

Table 1. Total and o-Dihydroxy phenols in fully mature outer head leaves of six lettuce cultivars

Cultivar	Polyphenols, mg/100 g Fresh Weight <sup>a</sup>			
	Total (Folin-Denis)		o-Dihydroxy (Arnow)	
	1961	1962	1961	1962
Great Lakes				
Arizona Sunbright	387 ± 37	406 ± 66	187 ± 16	176 ± 68
Climax	368 ± 37	321 ± 41	145 ± 23	170 ± 51
407 P	410 ± 62	402 ± 62	213 ± 40	186 ± 36
Valverde <sup>b</sup>	375 ± 49	402 ± 49	174 ± 35	170 ± 33
Imperial				
847	417 ± 68	351 ± 62	154 ± 22	189 ± 50
T	396 ± 53	333 ± 35	128 ± 17	166 ± 22

<sup>a</sup>Calculated as chlorogenic acid. Variabilities shown are standard deviations.

<sup>b</sup>Valverde is intermediate in appearance and growth character between Great Lakes and Imperial types.

Paper chromatography and ultraviolet examination of neutral and alkaline extracts of the pigmented filter paper suggest that chlorogenic acid and another, as yet unidentified, polyphenol may be involved in the red pigment formation.

#### Characteristics of Harvested Lettuce Heads

(N. F. Oebker, B. L. Harriott, Carmy G. Page, B. R. Foerman and R. E. Grounds)

Abstract: A study was made of the characteristics of harvested lettuce heads in Arizona during the 1964-65 season. Information on size, weight, firmness and number of wrapper leaves of each head sampled was collected and set up for analysis. No results were available at the time of this progress report.

#### Introduction

To develop background information on the lettuce being packed and marketed in Arizona, a survey was made of the characteristics of the heads being harvested in the different areas and seasons. This information is to be used in developing new containers and in improving handling techniques for the Western lettuce industry. This is a progress report of work done up to June 1965.

## Methods

Samples of lettuce were taken from fields in each lettuce producing area of Arizona throughout the harvest period during the 1964-65 season. Lettuce heads were picked up directly behind the cutters and before packing. The following lettuce deals have been studied - Willcox Fall, Salt River Valley Fall, Yuma Winter, Salt River Valley Spring, and Willcox Spring. Information was collected on 13 varieties from 31 grower-shippers. Data from California has also been provided for this study.

The size, weight, firmness and the number of wrapper leaves of each head under study was observed and recorded. Each head was measured at each of three stages of trimming: first, as it was cut in the field for commercial pack; second, as it was trimmed to two wrapper leaves (for flat pack); and third, as it was trimmed for retail sale (wrapper leaves and outer cap leaf removed). The size measurements include maximum and minimum equatorial diameters and polar diameter. The heads were measured with a device designed by The University of Arizona Agricultural Engineering Department.

All observations, along with the date and identification of the lettuce, were recorded for each head on a separate IBM card. A program has been set up to compile and to analyze the data on the IBM 7072 computer. The means, frequency distributions, variances and other statistics on these data will be calculated. A good picture of the lettuce head will be revealed. Information will be developed for areas, varieties, and even for individual growers as well as for the whole industry.

## Results

Since the data collected in the 1964-65 season still are being processed in the computer, no findings can be reported at this time.

### Lettuce Packing Procedures

(N. F. Oebker, R. E. Grounds and B. R. Foerman)

## Introduction

During the spring of 1964, a survey was made of some of the characteristics of harvested and packed Arizona lettuce. The main concern of this study was to find out how the type of packing (flat vs. bulge) affected the lettuce and to learn what other factors are important in the packaging of lettuce.

It is recognized that overpacking causes problems, but shippers continue the practice. It is hoped that information from this study and others to follow will lead to improved methods of packing and containers for lettuce.

## Methods

The Yuma lettuce was held in storage (36°F) for ten days and on April 22-23, 1964, was removed for evaluation. The Red Rock and Marana lettuce was