

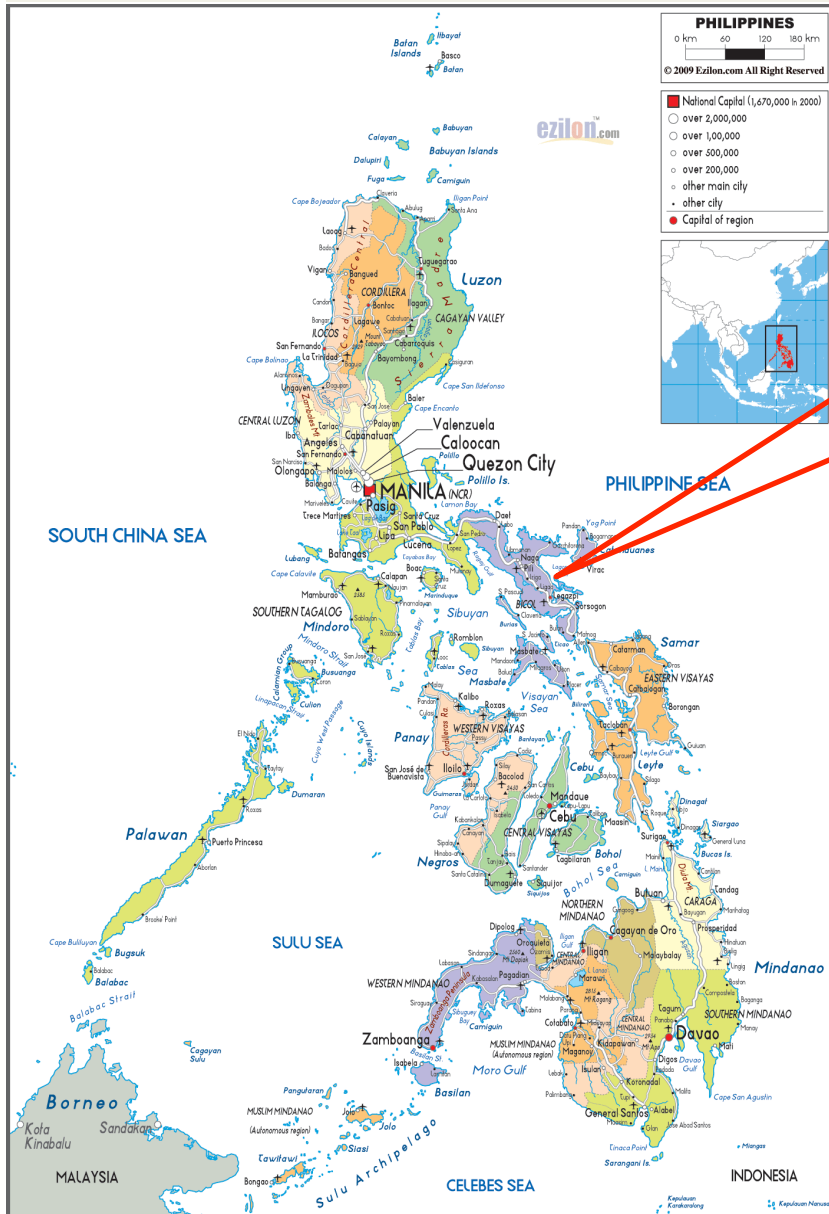
# **PILI (*Canarium ovatum* Engl.)**

## **A Promising Indigenous Crop of the Bicol Region in the Philippines for Food and Nutrition**

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# COUNTRY BACKGROUND



## REGION 5 – Bicol Region

- Philippines, stretching 1,839 kms. north to south off the Southeast coast of Asia has a total land area of 300,000 sq. kms;
- It's 7,107 islands comprise one of the largest island groups in the world;
- Philippines is a tropical country with an average temperature of 32 °C (89.6 °F);

**Pili scientifically known as *canarium ovatum Engl.* is considered a tree of hope; a premium crop; “The Majestic Tree”; Indigenous crop and “Flagship Commodity of the Bicol Region in the Philippines”.**





✓ Pili trees are attractive symmetrically shaped evergreens, averaging 20 m tall with resinous wood and resistance to strong wind.






✓ The pili fruit is a **drupe**, 4 to 7 cm long, 2.3 to 3.8 cm in diameter, and weighs 15.7 to 45.7 g. The skin (**exocarp**) is smooth, thin, shiny, and turns purplish black when the fruit ripens; the pulp (**mesocarp**) is fibrous, fleshy, and greenish yellow in color, and the hard shell (**endocarp**) within protects a normally dicotyledonous embryo.





✓The basal end of the shell (endocarp) is pointed and the apical end is more or less blunt; between the seed and the hard shell (endocarp) is a thin, brownish, fibrous seed coat developed from the inner layer of the endocarp. This thin coat usually adheres tightly to the shell and/or the seed. Much of the kernel weight is made up of the cotyledons, which are about 4.1 to 16.6% of the whole fruit; it is composed of approximately 8% [carbohydrate](#), 11.5 to 13.9% [protein](#), and 70% [fat](#). Kernels from some trees may be bitter, fibrous or have a turpentine odor.



# **Distribution, Habitat & Cultural Management**

- ✓ **Pili is a tropical tree preferring deep, fertile, well drained soil, warm temperatures, and well distributed rainfall. It can not tolerate the slightest frost or low temperature.**
- ✓ **Most pili kernels tend to stick to the shell when fresh, but come off easily after being dried to 3 to 5% moisture (30 °C for 27 to 28 h). Shelled nuts, with a moisture content of 2.5 to 4.6%, can be stored in the shade for one year without deterioration of quality (Coronel et al. 1983).**





- ✓ Although they are grown as ornamental trees in many areas of the Old World tropics of Indonesia, Malaysia and the Philippines, only the Philippines produces and processes pili nuts commercially.
- ✓ Bicol Region in the Philippines is the major producer of pili in the country with a share of 78% domestic production;
- ✓ It has an existing area of 7,754 hectares with 617,317 bearing trees and 160,483 non-bearing trees. Regional production for CY 2011 was approximately 23,221 metric tons.

# FACTS AND HIGHLIGHTS



✓ ***Pilinut*** is considered superior to almond (West, 1993). It has a long shelf life. Processed pili kernel are delicious and can be used in the preparation of many food products, and is also the source of edible oil of excellent quality.

✓ ***Pilinut pulp and kernel*** are extremely nutritious, are excellent sources of minerals, vegetables fats and proteins;







PILI-STUFFED CHICKEN



PILI PESTO ANGELS HAIR PASTA & CHEESE-STUFFED HERBED MAHI-MAHI WITH PILI

## Pili Pesto Angels Hair Pasta

2 cups loosely packed basil leaves  
¼ cup Parmesan Cheese, grated  
1 pc garlic clove, halved  
¼ tsp salt  
1 tsp shrimp powder  
¼ cup pili nuts, toasted  
½ cup olive oil  
60 g angel hair

Cook the pasta in boiling salted water following packaged directions. Drain and set aside.

Place the basil, cheese, garlic and salt in a food processor, then cover and pulse until chopped. Add half of the nuts, cover and process until well-blended. While processing, gradually add oil in a steady stream.

Toss cooked pasta with the pesto until well-combined. Top with parmesan cheese and the remaining pili nuts and serve.

## Cheese-Stuffed Herbed Mahi-Mahi with Pili

3 pcs fish fillet (80 g each)  
1 pc lemon  
100 g mozzarella cheese with garlic and herbs  
50 g quickmelt cheese  
½ cup bread crumbs (about 1½ slices)  
1/3 cup Parmesan cheese, shredded  
¼ cup butter, melted  
4 tsp pili nuts, toasted  
salt

Rinse fish, and pat dry. Preheat oven to 425°F. Finely shred peel from lemon to make 2 teaspoons; cut lemon in wedges and set aside.

In small bowl, combine cheeses, 2 tablespoons pili nuts and lemon peel. From about 1/2 inch from one edge of the fillet, cut a pocket, taking care not to cut all the way through the fish. Spoon cheese mixture into pockets. Season fish with salt. Place in shallow baking pan. Set aside.

Combine bread crumbs, Parmesan cheese, butter, and the remaining 2 tablespoons of pili nuts. Sprinkle over fillets, pressing lightly. Bake uncovered for about 14 minutes. Serve with lemon wedges.

## Farfalle & Broccoli Salad with Honey Roasted Pili

170 g broccoli, trimmed and coarsely chopped  
1 tbsp olive oil  
225 g farfalle (butterfly pasta)  
1 tbsp butter  
45 g honey roasted pili nuts, coarsely chopped  
52 g white cheese, crumbled  
salt  
pepper

Preheat the oven to 400°F. On a baking sheet, toss the broccoli in olive oil. Season with salt and pepper, then roast for about 10 minutes or until cooked.

Cook the pasta in boiling salted water following packaged directions. Drain and reserve 1/3 cup of pasta cooking water. Return pasta and reserved cooking water to the pot, and stir in the butter and broccoli.

Transfer the pasta mixture to a serving bowl. Toss in the pili nuts and top with crumbled white cheese.

## Pili-Stuffed Chicken

1/3 cup cream cheese  
1 tbsp red & green pepper, roasted and chopped  
5 g garlic, chopped  
1 tbsp pili, toasted, coarsely chopped  
1 tsp parsley, chopped  
2 pcs chicken breast, boneless and skinless (approximately 150 g each)  
¼ tsp salt  
1/8 tsp freshly ground black pepper  
¼ tsp butter

Combine cheese, garlic, red and green pepper, pili and parsley in a small bowl. Set aside.

Cut a small slit at the upper portion of each chicken breast to form a pocket. Stuff pili mixture into each chicken breast. Secure each chicken breast with a wooden pick. Season chicken with salt and pepper.

Heat butter in a large pan over a medium heat. Add chicken to pan and cook for 6 minutes on each side or until done. Remove from pan; cover and let stand 2 minutes. Remove wooden picks from chicken and serve.

## Pili, Bacon & Caramel Popcorn

½ cup freshly popped corn kernels  
2 tbsp vegetable oil  
180 g bacon bits and end, chopped  
½ cup unsalted pili  
1 tsp iodized salt  
¼ cup cayenne pepper  
¼ cup whipping cream  
1 tea bag  
1 ½ cups sugar  
¼ cup water  
2 tsp light corn syrup

Cook bacon in pan over medium heat until almost crisp, and drain on paper towels to cool. Add bacon and pili to the popcorn. Sprinkle with coarse salt and cayenne. Toss to coat.

Bring cream and tea bag just to a boil over medium heat. Remove from heat, and let steep for 15 minutes, occasionally pressing on tea bag to release flavor.

To make the caramel, combine sugar, water, and corn syrup in a large saucepan over medium-low heat until sugar dissolves. Increase heat to high; boil without stirring until syrup turns deep amber. Remove from heat, and add cream immediately. Stir until well blended. Drizzle caramel over popcorn mixture, and toss with greased spatulas until evenly coated.

Transfer caramel popcorn to a foil-lined and greased baking sheet. Bake in oven until caramel is shiny. Toss occasionally. Let cool, and toss to break up large clumps. Serve or store in an airtight container. Refrigerate to keep fresh up to 2 days.

## Pili Energy Bar

2 tbsp honey  
1 cup oat meal, roasted  
150 g dried mangoes  
1 ½ cup pili  
1 cup skimmed milk powder  
10 tsp + 2 tsp orange juice

Warm the honey in a pan. In a large bowl, combine the heated honey, oats, dried mango, raisins, pili and powdered milk.

Mix well and add just enough of the orange juice so the mixture will hold well together. Press mixture into a 7 x 7 inch greased baking pan.

Refrigerate for at least 4 hours or overnight. Cut the mixture into 1 x 1 ½ inch bars.

## Roasted Potato & Pear Salad with Spiced Pili Nuts

¼ cup pili, coarsely chopped  
1 tbsp unsalted butter, melted  
1/16 tsp chili powder  
1 ½ cups potato, peeled, ¼ inch-diced, soak in water  
1/8 cup olive oil  
1/6 tsp salt  
2 pcs shallots, very thinly sliced  
2 tbsp balsamic vinegar  
½ tsp dijon mustard  
1 tbsp light brown sugar  
3 cups salad greens  
½ pc ripe pear, halved, cored, and thinly sliced

Preheat oven to 450°F. Put the pili, butter and chili powder in an oven dish, and toss to coat. Bake the nuts for about 5 minutes until toasted. Set aside to cool.

Drain potato and put on a baking sheet. Drizzle 2 tablespoons of the oil over the potato and sprinkle with 1/16 teaspoon of salt. Toss to coat. Roast the potato for about 15 to 20 minutes until brown on the bottom. Flip over and continue to roast for another 5 minutes until the potato is tender and nicely browned on the second side. Set aside to cool.

Put the shallots in a small bowl and cover with hot water. Soak for 15 minutes and drain in a colander.

In a bowl, combine the vinegar, mustard, brown sugar and salt. Slowly pour in the remaining olive oil while whisking vigorously.

Combine the salad greens and shallots in a large bowl, then drizzle with just enough of the dressing to coat lightly. Toss gently, and portion on salad plates with pili, potato and pear slices over the greens. Drizzle with more dressing as desired.

## Sauteed Beans with Pili

2 tbsp unsalted butter  
454 g bagoong beans  
¼ cup chili garlic pili nuts, coarsely chopped  
½ tsp finely grated lime zest, plus lime wedges  
salt  
freshly ground pepper

In a large pan, heat the butter until simmering then add the beans. Season with salt and pepper. Cook over high heat for about 5 minutes, stirring until tender.

Stir in the pili nuts and lime zest. Transfer the beans to a platter, then garnish with the lime wedges and serve.

## Pili Coconut Rice

½ cup unsweetened coconut flakes (desiccated)  
1 cup rice, rinsed  
1½ cups water  
¼ tsp salt  
1 tsp olive oil  
¼ cups roasted whole pili (90 g)

Preheat the oven to 350°F. Spread the coconut flakes on a baking sheet and toast for about 3 minutes until golden. Let it cool.

In a large pan, cover the rice with water. Add salt and bring to a boil. Cover and simmer for about 12 minutes until the rice is tender and the water is absorbed. Spread the rice on a baking sheet, and let it cool slightly.

In a large, deep nonstick skillet, heat the olive oil. Add the pili nuts, and cook over moderately high heat. Stir constantly for about 1 minute until lightly toasted. Stir in the rice and cook until heated through. Transfer the rice to a large bowl, then garnish with the toasted coconut flakes. Serve.

## Crispy Laing Samosa

50 g pork strips  
30 g shrimp, shelled  
10 g ginger, julienned  
10 g onions, chopped  
10 g garlic, minced  
siling labuyo, chopped  
1 tsp bagoong alamang  
¼ cup fresh coconut milk  
1 cup gabi leaves, boiled and cut  
½ cup water  
lumpia wrapper  
oil for deep frying

Fry pork and set aside. In a pan, sauté garlic in oil until it becomes golden brown. Add onion, ginger, fried pork and shrimp. Mix in the bagoong alamang until well-blended. Drop blanched gabi leaves, and pour half of the coconut milk. Add water and cook for 10 minutes, stirring occasionally. Add siling labuyo and the remaining coconut milk. Simmer for another 15 minutes, then remove from pan. Set aside and let it cool.

Cut lumpia wrapper into three strips. Place a spoonful of laing on one strip, then fold and wrap in triangular shape. Seal edges with water (mixed with a little flour). Deep fry samosa until it becomes golden brown. Serve hot.



PILI BACON & CARAMEL POPCORN



PILI COCONUT RICE



## Experimented on New Recipes and Preparations



*Mazapan de pili or  
Salcichon de pili*



*Pili Nut in Bitter Valrhona  
Chocolate Sponge*



*Pili Nut Pesto*

## ***PILI NUT GOURMET PREPARATIONS***



Stuffed Salmon Topped with Pili



Pili Stuffed Chicken



Sauteed Okra with Pili



Coconut Pili Rice



Pili Energy Bar

*"In a nutshell, it's perfect!"*



# “Pili Kulinarya”

**New Pili Recipes for mid- to high-end cuisine  
developed with Via Mare**



Bacon Pili Caramel Corn

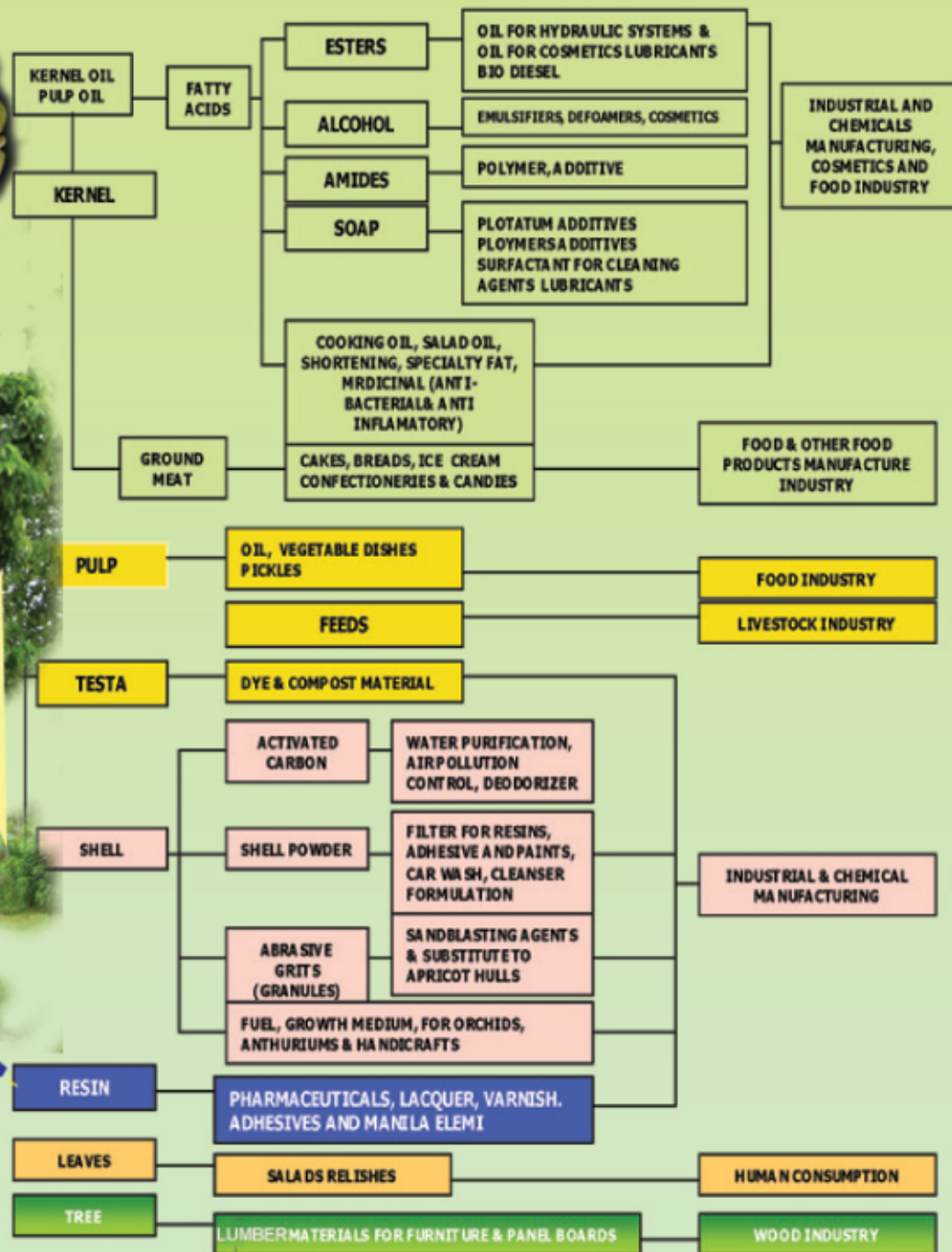


Pesto with Pili

*"In a nutshell, it's perfect!"*



## Uses of Pili



# NUTRITIONAL COMPOSITION OF PILI

(100 gm edible portion)

Food and Nutrition Research Institute,  
Philippines

Composition (Raw Pili)	Amount (g)	Micronutrients	Amount (mg)
Water	8.0	Calcium	135.0
Protein	14.2	Iron	2.6
Fat	68.5	Magnesium	606.0
Ash	2.9	Phosphorus	520.0
Dietary Fiber	3.2	Potassium	489.0
Carbohydrates	3.2	Sodium	3.0
Beta Carotene	25.0	Zinc	11.17
		Copper	7.11
		Thiamin	0.95
		Riboflavin	12.0
		Niacin	0.40
		Ascorbic Acid	29.0





# POTENTIALS AND PROSPECTS

- Availability of production and processing technologies;
- Superior and accredited varieties are available for propagation and distribution which are high yielding, easy to propagate asexually, bears fruit all year round and resistant to pest and diseases, and responsive to low production inputs;
- Technical Experts and skilled technicians are available in the region;
- The Regional Pili Research and Training Center was established to develop new propagation techniques, evaluate performance of promising cultivars, identify, index and collect elite pili varieties;
- New propagation techniques was develop which reduces the gestation period from 7 to 4 years;



# POTENTIALS AND PROSPECTS

- Pili Foundation Scion Groves, Germplasm Bank, Technology Demonstration Farms and nurseries are maintained in strategic location for the production of quality planting materials;
- Pili trees can be planted in remote rural areas without fear that the fruits will spoil or rot if not marketed immediately. Once the nut is properly dried it can be stored for one year under ordinary room temperature;
- Production cost per hectare = US \$ 795.00 and ROI = 35%
- Strong government and private sector partnership. The Regional Pili Board was organized to serve as a vehicle and link the various key commodity players in order to ensure the sustainability of the industry;

The Philippines

# Thank You!

The Bicol region is composed of four contiguous provinces: ALBAY, CAMARINES SUR, CAMARINES NORTE, and SORSOGON; two island provinces of CATANDUANES and MASBATE with seven cities: Legazpi City, Naga City, Iriga City, Tabaco City, Ligao City, Sorsogon City and Masbate City.

Mountainous and hilly, Bicol is endowed with fantastic gulfs, bays and active volcanoes, most prominent and among the most active among them Mayon Volcano. Rich in history and natural resources, the Bicol Peninsula offers itself to exciting exploration for business, adventure, historical research, and a joyful voyage into incredible food trips.

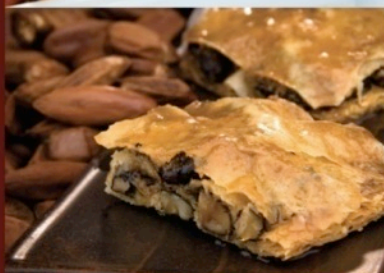
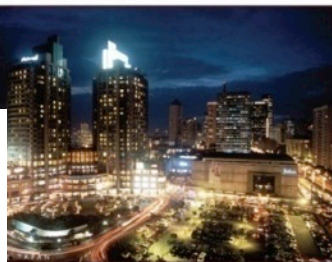


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*The Bicol Peninsula:  
Home of Mt. Mayon and pili nut*



A GLOBAL BUSINESS HUB,  
AN ADVENTURE DESTINATION,  
A RICH HISTORICAL RESOURCE,  
AND HOME TO THE EXCITING PILI NUT



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