PRELIMINARY PHYSICAL AND CHEMICAL ANALYSIS OF SELECTED QUENEPA (*Melicoccus bijugatus*) CLONES IN RELATION TO POST- HARVEST CHARACTERISTICS OF THE FRUIT

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INTRODUCTION

- The quenepa (*Melicoccus bijugatus*) Is a fruit of the family Sapindaceae, the fruits are drupes commonly of spherical form. 2 to 4 cm of diameter.

- The peel is smooth, the pulp is salmon-colored or yellowish, translucent, gelatinous, juicy but very scant and somewhat fibrous (Morton, 1987)

- The demand for tropical fruits is continuously increasing in the international markets, especially in those where the Hispanic population predominates.

- In Puerto Rico, there are diverse varieties of quenepa (*Melicoccus bijugatus*) In others countries is named genip, kenip, mamoncillo.

- Has representative characteristics such as size, flavor, quantity of pulp, time of harvest, and others.

INTRODUCTION

- The fruit characters were considered undesirable:
  - High acidity
  - Disagreeable flavors
  - Pulp difficult to remove from seed
  - Undesirable pulp color
  - Excessive juiciness
  - Small size

Objectives of the research

- Determine the differences of adherence of the pulp in the seed in new clowns or varieties.
- The physical-chemical characteristics of the new clones or varieties.

LOCATION

www.ccsu.edu/images/ pr-municipalities.gif

The trees were identified in different localities of the island:

- Cabo Rojo
- Sabana Grande
- Juana Díaz
- Peñuelas

METHODOLOGY

- Five varieties named:
  - Perfa
  - Jose Pabón
  - Fela
  - Soto Mayor
  - Sasa
- Yield determination
  - Extraction and Adherence
- Determination of pH
- Determination of acidity
- Soluble solid determination.

Figure 1. Sasa

METHODOLOGY

- Extraction and adherence of the pulp:
  - Method 1: (100 g Fruit) Food processor for establish time of extraction and yield of pulp (%) in determinate rpm.
  - Method 2: (100 g Fruit) Mixer establish time of extraction and yield of pulp (%) in determinate rpm.
  - Method 3: (100 g Fruit) Vacuum pump establish the time, pressure, and yield in weight of the extraction for every variety.

METHODOLOGY

- **Determination of pH**. 50 g of sample (pulp) homogenized with water deionizer read with pH- meter (AOAC 10,041/84).

- **Soluble Solid Determination**. (AOAC 932,12). Refractometer reading in Brix scale.

RESULTS AND DISCUSSION

Variety	Date flowering	Date harvest	Location
Perfa	April 19 / 2005	July 13/ 2005	Cabo Rojo
Jose Pabón	April 19 / 2005	July 13/ 2005	Cabo Rojo
Fela	April 26 / 2005	July 20/ 2005	Sabana Grande
Soto Mayor	April 15 / 2005	July 20/ 2005	Juana Diaz
Sasa	May 10 / 2005	Aug 03/ 2005	Juana Diaz

Table 1. Date of flowering and harvest of the varieties.

RESULTS

Variety	Yield of pulp (%)			Pressure (inch)	Extrac. Time (min)	Adherence (inch/Min)
	M1	M2	M3			
Pf	41,7	35,4	43,8	17,5	1,111	15,75
JP	38,8	42,3	47,5	24,1	1,406	17,14
F	39,4	34,8	37,6	18,6	1,235	15,06
SM	39,6	33,9	37	16,1	0,779	20,66
Sa	37,1	35,1	36,3	6,50	0,573	11,35

Table 2. Physical characteristics: Yield of pulp, pressure, extraction time and adherence average by variety (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS

Variety	pH	Acidity (mg citric acid)	º Brix
Pf	3,96	0,895	20,4
JP	3,59	1,383	18,6
F	3,47	1,225	21,8
SM	3,89	0,650	20,2
Sa	3,74	0,896	24,4

Table 3. Chemical characteristics by variety (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS AND DISCUSSION

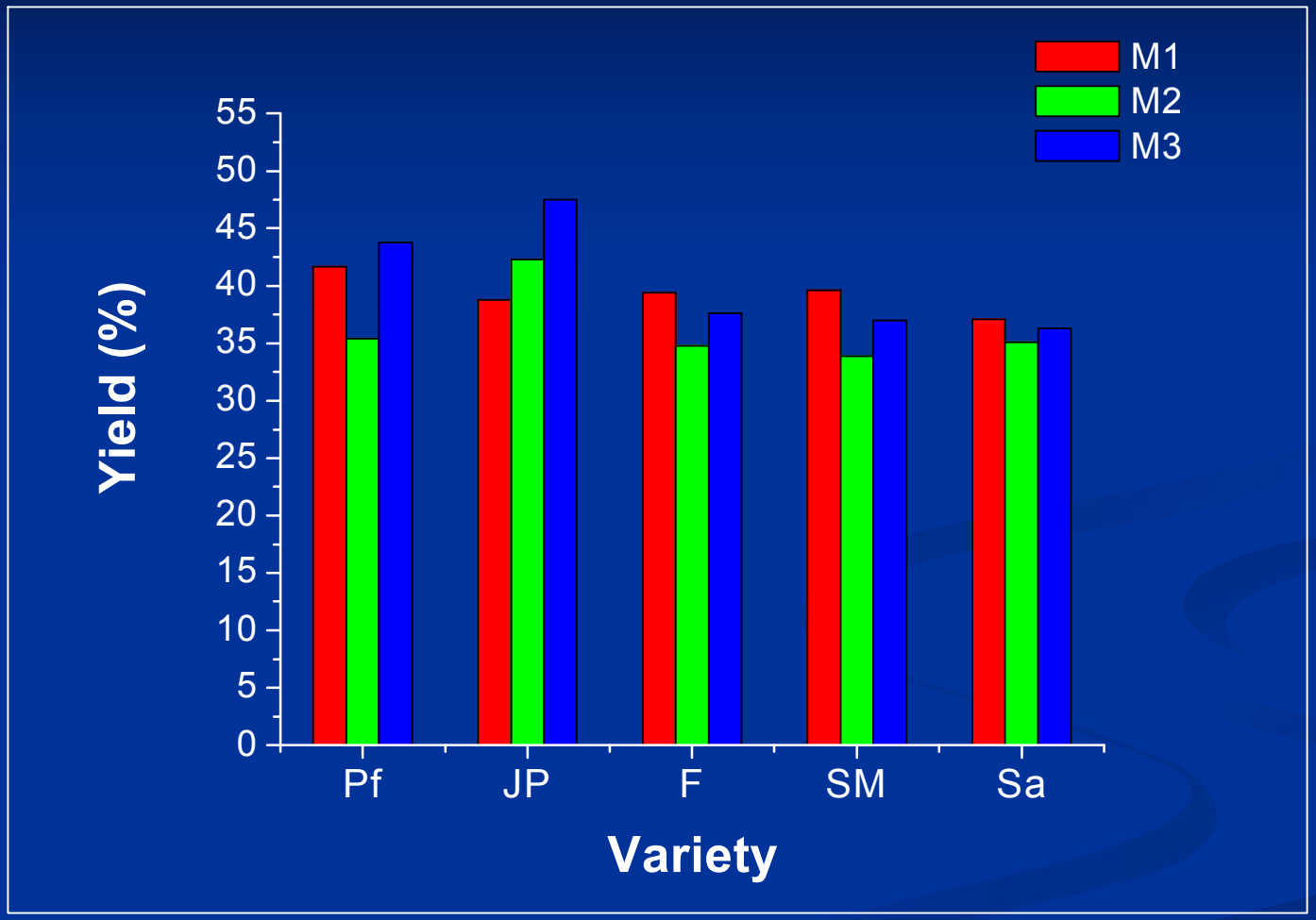

Figure 2. Yield of pulp according to the method of extraction for variety. (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS AND DISCUSSION

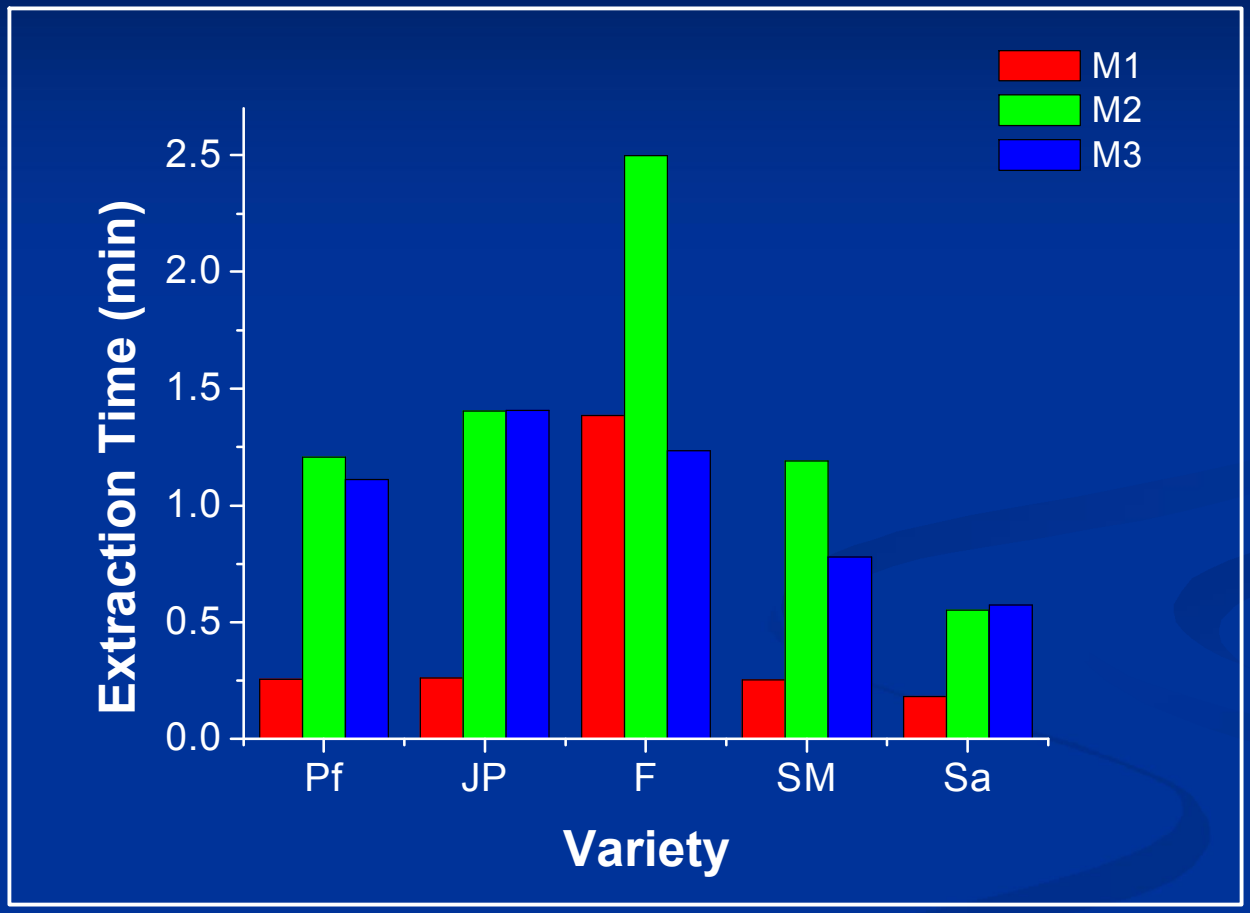

Figure 3. Extraction time by method for variety. (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS AND DISCUSSION

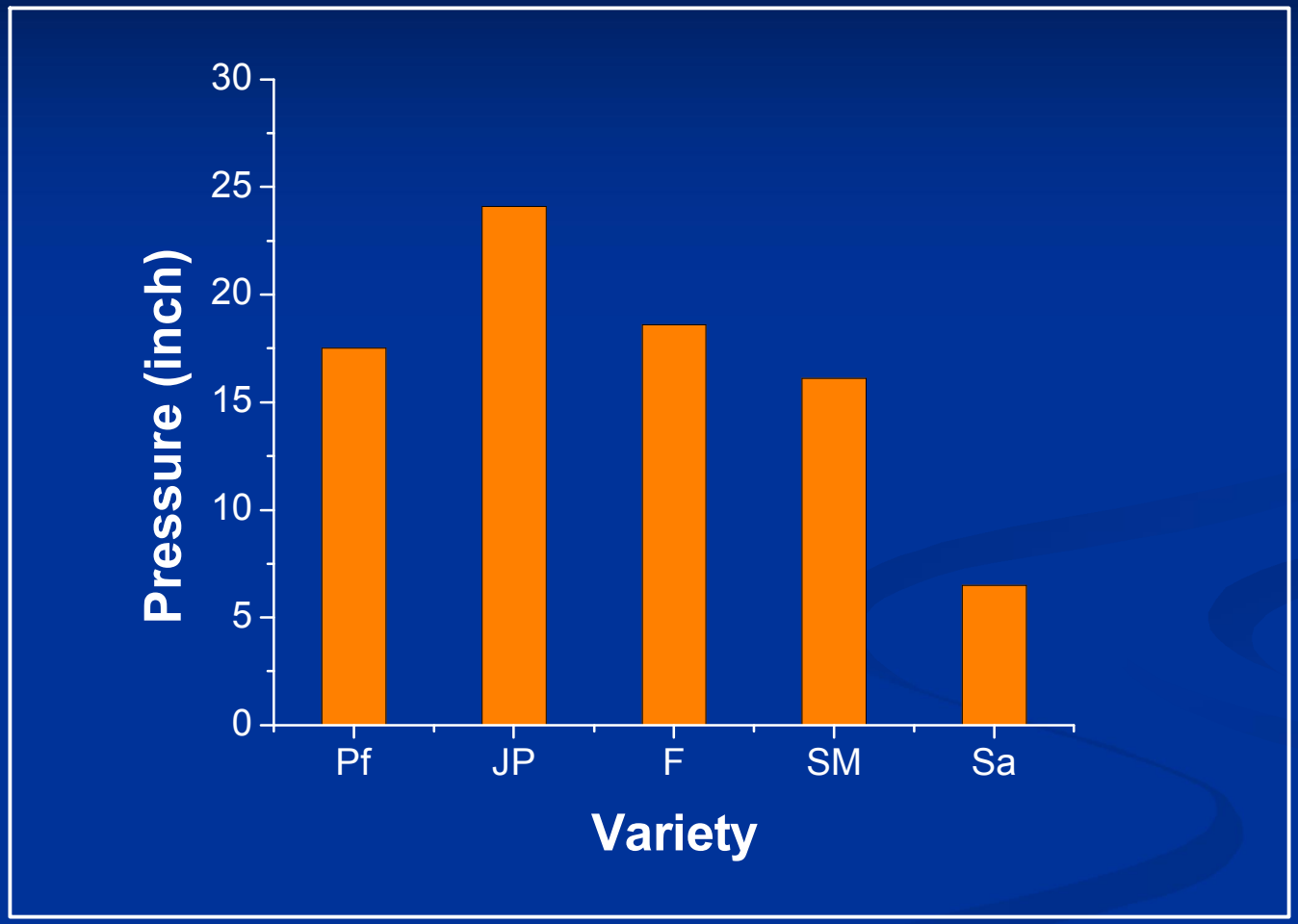

Figure 4. Extraction pressure of the pulp in the seed for variety. (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS AND DISCUSSION

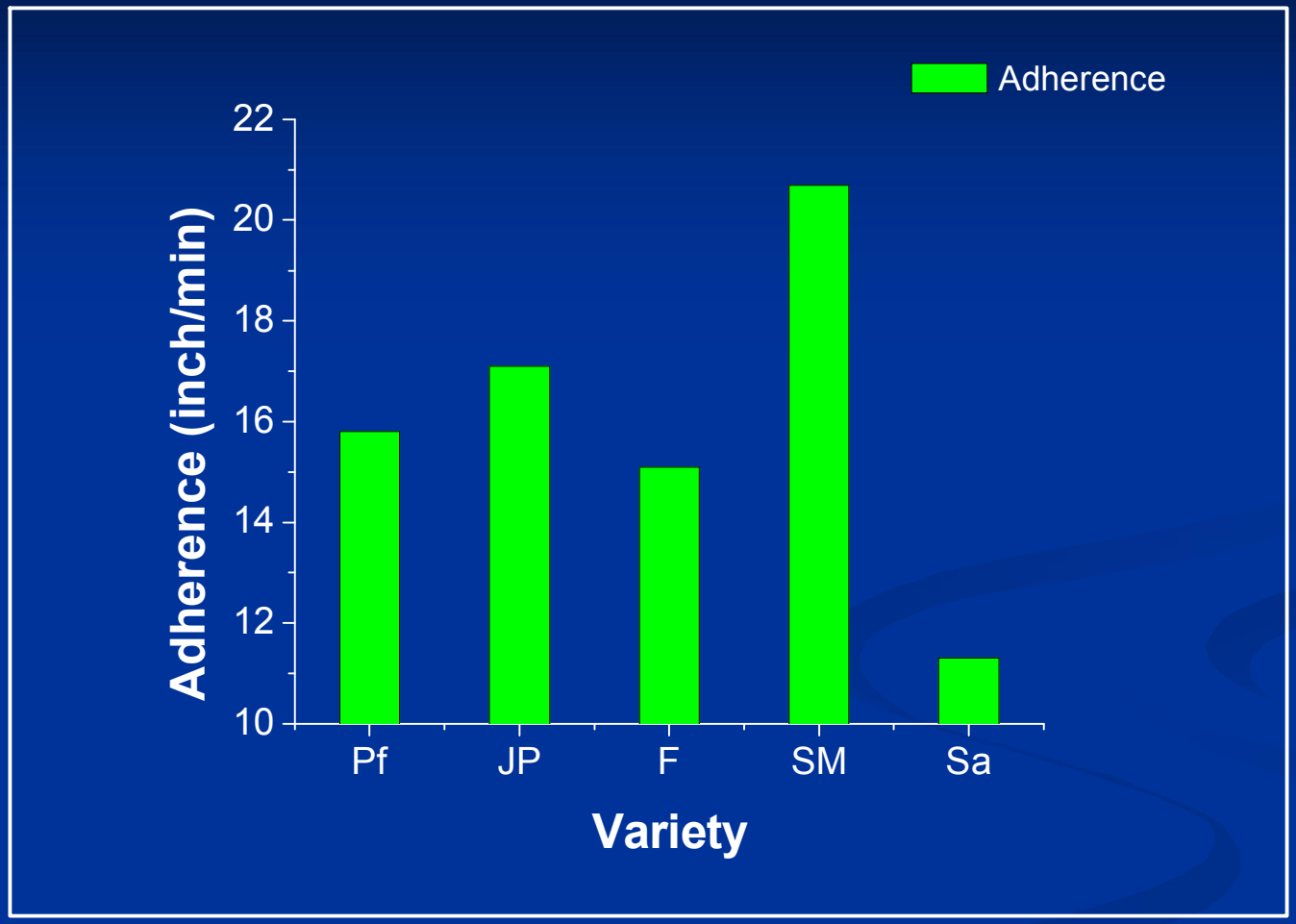

Figure 5. Measurements of adherence of the pulp in the seed for variety. (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS AND DISCUSSION

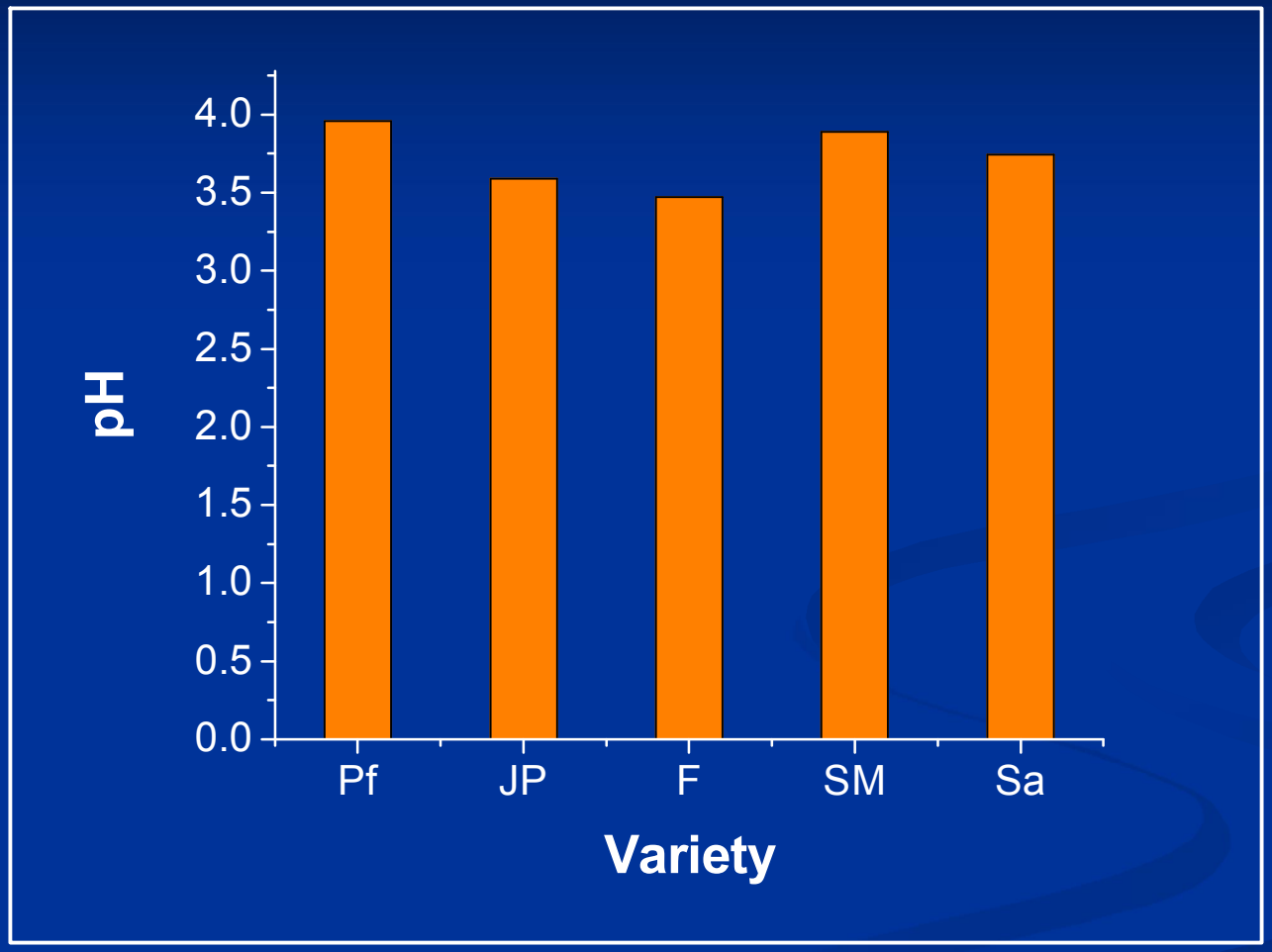

Figure 6. pH predominant by variety. (Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

RESULTS AND DISCUSSION

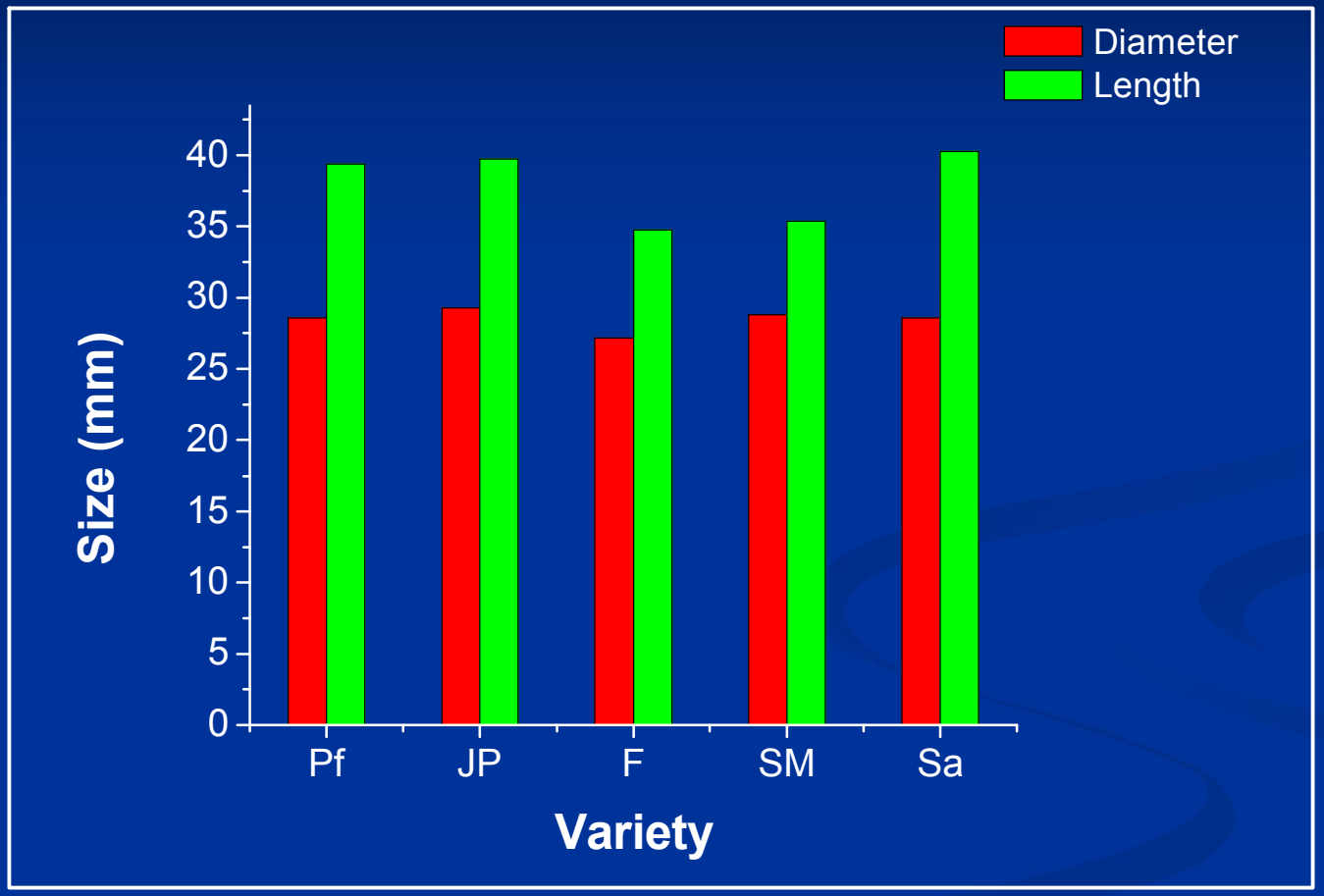

Figure 7. Size (diameter, and length) of fruit by variety.
(Pf: Perfa, JP: Jose Pabón, F: Fela, SM: Soto Mayor, Sa: Sasa)

CONCLUSIONS

- The variety with major yield of flesh is JOSE PABON in the methods 1 and 2. For this variety the best extraction is with vacuum.
- The five selection made had 36.3 to 47.5 percent of edible matter.
- The relation pressure - time shows the adherence of the pulp in the seed. The variety fewer adherent is the SASA.
- The pH showed between 3.5 and 4.0, the acidity titratable is report around values between 0.65 and 1.4 mg of citric acid.
- The size (length) is between 3.4 at 4.0 cm. And diameter is 2.7 and 2.9 cm.

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