue as needed. Spray in the afternoon and evening to avoid injury to plants due to "burning" and the killing of bees. *Bees are beneficial for pollination* of female flowers. Poor pollination results in a reduced fruit set and a high percentage of misshapen fruit.

Disease Control

The seed companies usually treat the seed with fungicides to control seed and soil-borne diseases.

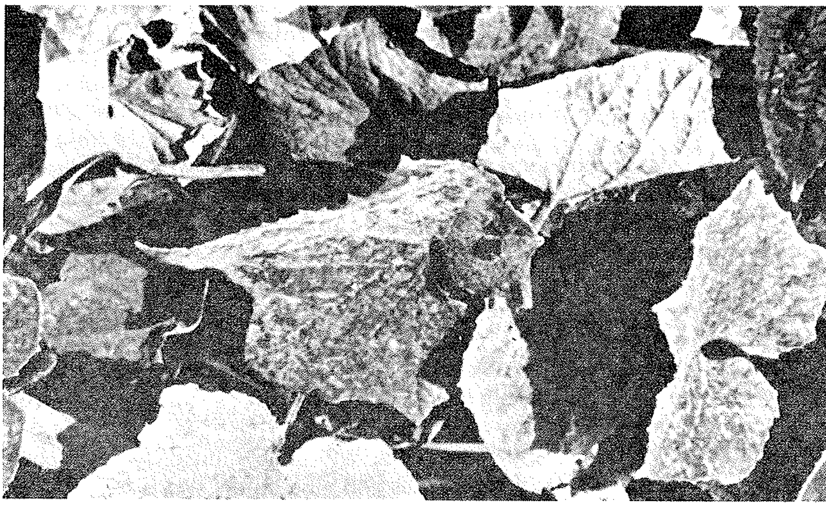
Damping off of seedlings: Sprinkle or spray Captan 50 over the row at the rate of 1 lb. active ingredient in 100 gal. of water.

Other leaf and fruit diseases and their controls are shown in Table 2. Application rates for chemicals should follow recommendations on the label.

Table 2. Cucumber leaf and fruit diseases and their controls.

Diseases	Manzate D or Dithane M-45	Polyram	Karathane	Fixed Copper
Powdery Mildew	F	G	E	F
Angular Leaf Spot	G[a]	?	U	G[a]
Alternaria	E	?	U	U
Anthracnose	F	E	U	U

E = Excellent, G = Good, F = Fair and U = Unsatisfactory control.
[a] Use in combination or as alternate sprays for effective control.



Powdery mildew symptoms on the leaves.

Angular leaf spot symptoms on the leaves.

Training Vines

For pickles, harvesting starts 4-5 days after the opening of the female flowers. The smaller the fruit the less the yield but the higher the price paid per 100 lbs.

The following grades are set up for pickling cucumbers:

No.1—up to one inch (1") in diameter.
No.2—from one inch (1") to one inch and one-fourth (1 1/4").
No.3—from one and one-fourth inch (1 1/4") to one and three-fourths inches (1 3/4") in diameter.
No.4—from one and three-fourths inches (1 3/4") to two and one-sixteenth inches (2 1/16") in diameter.

Do not allow any fruit to mature on the vine, particularly before the first picking. Mature fruits reduce the set and quality of later fruits. Harvest every 2 to 3 days depending on fruit development. *Pick but leave all misshapen fruit in the field.* Misshapen fruit is not marketable. Pick thoroughly at each picking. The picking season is generally 6 to 8 weeks long.

Cucumbers for pickling must be delivered to the processor within 24 hours of picking. Haul in refrigerated trucks or during the night. Harvested pickles should not be left in the sun since they will lose weight and quality. Deliver to the buying stations in wooden containers of about one bushel capacity the day they are harvested.

Abbreviations

SMR = Scab Mosaic Resistant; Oz = Ounce; WP = Wettable Powder; A = Acre.