US00PP23022P3

(12) **United States Plant Patent**
Perl et al.

(10) **Patent No.: US PP23,022 P3**
(45) **Date of Patent: Sep. 11, 2012**

(54) **GRAPEVINE NAMED 'BIG PEARL'**

(50) Latin Name: ***Vitis vinifera* L.**
Varietal Denomination: **BIG PEARL**

(75) Inventors: **Avichai Perl**, Rishon Lezion (IL); **Nachman Sahar**, Rehovot (IL); **Oded Degani**, Moshav Sde Moshe (IL); **Tatiana Okun**, Rehovot (IL); **Arie Sarfian**, Nes-Ziona (IL); **Hanan Bazak**, Carmei Yossef (IL); **Refael Eliassi**, Neve Yamin (IL); **Ahuva Daos**, Ganey Hmoshava Mazkeret Batia (IL)

(73) Assignee: **State of Israel, Ministry of Agriculture & Rural Development, Agricultural Research Organization**, Bet Dagan (IL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/929,131**

(22) Filed: **Jan. 3, 2011**

(65) **Prior Publication Data**

US 2011/0277196 P1 Nov. 10, 2011

(30) **Foreign Application Priority Data**

Jan. 4, 2010 (IL) 4233

(51) **Int. Cl.**
A01H 5/00 (2006.01)

(52) **U.S. Cl.** **Plt./206**

(58) **Field of Classification Search** Plt./205
See application file for complete search history.

Primary Examiner — Annette Para
(74) *Attorney, Agent, or Firm* — Foley & Lardner LLP

(57) **ABSTRACT**

This invention relates to a new and distinct variety of grapevine named 'BIG PEARL'. The new early ripening, very fertile grapevine variety is particularly characterized by an attractive berry color, a very uniform bunch and a firm berry with tender crunchy skin.

5 Drawing Sheets

Botanical name of the genus and species of the plant claimed: *Vitis vinifera* L.

Variety denomination: 'BIG PEARL'.

PRIORITY CLAIM

This application claims priority under 35 U.S.C. §119(f) of the Israeli Plant Breeders' Rights Application No. 4233 filed Jan. 4, 2010.

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct grapevine variety, botanically known as *Vitis vinifera* L., and hereinafter referred to by its variety denomination 'BIG PEARL'.

The new grapevine 'BIG PEARL' is a product of a controlled breeding program conducted by the inventors, Avichai Perl, Nachman Sahar, Oded Degani, Tatiana Okun, Arie Sarfian, Hanan Bazak, Refael Eliassi and Ahuva Daos at The Volcani Center, located in Bet Dagan, Israel. The objective of the breeding program was to develop a new early ripening, very fertile grapevine variety particularly characterized by attractive berries with yellowish green color which are uniform in size and shape and are firm with tender crunchy skin.

The new grapevine 'BIG PEARL' originated from a cross made by the inventors in 2004 at The Volcani Center. The female or seed parent is the grapevine *Vitis vinifera* L indicated as 'ARO 2117' (unpatented), in the inventors' collection located in Bet Dagan, Israel, and the male or pollen parent is

the grapevine *Vitis vinifera* L. indicated as 'ARO 1717' (unpatented), in the inventors' collection.

The new grapevine 'BIG PEARL' was observed and selected by the inventors within the progeny of the stated cross in a controlled environment in 2007 at The Volcani Center.

Asexual propagation of the new grapevine variety by bud grafting was first performed in January 2008 at The Volcani Center, and has demonstrated that the combination of characteristics as herein disclosed for the new variety is firmly fixed and retained through successive generations of asexual propagation. The new cultivar propagates true-to-type.

SUMMARY OF THE INVENTION

'BIG PEARL' can be grown in various climates and growing conditions. The variety produces and maintains a strong vigorous plant and consistent fruit production from end June through end July in Bet Dagan, Israel.

The following traits have been repeatedly observed and are determined to be characteristics of 'BIG PEARL', which in combination distinguish this grapevine as a new, unique and distinct variety.

1. Very fertile;
2. Early ripening;
3. Firm berry with tender crunchy skin;
4. Attractive yellow green berry color; and
5. Berries which are uniform in size and shape.

Plants of the new grapevine 'BIG PEARL' differ from plants of the parents, *Vitis vinifera* L. 'ARO 2117' (unpatented) and *Vitis vinifera* L. 'ARO 1717' (unpatented), in the following characteristics described in Table 1.

TABLE 1

Comparison with parent varieties.

Characteristic	New Variety 'BIG PEARL'	Female Parent 'ARO 2117' (unpatented)	Male Parent 'ARO 1717' (unpatented)
Berry shape	broad elliptic	rounded	elongated
Berry color of skin	yellowish green	yellow green	yellow green
Berry thickness of skin	thick	very thick	medium
Seeds	absent	absent	absent

Of the many commercial varieties known to the present inventors, the most similar to the new grapevine 'BIG PEARL' are *Vitis vinifera* L. 'SUGRAONE' (U.S. Plant Pat. No. 3,106) and *Vitis vinifera* L. 'PRIME' (registered for Israeli Plant Breeders' Rights No. 1467), which differ from the new grapevine 'BIG PEARL' in the characteristics described in Table 2:

TABLE 2

Comparison with similar varieties.

Characteristic	New Variety 'BIG PEARL'	Comparison Variety 'SUGRAONE' (patented)	Comparison Variety 'PRIME' (registered)
Berry shape	broad elliptic	obtuse ovate	oblong
Berry color of skin	yellowish green	yellow green	yellow green
Berry thickness of skin	thick	medium	medium
Seeds	absent	absent	absent

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

The accompanying photographs illustrate the overall appearance of the new grapevine 'BIG PEARL' showing the colors as true as is reasonably possible with colored reproductions of this type. Colors in the photographs may differ slightly from the color values cited in the detailed morphological description, which accurately describe the color of 'BIG PEARL'.

FIG. **1** shows a typical bunch of 'BIG PEARL' on the plant.

FIG. **2** shows a typical mature leaf of 'BIG PEARL'.

FIG. **3** shows a typical inflorescence of 'BIG PEARL'.

FIG. **4** shows a typical growth tip of 'BIG PEARL'.

FIG. **5** shows a typical berry of 'BIG PEARL'.

DETAILED MORPHOLOGICAL DESCRIPTION

The new *Vitis vinifera* L. 'BIG PEARL' has not been observed under all possible environmental conditions. The phenotypical descriptions and color designations stated for the new variety may vary, depending on variations in environmental factors, including weather (temperature, humidity and light intensity), day length, soil type, location and cultural conditions, without any change in the genotype of the grapevine.

The following description of 'BIG PEARL' unless otherwise noted, is based on observations and measurements taken during 2010 and 2011 at The Volcani Center, on plants grown in the vineyard located in Bet Dagan, Israel under conditions which closely approximate those generally used in commercial practice. The described plants were grafted on 'Richter110' (unpatented) and planted at a distance of 1.5 m in sandy red loam soil at an elevation of about 30 meters above sea level with drip-irrigation up to 40 m^3 per hectare in the peak season in the summer and Shefer 737+micro-elements 1.5 ltr. fertilizers in each 5 m^3 of water. Average annual rainfall is about 550 mm, with an average of 350 mm rainfall in winter (December through February). Mean diurnal minimum temperature in January is 7.2° C., and mean diurnal maximum temperature in July is 30.8° C.

Unless otherwise stated, the detailed morphological description includes observations, measurements and values based on three-year-old 'BIG PEARL' plants grown in the vineyard at The Volcani Center, located in Bet Dagan, Israel from 2010 to 2011. Quantified measurements are expressed as an average of measurements taken from a number of plants of 'BIG PEARL'. The measurements of any individual plant, or any group of plants, of the new variety may vary from the stated average.

Color references are made to The Royal Horticultural Society Colour Chart (R.H.S.), 1986 edition, except where general colors of ordinary significance are used. Color values were taken under daylight conditions in full sunlight in Bet Dagan, Israel.

All of the plants of 'BIG PEARL', insofar as they have been observed, have been consistent in all the characteristics described below.

Classification:

Botanical.—*Vitis vinifera* L.

Parentage:

Female or seed parent.—*Vitis vinifera* L. 'ARO 2117' (unpatented).

Male or pollen parent.—*Vitis vinifera* L. 'ARO 1717' (unpatented).

Propagation: Grafting onto 'Richter110' (unpatented), Interspecific Cross, *V. berlandieri* Planch×*V. rupestris* Scheele.

Growing conditions:

Light intensities.—Full sunlight.

Temperature.—Bet Dagan — 30 meters above sea level.

	January	February	March	April
Mean maximum air temperature (° C.)	17.8	18.1	20.1	24.5
Mean minimum air temperature (° C.)	7.2	7.1	8.8	11.5
Mean rainfall (mm)	140.5	96.9	66.1	17.5

	May	June	July	August
Mean maximum air temperature (° C.)	27	29.2	30.8	31.2
Mean minimum air temperature (° C.)	14.6	17.9	20.6	21.2
Mean rainfall (mm)	2.2	—	—	—

	September	October	November	December
Mean maximum air temperature (° C.)	30.4	28.3	24.1	19.7
Mean minimum air temperature (° C.)	19.4	16	11.8	8.6
Mean rainfall (mm)	0.4	20.4	76.2	130.3

Fertilization.—A balanced fertilizer with level of Shefer 737+microelements 1.5 ltr. in each 5 m^3 of water.

Growth regulators.—None applied.

Pruning.—As in commercial practice.

Training.—Y trailing cordon.

Table of characteristics:

Plant.—Time of vegetative bud burst: beginning of March.

Young shoot.—Openness of tip: slightly open. Density of prostrate hairs on tip: very dense. Anthocyanin coloration of prostrate hairs on tip: weak. Green color: green RHS 144 A. Green color of upper side of undeveloped leaf blade: medium green RHS 144 A with over color medium red brown RHS 166B. Green color of lower side of undeveloped leaf blade: light green RHS 144 B with over color medium red brown RHS 166B. Anthocyanin coloration: strong.

Young leaf.—Density of hairs between main veins on lower side of blade: dense. Glossiness of upper side: very strong. Glossiness of lower side: medium.

Shoot.—Length of internode: 8-10 cm. Thickness of internode: 5-8 mm. Color of dorsal side of internode: green RHS 144 B. Anthocyanin coloration of dorsal side of internode: weak RHS 174 A. Distribution of anthocyanin coloration of dorsal side of internode: blushed. Color of ventral side of internode: green RHS 144 B. Anthocyanin coloration of ventral side of internode: absent. Distribution of anthocyanin coloration of ventral side of internode: not relevant. Density of erect hairs on internodes: glabrous. Height of node: about 2 cm. Swelling at node: about 1 mm. Diameter of node: 10-13 mm. Color of dorsal side of node: green RHS 144 B. Anthocyanin coloration of dorsal side of node: weak RHS 174 A. Distribution of anthocyanin coloration of dorsal side of node: blushed. Color of ventral side of node: green RHS 144 B. Anthocyanin coloration of ventral side of node: absent. Distribution of anthocyanin coloration of ventral side of node: not relevant. Pubescence of node: absent. Length of tendril: 20-30 cm. Diameter of tendril at base: about 2 mm. Diameter of tendril at tip: about 1 mm. Pubescence of tendril: absent. Number of bifurcations per tendril: 4-6. Color of tendril: light yellow green RHS 145 B. Anthocyanin coloration of tendril: weak, at lower part, RHS 174 A, blushed on sunny side. Number of consecutive tendrils: more then 3.

Inflorescence.—Length: 16-20 cm. Maximum diameter: 6-8 cm. No. of side branches: 7-12. Attitude of side branches: semi upright. Length of longest side branch: 4-5 cm. Thickness of main axis: 3-4 mm. Green color of main axis: light yellow green RHS 146 D. Anthocyanin coloration of main axis: weak to medium. Pubescence of main axis: very weak.

Flower.—Sexual organs: fully developed stamen and fully developed gynoecium.

Pedicel.—Length: 4-5 mm. Thickness: less than 1 mm. Green color: light yellow green RHS 146 D. Pubescence: absent.

Stamen.—Number: five. Length of filament: 2-3 mm. Thickness of filament: minuscule. Pubescence of filament: absent. Surface: smooth. Color: light green RHS 145 C.

Anther.—Shape: transverse elliptic. Length: minuscule. Color: light green RHS 145 C.

Pollen.—Color: yellow RHS 150 B.

Ovary.—Shape: elliptic. Color: green RHS 144 A. Length: 1-2 mm. Diameter: about 1 mm. Surface: smooth.

Style.—Length: minuscule.

Stigma.—Size: minuscule. Color: yellow RHS 150 B.

Mature leaf.—Blade length: 13-18 cm. Blade width: 15-19 cm. Shape of blade: pentagonal. Green color of upper side: dark green RHS 137 B. Green color of lower side: yellow green between RHS 146 A and 146 B. Glossiness of upper side: absent. Glossiness of lower side: absent. Profile in cross section: flat. Blistering of upper side: weak. Number of lobes: five. Central lobe length: about 8 cm. Central lobe width: 8-10 cm. Upper, side lobe length: 7-8 cm. Upper, side lobe width: 5-7 cm. Pubescence of veins on upper side: medium. Pubescence of veins on lower side: Strong. Green color of veins on upper side: yellow green RHS 144 D. Green color of veins on lower side: light yellow green RHS 145 C. Anthocyanin coloration of veins on upper side: absent. Anthocyanin coloration of veins on lower side: absent. Depth of upper lateral sinus: deep. Arrangement of lobes of upper leaf sinus: slightly overlapping. Arrangement of lobes of petiole sinus: very open. Petiole sinus limited by veins: absent. Length of distal tooth: 9-12 mm. Width of distal tooth: 11-16 mm. Ratio length/width of distal tooth: small. Shape of tooth: straight on both sides. Anthocyanin coloration of main veins on upper side of blade: absent. Density of hairs between veins on upper side of blade: medium. Density of hairs between veins on lower side of blade: strong. Length of petiole compared to main vein: shorter. Length of petiole: 8-10 cm. Petiole thickness: 3-5 mm.

Petiole.—Green color of upper side: green yellow RHS 144 D. Anthocyanin coloration of upper side: red RHS 59 B. Green color of lower side: not visible. Anthocyanin coloration of lower side: Red RHS 59 B. Pubescence: strong.

Fruit.—Time of beginning of berry ripening: N/R.

Bunch.—Size (peduncle excluded): N/R. Length (peduncle included): 17-27 cm. Diameter: 9-12 cm. Weight: 270-310 gr. General shape: narrow triangular. Peduncle length: 3-6 cm. Peduncle thickness: about 5 mm. Peduncle color: light yellow green RHS 144 C. Peduncle lignification: absent. Density: medium.

Pedicel.—Length: 7-11 mm. Thickness: about 1 mm. Color: light yellow green RHS 144 C.

Berry.—Detachment: difficult. Length: about 30 mm. Maximum diameter: about 21 mm. Average weight: 7.2 gr. Shape in profile: broad elliptic. Shape in cross section: rounded. Depression at distal end: present Color of skin (without bloom): yellowish green between RHS 145 B and 145 C. Amount of bloom: none. Surface: smooth, slightly bumpy. Thickness of skin: thick. Adherence of skin to flesh: strong. Flesh color: light Yellowish green RHS 145 C. Flesh anthocyanin coloration: absent. Firmness of flesh: firm. Juiciness of flesh: medium. Particular flavor: absent. Formation of seeds: absent.

Woody shoot.—Length of node: variable. Color (without bloom): brown RHS 177 B. Surface: smooth. Shape in cross section: ribbed. Diameter: about 9 mm. Lenticels: not visible.

Usage: Table grape.

Disease\pest resistance: No atypical resistance has been noted.

What is claimed is:

1. A new and distinct grapevine variety, referred to as 'BIG PEARL', as herein described and illustrated by the characteristics set forth above.

* * * * *

Fig. 1

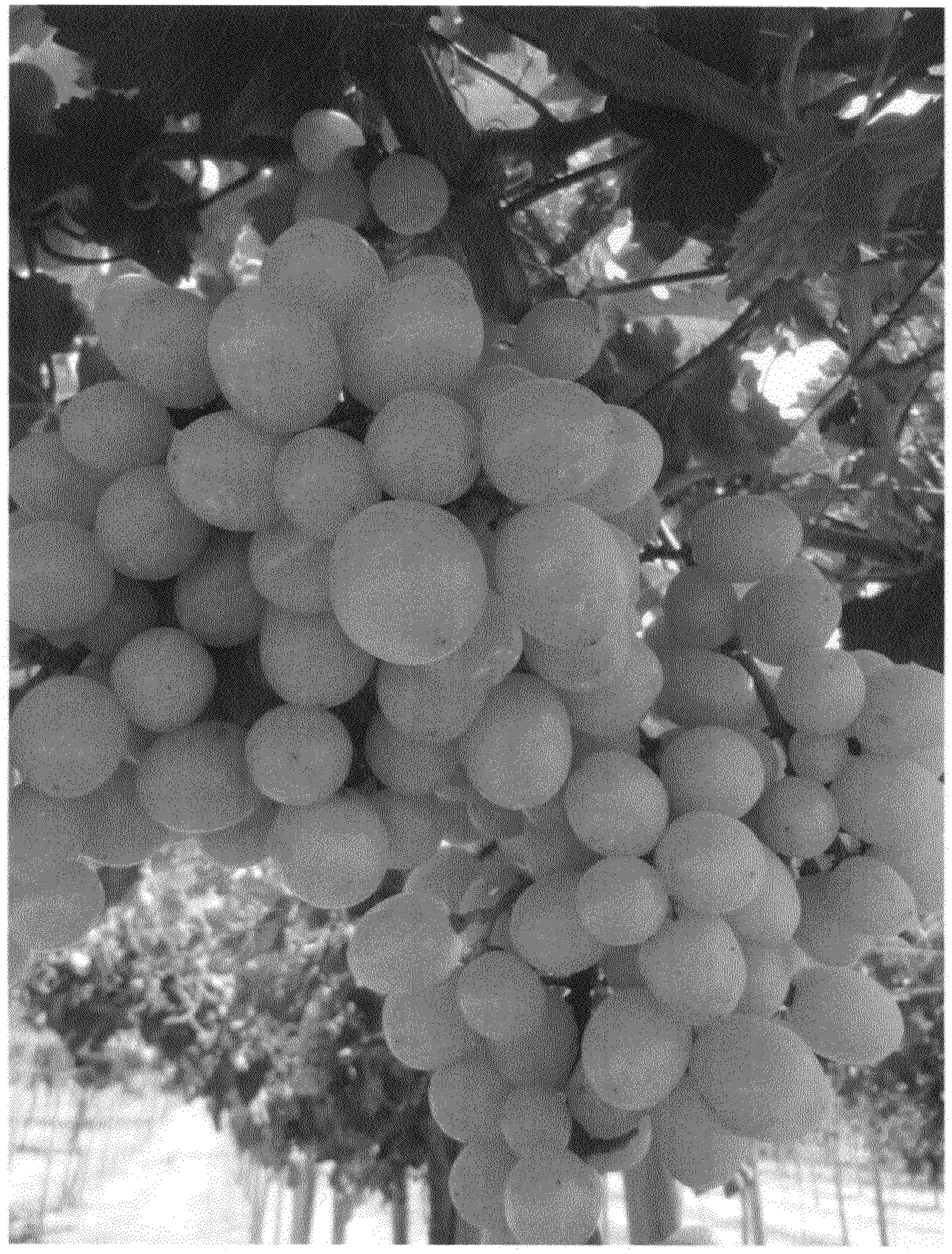

Fig. 2

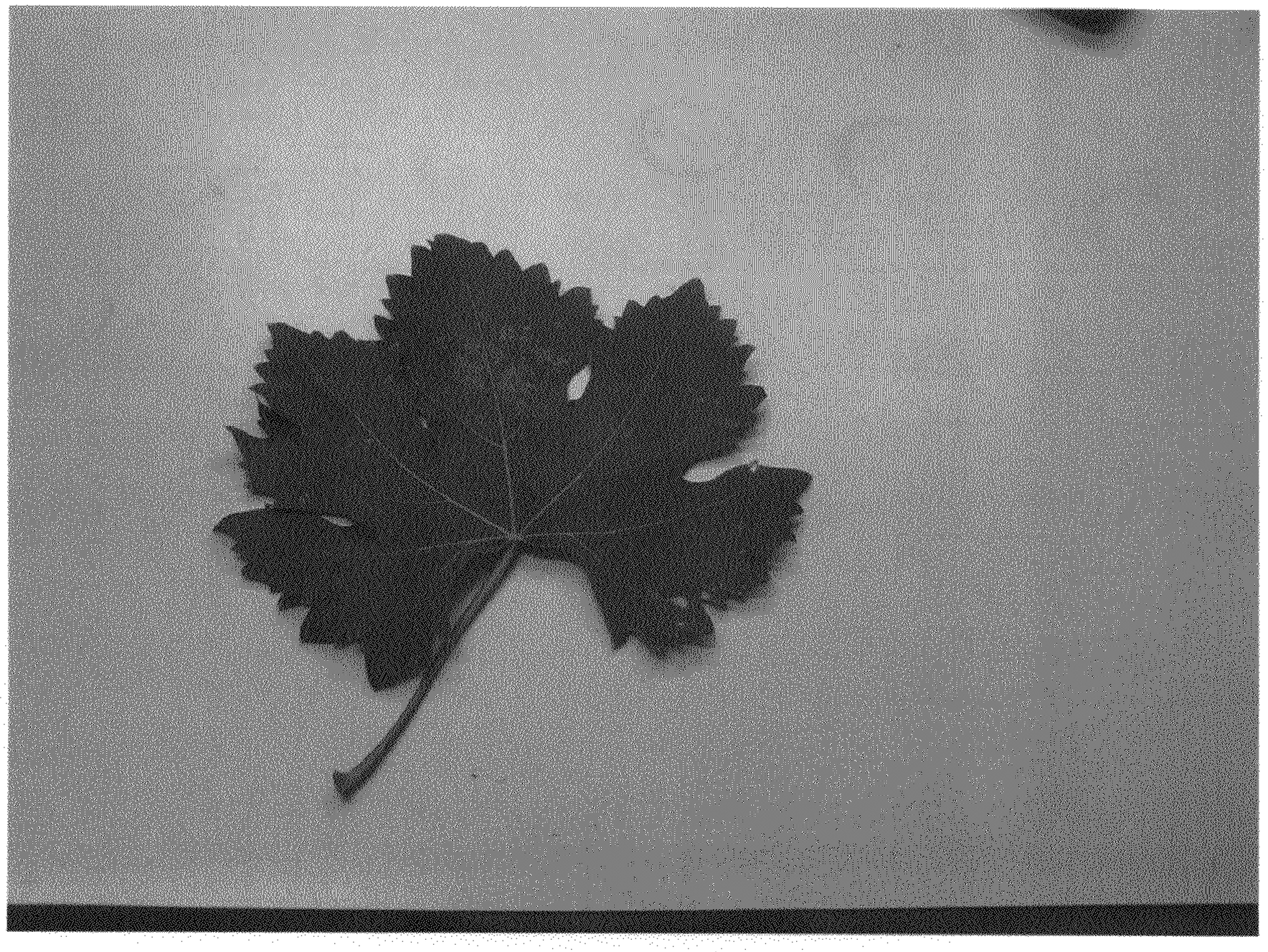

Fig. 3

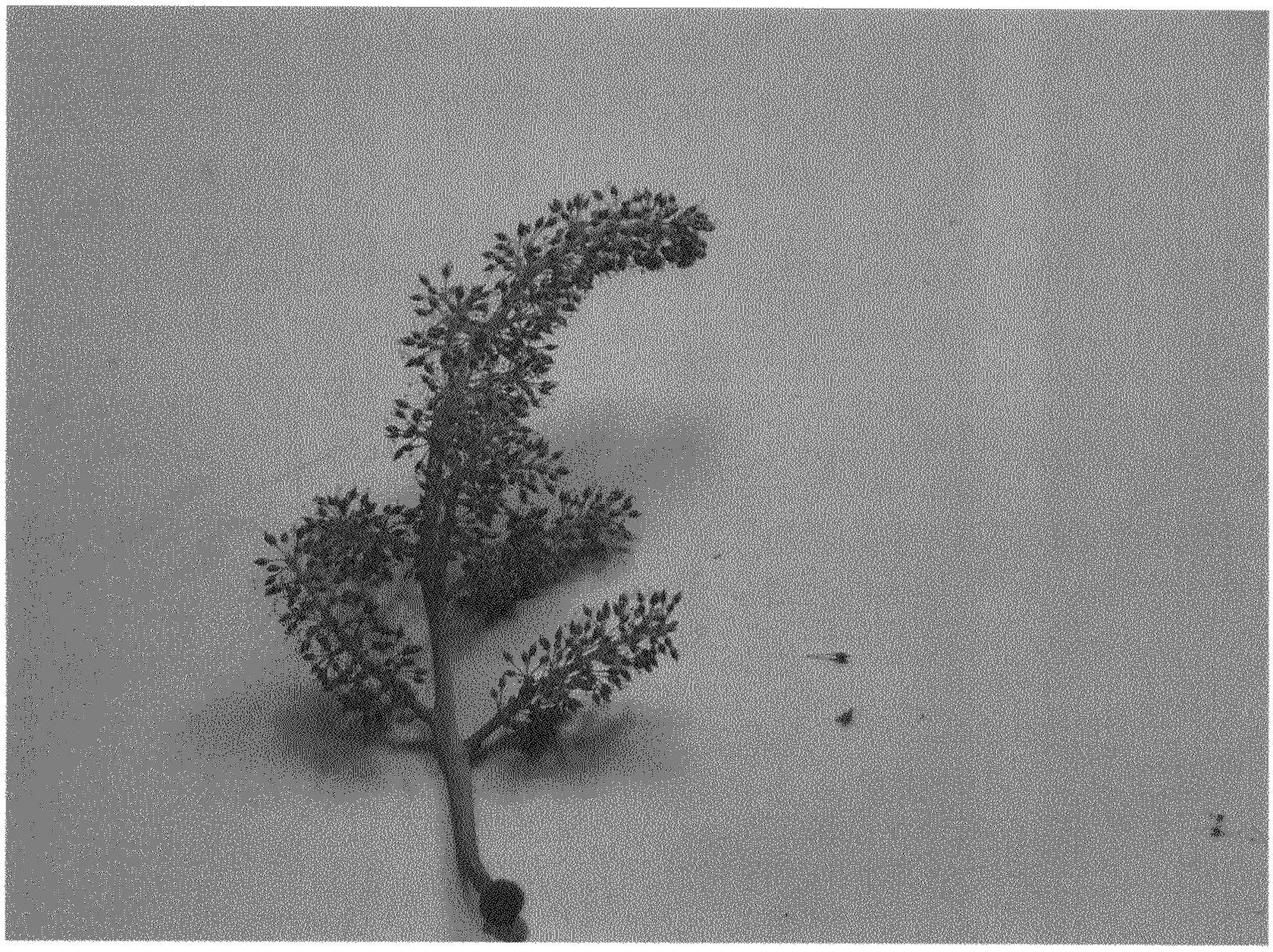

Fig. 4

Fig. 5