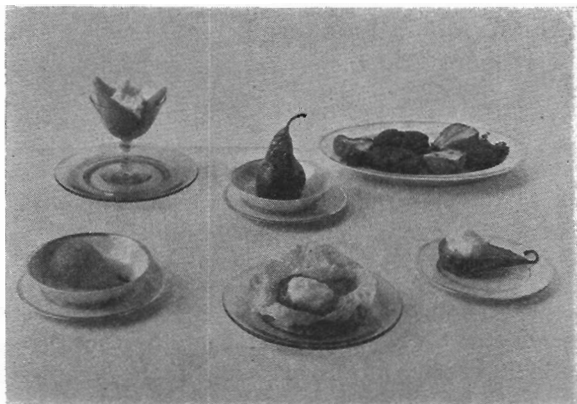


Baking of Pears

Standardization of Household Practice
as applied to the Baking of Bosc,
D'Anjou, and Comice Pears



Agricultural Experiment Station
Oregon State Agricultural College
CORVALLIS

BAKING OF PEARS

Pears can be used in the menu in a wide variety of ways.



Oregon-grown varieties of pears may be found in local and eastern markets for a long period of time extending from October to March.



Pears may be baked satisfactorily over a wide range of baking temperatures, thus fitting in very well with the use of the oven in meal preparation.



In a good diet a balance of acids and bases is essential. The alkalinity of pears is of value in the maintenance of this acid-base balance.

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SUMMARY

Baked pears may be used as a breakfast fruit, a salad, a meat accompaniment, or a dessert.

The same methods of baking are applicable to Bosc, Comice, and D'Anjou pears.

Beginning about October 1, these varieties are in good baking condition. The baking period for Bosc extends until January; for Comice, until February; for D'Anjou until March or later.

Pears may be baked satisfactorily either peeled or not peeled. The skin contributes a definite flavor, aids in preventing shrinkage, and hinders sugar penetration.

A covered baking dish is preferable. The use of a covered as compared with an uncovered baking dish affects the appearance of pears, the difference being greatest in the case of peeled pears. An undesirable discoloration takes place when peeled pears are baked uncovered.

The quantity of sugar added affects appearance and texture as well as flavor of pears. Fifty to seventy-five grams or approximately one-fourth to one-third cup of sugar is a desirable quantity for four pears size 120.

White, brown, or maple sugar may be used. Brown and maple sugar detract slightly from the appearance of peeled pears.

Use of a small amount of water in relation to the sugar results in a well-glazed product. When a large amount of water is used, baked pears are similar to the stewed fruit.

The following flavors, used either alone or in combination, blend most satisfactorily with the three varieties of pears studied. The quantity is given in relation to four pears, size 120 per box, as follows: lemon-juice, 10 to 20 c.c. (2 to 4 teaspoons); rind, .5 to 1 gram ($\frac{1}{4}$ to $\frac{1}{2}$ teaspoon); preserved ginger, 5 grams (1 teaspoon chopped); ground ginger, .35 gram ($\frac{1}{4}$ teaspoon); stick cinnamon, 1 gram (piece 2 inches long by $\frac{1}{2}$ inch wide); butter, 6.5 grams ($\frac{1}{2}$ tablespoon).

Comparable results are obtained from baking at 300°, 350°, and 400° F, if baking time is adjusted accordingly. A baking period of 2.5 hours at 300° F, gives approximately the same results as 1.5 hours at 400° F.

Length of time of baking has a greater influence on the color of peeled pears than on the flavor or texture. Pears baked too short a time darken after standing. Increase in baking time causes the peeled fruit to undergo color change including yellow-red yellow, yellow-red, and red yellow-red.

When baked with the skin, Bosc pears are more attractive in appearance than Comice or D'Anjou.

The three varieties are distinctive in flavor.

Baked pears either hot or well chilled are preferable to those at room temperature.

Thoroughly baked pears do not undergo changes in appearance or flavor when properly kept at a cool temperature. A quantity sufficient for several meals may be baked at one time.

The procedure that has been developed for market practice in handling pears gives a product satisfactory for baking.

Baking of Pears

Standardization of Household Practice as applied to the Baking of Bosc, D'Anjou, and Comice Pears

By AGNES KOLSHORN
Assistant Professor of Foods and Nutrition

INTRODUCTION

Well-prepared baked pears are a delicious, attractive food that can be used as a breakfast fruit, a salad, a meat accompaniment, or a dessert. This Bulletin is a report of an investigation undertaken to determine some facts of value to the homemaker in the baking and use of three varieties of Oregon-grown pears—namely, the Bosc, D'Anjou, and Comice.

Under the direction of the Oregon Agricultural Experiment Station, extensive studies have been made on the production and handling of some Oregon-grown varieties of pears.^{1,2,3} Pears of excellent quality are now available over a comparatively long period, in both local and eastern markets. No record was found, however, of any extensive study on methods of cooking pears, and very little information has been published on methods of baking pears. A comparison of available directions for baking pears showed that they were contradictory in all details, without giving the reason for using one method in preference to another. This study was undertaken to enable the homemaker to obtain the best product with the greatest ease.

EXPERIMENTAL STUDY

Pears used. The three varieties of pears used in this study were the Bosc, Comice, and D'Anjou. These pears were chosen because they are produced in significant quantities and are on the market for a period of several months and therefore facts influencing their use are of interest to both the producer and the homemaker. These three varieties are in excellent baking condition beginning about October 1. Bosc is in good baking condition until somewhat past the first of January, Comice until February, and D'Anjou until March or later. Each variety gives comparable baking results throughout the season, being in good baking condition until actual spoilage or core breakdown takes place.

The pears were harvested, stored, and ripened under the direction of the department of Horticulture in accordance with the procedure developed for market practice.^{1,2,3} They were harvested and placed in the cold room at the Southern Oregon Branch Experiment Station at a temperature of 32° F. Lots of three to five boxes were shipped to the College as needed. Here they were held in the ripening chamber from five to seven days at a temperature of approximately 65° F. Immediately after ripening, pears were stored at approximately 32° F., either in an electric refrigerator in the Home Economics Experimental Laboratory or in a cold-storage plant in order to keep the pears in uniform condition during the experimental period.

Sixteen boxes of Bosc (size 120 per box), four boxes of Comice, and three boxes of D'Anjou pears were used.

Equipment used. The baking tests were made in two electric ovens equipped with heat control. The oven temperatures were carefully checked and compared to assure accuracy of records throughout the study.

In selecting baking utensils for these tests it was considered desirable to use a type of dish that is frequently included in a homemaker's cooking equipment. Glass baking dishes of a capacity of six cups were found adapted to the variants in the problem, as well as to the size of the pears and the size of the ovens. The glass dishes were of advantage in observing color changes in the fruit and evaporation of liquid during baking. Recent tests on the performance of oven utensils⁵ show that this type of utensil is efficient for oven baking.

An electric refrigerator with temperature control was used in the laboratory for storage of raw and baked pears.

Laboratory method. To control temperatures, the following precautions were taken. Pears were removed from the refrigerator just before weighing and preparing for baking. Sirup was made by pouring the hot water over the sugar, stirring until dissolved and cooling to room temperature. Whenever two dishes were placed in an oven, the dishes were rotated from front to back at half-hour intervals during the baking period, in order to offset the slight heat difference in the back and front of the ovens.

The following records were kept:

SAMPLE FORM OF TYPICAL RECORDS

Date _____
 Object of test _____
 Kind of pears used _____ Lot No. _____ Box No. _____
 Weight of pears per dish _____
 Preparation of pears _____
 Sirup used _____
 Kind _____ Quantity per dish _____
 Temperature (Degrees F.) _____

No.	Ovens		Pears (Interior)*	Refrigerator	Sirup*
	Thermostat	Thermometer			

* Before baking.

Baking

Placement		Preparation		Time			
Dish No.	Oven Position	Pears	Utensil	Put in	Rotated	Taken out	Total
A.	65 Front	Peeled	Covered				
B.	65 Back	Not peeled	Covered				
C.	74 Front	Peeled	Uncovered				
D.	74 Back	Not peeled	Uncovered				

RECORD FORM*

Judge.....

Series.....

Date.....

Product	Description							Desirability					Score					
								5	4	3	2	1	Test					
								Excel- lent	Very good	Good	Fair	Poor	A	B	C	D		
Skin.....	Whole	Slightly broken	Wrinkled	Dull	Glazed	Tough	Tender											
<i>Fruit—</i> Color.....	Red (R-YR)	Yellow-red (YR)	Light (YR-Y)	Slightly darkened	Darkened	Trans- parent												
Shape.....	Whole	Slightly broken	Much broken	Much flat- tened	Shrunken	Puffed												
Texture.....	Firm	Tender	Tough	Too soft	Dry	Juicy												
Flavor.....	Well blended	Fruit flavor predom- inant	Sweet flavor predom- inant	Too sweet	Not sweet enough	Burned												
<i>Juice—</i> Consistency	Heavy	Medium heavy	Thin	Watery	.....	.....										
Color.....	Burned	Amber	Light amber	Light	Grayish	.....											
Flavor.....	Well blended	Fruit flavor predom- inant	Sweet flavor predom- inant	Too sweet	Not sweet enough	Burned												
											Total							

* Directions:

Description—Write the letter corresponding to each test under the word which best describes it.

Desirability—Write the letter corresponding to each test under the word which expresses your opinion of its desirability.

Score—The score for each test corresponds to the figure in the desirability column.

Comments:

Data on quantity and density of sirup formed during baking were taken for some tests with a Balling Scale Saccharometer.

Changes in color during baking were recorded for some tests, using the Munsell Book of Color, abridged edition⁶, as a basis for indicating value, hue, and chroma.

Judging baked pears. Products were generally judged when removed from the oven and after standing two hours or more. Most of the samples were also judged on the following day. Several of the judges filled out record forms for practically each baking test. In addition to the records of these judges an effort was always made to get the opinion of as many different persons as possible.

The record form used gives an equal value to flavor and appearance. For further comparison some of the scores were later weighted, giving a higher value to flavor.

Baking tests. Tests were made using the following variants.

1. Preparation for baking.
Whole, halved, cored, peeled, not peeled.
2. Utensil.
Glass
Covered, uncovered, deep, shallow.
Tin
Shallow.
3. Baking temperature (degrees Fahrenheit).
300, 350, 400, 450.
4. Baking time (hours).
One-half, one, one and one-half, two, three.
5. Sugar.
Quantity (grams in relation to four pears).
None, 25, 50, 75, 150.
Time of adding in relation to baking period.
Beginning, middle, ten minutes before end.
Kind.
White, brown, maple.
6. Seasonings.
Lemon, lemon rind, ginger, cinnamon, mint, cloves, nutmeg, butter, salt.
7. Temperature of serving.
Hot, room temperature, chilled.
8. Number of days in ripening chamber.
4, 6, 8, 12.
9. Storage in
Refrigerator, 32° F.; laboratory 70° F.;
Cold-storage room with variable temperature.
10. Soaking in salt solution before baking.

The method giving the best results in the foregoing tests was applied to the D'Anjou and Comice pears in all cases listed except the length of ripening period and conditions of storage.

RESULTS AND CONCLUSIONS

Although baked Bosc, Comice, and D'Anjou pears were found distinctive in flavor and appearance, the tests made in this study indicated that the results and suggestions reported in the following paragraphs are applicable to each of the three varieties.

SELECTION OF BAKING UTENSIL

Baking tests made, using a deep dish (3 inches) and a shallow dish (1¼ inches), showed that the shape of the baking utensil influenced the ease with which the desired product was obtained. A deep dish was somewhat preferable to a shallow dish. Whole pears baked in a shallow dish tended to become

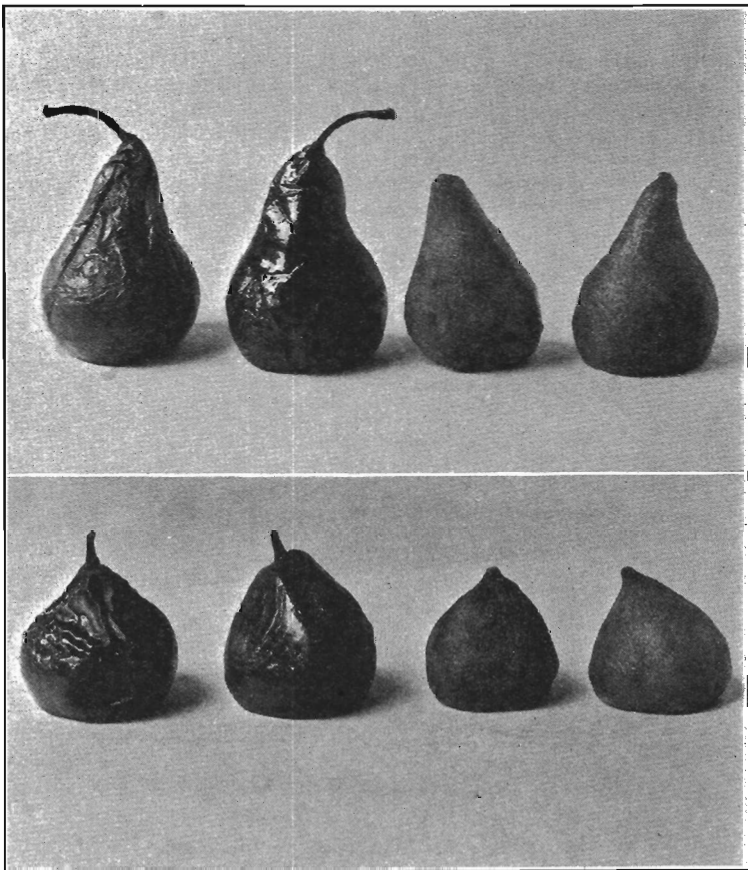


Figure 1. Covering and peeling influence the appearance and shrinkage of pears. *Upper:* Bosc. *Lower:* Comice. Pears of each variety were same weight and shape before baking. From left to right, baked uncovered, baked covered; peeled and baked uncovered, peeled and baked covered.

overcooked and shriveled on the top before the larger base was cooked (Figure 1). A deep dish that could be covered during at least part of the cooking period had an added advantage in that less basting of the product was required to produce baked whole pears that were uniformly glazed and not very much cracked and wrinkled. Differences in pears baked various ways are shown in Figure 1.

PREPARATION OF PEARS

Throughout this study the baking tests were applied to the whole pears and to the halves. In each case the tests were also made upon the fruit with the skin on as well as upon fruit peeled. The results showed that pears may be peeled or not and left whole or cut into halves depending entirely on the type of finished product and the method of serving which is desired.

Leaving skin on. When pears were baked whole with the skin on there was less shrinkage than when they were peeled before baking (Figure 1). The skin contributed a definite flavor. When the skin was left on, the sugar did not penetrate through the whole pear. The skin of the Bosc pear retained a rough texture that was not softened appreciably by any of the means of cooking used in this study. The skin could be easily removed after baking, leaving an evenly and attractively browned surface. The skin of the Comice and D'Anjou pears wrinkled more than the Bosc during baking (Figure 1).

When the pears were peeled, a discoloration or darkening of the surface took place, due to the action of the enzyme oxidase⁷. This darkening continued to a very undesirable stage when peeled pears were baked uncovered.

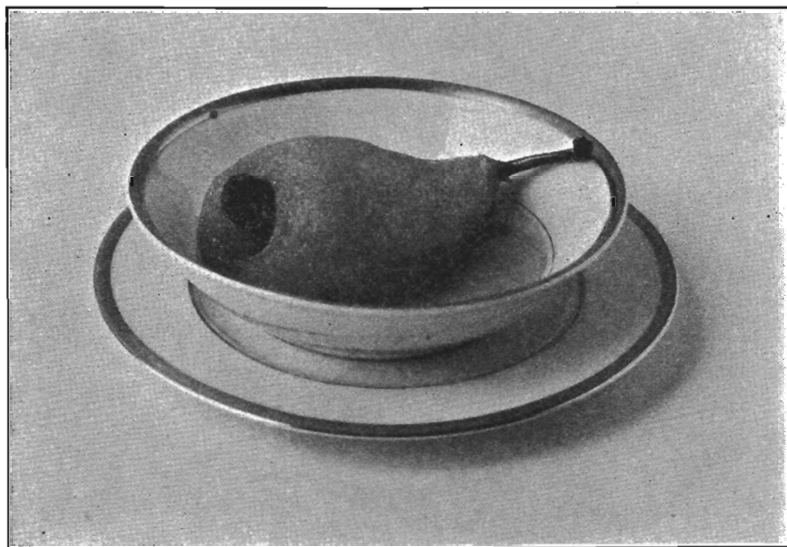


Figure 2. A Bosc pear, peeled, cored, and stuffed before baking.

Coring pears. It was found that the most economical and attractive method of coring whole pears was to remove the core from the base of the pear, leaving the top of the pear intact (Figure 2). Halves of pears were preferably cored before baking. This was done satisfactorily with a small knife or a teaspoon. Unless the whole pears (not peeled) were cored, the sugar and other flavorings did not blend with the interior of the fruit.

USE OF SUGAR

Effect on flavor and appearance. The composition of pears is apparently such that a fairly palatable product was obtained without added sugar. A small amount of sugar, however, was generally preferred. A large amount of sugar tended to predominate over the delicate pear flavor. The addition of sugar improved the appearance of pears. Whole pears, not peeled, became glazed more easily with the addition of sugar. Peeled pears, whole or halves, flattened slightly when they were baked without sugar and were also somewhat dull in appearance.

Desirable quantity. The quantity desired may vary somewhat with the use of the baked fruit. Fifty to seventy-five grams (approximately $\frac{1}{4}$ to $\frac{1}{3}$ cup) of sugar to four pears, size 120 per box, gave a product having a pleasing blending of sugar and pear flavor (Table I).

Time of adding sugar. In cooking fruits, it is usually necessary to add sugar at the beginning of the cooking process in order that the fruit may retain its shape. In these varieties of pears, however, no appreciable difference was observed in the shape, flavor, or color of the fruit when the sugar was added at the beginning of the baking period, the middle of the period, or ten minutes before the end of the period. It was concluded that the time of adding the sugar is largely a matter of convenience. Perhaps the most convenient method

TABLE I. EFFECT OF AMOUNT OF WHITE SUGAR USED IN BAKING PEARS. Whole Bosc Pears, peeled and covered. Baking time 1.5 hours; temperature 400° F.; quantity of pears 690 grams; water 180 c.c.

Product	Quantity of sugar in grams			Desirability score*		
	Test A. None	Test B. 75	Test C. 150	Test A	Test B	Test C
<i>Fruit—</i>						
Color.....	Slightly dull with grayish cast	Attractive; not as transparent as test C	Transparent; rich appearance	3	4	5
Shape.....	Slightly flattened	Uniform	Slightly shriveled	3	5	4
Texture.....	Soft	Tender	Slightly toughened	4	5	4
Flavor.....	Mild	Well blended fruit and sugar flavor	Sugar flavor predominant	4	5	3
<i>Juice—</i>						
Consistency.....	Very thin	Medium; suitable for serving	Very heavy	.....	.....	.....
Color.....	Light grayish tinge	Amber	Rich amber	2	4	5
Flavor.....	Pear flavor predominant, bland	Well blended; flavor of pear and sugar	Sugar flavor predominant	4	5	3
			Total.....	20	28	24

* See Record Form, page 7.

is to mix the sugar and water and pour it over the fruit at the beginning of the baking period. The dry sugar may be poured over the fruit, but unless the dish is covered basting is required to blend the sugar with the pears.

Kind of sugar. A comparison of white, brown, and maple sugar showed that the kind of sugar used affected both the flavor and the appearance of the pears, especially in the case of peeled pears. White sugar blended very pleasantly with the pear flavor and gave an attractive product. Brown sugar when used alone slightly modified the characteristic pear flavor, but was very pleasing to some persons. When pears were peeled, the brown sugar tended to give a slight grayish cast to the color, detracting somewhat from the appearance. The flavor of maple sugar blended well with pears, but also tended to detract slightly from the appearance of the peeled fruit. A mixture of maple sugar and white sugar or a mixture of brown sugar and white sugar gave a pleasing flavor.

QUANTITY OF WATER

The most desirable quantity of water to be added depended to some extent on whether or not the pears were peeled and on the type of finished product desired.

Peeled pears required slightly less water than those not peeled since in the case of the former the liquid was increased by that drawn out of the pears whenever a relatively heavy sugar solution was used. When an uncovered dish was used, there was more loss of liquid through evaporation than when the dish was covered.

A small amount of water in relation to the sugar resulted in a well-glazed product. A large amount of water in relation to the sugar resulted in a product similar to a stewed fruit rather than having the characteristics of a typical baked pear. One-half cup of water to four pears in a covered baking dish gave a satisfactory product.

[ADDITION OF FLAVORS AND SEASONINGS*

Although pears baked with only the addition of sugar and water gave a very satisfactory product, tests with various seasonings showed that a pleasing variety may be obtained by the addition of some of the seasonings that blend well with this fruit. The seasonings were added at the beginning of the baking process.

Lemon. As in the case of most fruits, a small amount of lemon juice and rind was used to advantage. When the fruit was baked for a long period it was found advisable to add the lemon-juice toward the last part of the baking period or to use only about half the quantity of lemon-juice, in order to prevent the development of a slightly bitter flavor.

Ginger. The flavor of ginger was very pleasing with the three varieties of pears tested. Preserved ginger and dry gingerroot, whole and ground, were used satisfactorily both alone and in combination with lemon.

Cinnamon. Cinnamon flavor was pleasing with pears but was not as popular as the ginger. Stick cinnamon should be used instead of ground because the

* For quantity of flavorings see page 13.

latter detracted from the appearance, especially in the case of peeled pears. The addition of enough red cinnamon candies to give a delicate pink tinge to the peeled pears was found a means of obtaining a pleasing color within a comparatively short baking period.

Cloves. A few whole cloves or a small quantity of ground cloves added to the sirup during baking gave a good flavor. The quantity should be kept so small that it blends with the pear flavor and does not predominate.

Nutmeg. The addition of a small quantity of nutmeg gave an especially pleasing variety to the sirup.

Butter. A small quantity of butter did not change the appearance or texture of the fruit appreciably. It blended well in flavor but unless the quantity was kept very small the butter formed a very unattractive coating on the fruit and sirup when the fruit cooled. When the sirup was thickened a larger amount of butter could be used.

Salt. A few grains of salt improved the flavor of baked pears.

Quantity of seasonings. On a basis of four pears, the quantity of flavoring giving a pleasing flavor is as follows:

Lemon-juice—10 to 20 c. c. or 2 to 4 teaspoons.

Lemon rind—.5 gram to 1 gram or $\frac{1}{4}$ to $\frac{1}{2}$ teaspoon.

Preserved ginger—5 grams or 1 teaspoon chopped.

Ground ginger—.35 grams or $\frac{1}{4}$ teaspoon.

Stick cinnamon—1 gram or a piece 2 inches long and $\frac{1}{2}$ inch wide.

Butter—6.5 grams or $\frac{1}{2}$ tablespoon.

Nutmeg—a few grains.

Salt—a few grains.

BAKING

Baking covered or uncovered. Whether the pears were covered or uncovered during baking had an effect on their appearance. The difference was greatest in the case of the peeled pears.

When pears that were not peeled were baked uncovered they tended to crack and to shrivel and brown on the top before the base was well cooked. Basting was necessary to obtain a well-glazed product (Figure 1). By careful basting it was possible to obtain a desirable product by this method. When halves of pears that were not peeled were baked uncovered in a small amount of sirup, a crisp edge was formed, considered by many persons especially desirable. Peeled pears darkened to an unappetizing appearance when baked uncovered unless a large proportion of sirup was used. Soaking in a salt solution before baking or using lemon in baking did not prevent the darkening. There was also much shrinkage in the peeled, uncovered fruit (Figure 1). It was found that the baking time could be slightly reduced by the use of a tightly covered dish (see Table II).

TABLE II. EFFECT OF BAKING NOT PEELED AND PEELED PEARS IN COVERED AND IN UNCOVERED DISHES.

Whole Bosc pears; baking time 1.5 hours; temperature 400° F.; quantity of pears 690 grams; water 120 c.c.; sugar 75 grams.

Product	Not peeled		Peeled		Desirability score*			
	Test A uncovered	Test B covered	Test C uncovered	Test D covered	Test			
					A	B	C	D
Skin or peeled surface.....	Dull cracked wrinkled	Glazed smooth	Dull wrinkled	Glazed smooth	3	5	2	5
<i>Fruit—</i> Color.....	Light (YR-Y 8/6)	Light (YR-Y 8/6)	Darkened (YR-Y 5/6) Unattractive	Red tinge (R-YR 6/10)	5	5	3	5
Shape.....	Slightly cracked	Whole uniform	Shrunk	Slightly shrunk	4	5	3	5
Texture.....	Tender; very juicy	Very tender; very juicy	Slightly toughened; less juicy	Very tender; juicy	5	5	4	5
Flavor.....	Pear flavor predominant, mild	Pear flavor predominant, mild	Well blended but not as pleasing as Test D	Pear and sugar flavor well blended	4	4	2	5
<i>Juice—</i> Consistency.....	Heaviest sirup, smallest quantity	Slightly larger quantity than Test A	Smaller quantity and heavier sirup than Test D	Largest quantity and thinnest sirup	.....	.....	.....	.....
Color.....	Amber	Amber	Light amber	Light amber	5	5	4	4
Flavor.....	Flavor of skin and sugar predominant	Less sweet than A	Fruit and sugar well blended	Less sweet than Test C; well blended flavor	5	5	4	4
Total.....					31	34	22	33

* See Record Form, page 7.

Temperature of oven during baking. These tests showed that pears may be baked satisfactorily over a wide range of baking temperatures, thus fitting in very well with the use of the oven in meal preparation. No appreciable difference was seen in pears baked in a slow oven (300° F.) as compared to a hotter oven (350° F. or 400° F.) provided they remained in the oven till equally done. From the standpoint of time an oven of 375° F. to 400° F., such as is used for muffins, is recommended.

Time of baking. The length of time of baking did not greatly affect the flavor of pears except that the sugar and flavoring tended to penetrate into the fruit and blend with it more thoroughly during long baking. The length of time of baking pears had much more influence on the color than on the texture. Shortly after thorough heating, pears were sufficiently tender. On the other hand, long cooking did not cause undue softening or breaking. Shrinkage tended to increase with the increase of the baking period. Long baking with sugar tended to toughen the pears.

Pears that were not peeled became more highly glazed as the cooking period continued. Long cooking resulted in a rich sirup and attractive fruit, but one that some judges considered too sweet in taste.

Pears baked only a short time in relation to the baking temperature darkened to an unpleasant color upon standing for several hours. This was especially true of fruit that had been peeled.

The color of the peeled fruit changed during the baking. Using the Munsell⁶ color designation the color was recorded as changing first on the outside to a yellow-red yellow (YR-Y 8/4), then to yellow-red (YR 8/4) and on long baking to red yellow red (R-YR 4/10). The color change extended throughout the fruit when a long baking period was used. Judges differed in opinion as to the desirability of these color changes. As has been indicated, the length of the baking period of peeled pears was governed by the color of the product desired. Table III indicates relative time required to obtain a similar color when a slow oven, 300° F., and a hot oven, 400° F., were used. (Pears were removed from storage of 32° F. just before baking so they were thoroughly cold and therefore showed less change during the beginning of the baking than if stored at room temperature.)

EFFECT OF LENGTH OF RIPENING PERIOD ON BAKING QUALITY OF PEARS.

The pears that were ripened only four days did not have as well developed flavor as those ripened five to seven days. Those ripened longer eight and twelve days did not have an appreciably better flavor and the raw fruit deteriorated much more rapidly. These tests indicated that the procedure that has been developed for market practice^{1,2,3} is satisfactory also from the standpoint of baking quality.

TABLE III. COLOR CHANGES DURING BAKING.

Method of baking	Predominant colors on outside of pear
One and one-half hours at 300° F. or One-half hour at 400° F.....	Y 8/4
Two hours at 300° F. or One hour at 400° F.....	YR 8/4 and R-YR 7/6
Two and one-half hours at 300° F. or One and one-half hours at 400° F.....	YR 8/4 and R-YR 6/10
Four hours at 300° F. or Two hours at 400° F.....	R-YR 6/10

COMPARISON OF BOSCH, COMICE, AND D'ANJOU VARIETIES AS TO BAKING QUALITY

When baked with skin, the Bosc pear retained its shape with less flattening or wrinkling than the Comice and D'Anjou. The skin of the Bosc was most highly glazed and was the most attractive in color.

When peeled and baked the D'Anjou remained lightest in color, the Comice became somewhat more pink, and the Bosc tended to turn deep pink or red.

The juice formed during baking tended to be light on the D'Anjou, light amber on the Comice, and a deep amber on the Bosc.

Each variety had a distinct flavor and judges differed in their preference (Table IV).

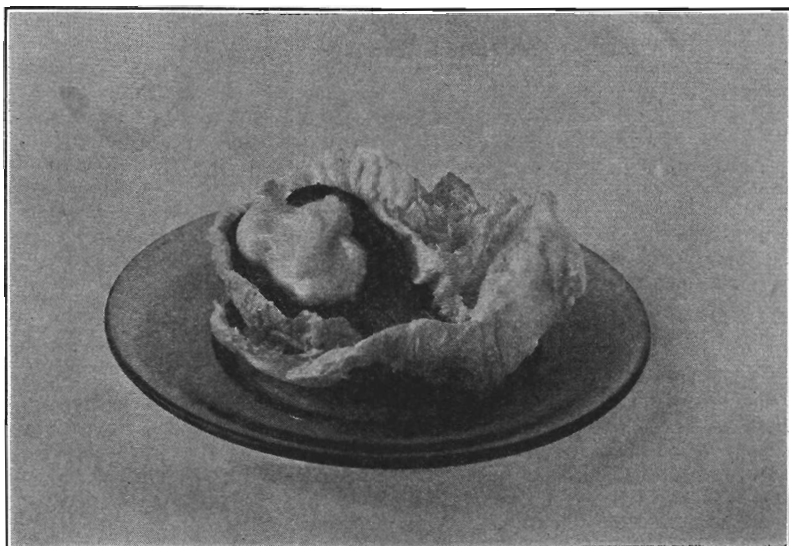


Figure 3. A salad suggestion.

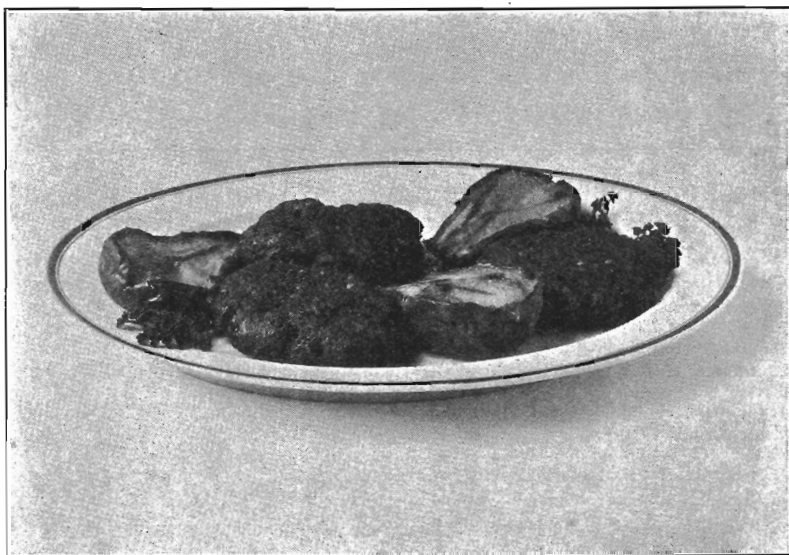


Figure 4. Baked or broiled pears served as a meat accompaniment.

TABLE IV. COMPARISON OF BOSCH, COMICE, AND D'ANJOU PEARS AS TO BAKING QUALITIES.

Pears peeled, covered. Time 1.5 hours. Temperature 400° F.

Product	Variety of Pears		
	Test A. Bosch	Test B. Comice	Test C. D'Anjou
<i>Fruit—</i>			
Color.....	Reddish (R-YR 6/10)	Pink cast (R-YR 8/4)	Light (YR-Y 8/4)
Shape.....	Uniform	Slightly flattened	Slightly flattened
Texture....	More firm than test B and C	More tender than test A and C	Tender
<i>Juice—</i>			
Color.....	Deep amber	Light amber	Light-yellow tinge

A BASIC RECIPE FOR WHOLE BAKED PEARS

The following directions may be modified according to suggestions given on the previous pages.

4 pears

 $\frac{1}{2}$ cup water $\frac{1}{3}$ cup sugar

seasonings (page 12)

Select firm well-ripened pears of uniform size and shape. Place upright in a deep baking dish. Mix sugar and water and seasonings and pour mixture over pears. Cover and bake at 300° F. for 2 to 2½ hours or 400° F. for 1 to 1½ hours (page 14).

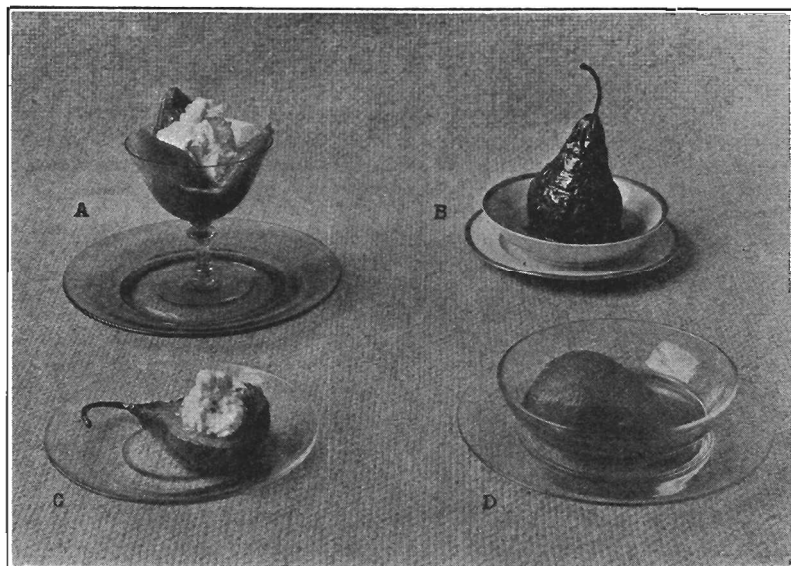


Figure 5. Pear desserts.

Top: A, Peeled pears with whipped cream, a frozen mixture or rice. B, Whole pear, baked with skin.

Bottom: C, Halves baked with skin and served with whipped cream or frozen mixture. D, Whole pear, stuffed.

SERVING BAKED PEARS

Temperature. Comparisons made to find the best temperature for serving showed that baked pears that were either hot or well chilled were preferable in flavor to those at room temperature.

Keeping quality. Thoroughly baked pears did not undergo any change in appearance or flavor when properly kept at a cool temperature. A quantity sufficient for several meals may therefore be baked at one time.

Uses in the menu. Baked pears may be served as a breakfast fruit. Whole or halves of pears, either peeled or not peeled, may be used.

For salad the halves, peeled or not peeled, may be used attractively either alone or in combination with a filling for the center (Figure 3).

Baked or broiled pears when only slightly sweetened are a delicious accompaniment to roast meat or steaks (Figure 4).

For the dessert pear there is much opportunity for variety. See Figure 5 for suggestions.

VALUE IN THE DIET

Fruits are primarily of value in the diet because they furnish minerals, vitamins, and bulk. Sufficient data are not available on the vitamin content of the Bosc, Comice, and D'Anjou pears to show their value in this respect. In order to give the homemaker definite information concerning the mineral value of these pears an analysis was made upon each variety. This analysis made by D. E. Bullis, Assistant Chemist of the Experiment Station (Table V) showed only a small difference in mineral content of the Bosc, Comice, and D'Anjou pears. Very little data are available on the ash analysis of other Oregon-grown fruits. A comparison of the ash content of pears with published data on the composition of fruits, however, indicates that pears compare very favorably with such fruits as apples.

In a good diet it is essential not only to have an adequate mineral content but also to have a proper balance between the acid- and base-forming constituents. Ample fruits and vegetables which are base forming must be used in the day's menu to balance such foods as meat and eggs, cereals and breads which are acid forming. The analysis of these pears showed that the alkalinity of the ash ranged from Bosc 3.8 to D'Anjou 4.53. Comparisons of these figures with the alkalinity of some fruits such as apples 3.7, grapes 2.7, lemon juice 4.1, and orange juice 4.5, indicate that pears are among the fruits which aid in maintaining a desirable acid base relation.

TABLE V. MINERAL ANALYSIS OF PEARS, FEBRUARY 1931.
Made by D. E. Bullis, Assistant Chemist, Experiment Station.

Variety	Moisture on flesh	Ash	Alkalinity of ash*	Insoluble and silica	Sodium	Potassium	Calcium	Magnesium	Iron	Phosphorus	Sulfur	Chlorine	Crude fiber
D'Anjou.....	82.17	.330	4.53	.00030	.00534	.156	.0126	.00799	.000139	.0156	.00367	.00067	1.43
Bosc.....	82.20	.273	3.80	.00035	.00274	.121	.0147	.00906	.000117	.0165	.00311	.00051	1.77
Comice.....	84.24	.269	3.83	.00046	.00470	.124	.0129	.00732	.000148	.0117	.00296	.00069	1.35

* Expressed as c.c. of normal acid required per 100 grams of fresh fruit.

Note: Fruit cored but not peeled. Composite sample of one quarter of each of 25 fruits used for foregoing analyses except for crude fiber, where one-quarter of each of 10 fruits was used. All percentages were calculated on fresh-fruit basis.

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