



Wild Berrylicious Youth School Kit



**“LEARNING FROM THE PAST,
BUILDING FOR THE FUTURE.”**

Elementary and secondary school kit for teachers to incorporate the wildberry into their curriculum, aiming to entice students to become more involved in the future of their communities.

Table of Contents

Introduction.....	5
Letter to Teachers	7
Pre-K and Kindergarten	9
Introduction to Wildberries.....	9
Who Am I?	9
Coloring Pages	10
Berry Picking Containers.....	10
Wildberry Song: “—Name—”	10
Qui suis-je?	10
Grade 1 and 2	11
Introduction to Wildberries.....	11
Who Am I?	11
Jam Jars.....	12
Wildberry Painting Project	12
Spelling	13
Qui suis-je?	13
Grade 3 and 4	15
Introduction to Wildberries.....	15
Trivia	16
My Favorite Berry	17
Wildberry Play	17
Qui suis-je?	17
Mots cachés.....	17
Grade 5 and 6	19
Introduction to Wildberries.....	19
Trivia	20
Blackboard Fill In	21
Berry Baskets	22

POP	35
Bringing the Youth Back	35
Contemporary World	35
Wildberry Opinion Essay	35
Art	35
Mural	35
Annexes	37
Annex 1	39
Annex 2	41
Annex 3	43
Annex 4	45
Annex 5	49
Annex 6	53
Annex 7	59
Annex 8	63
Annex 9	67
Annex 10	73
Annex 11	87



Introduction



In 2005, the Coasters Association Inc. received funding from the Public Health Agency of Canada to which one initiative was to develop an industry using local resources, which included the wildberries. Then in 2006, with the assistance of the Coasters Association, a group of women came together to create the BerryLicious Committee, due a decline in the fishery. Since then, the Coasters Association with the support of the BerryLicious Committee have been actively working to develop the wildberry industry.

In 2007 and 2008, two separate inventories were carried out in and supported by the Municipality of Bonne Esperance and the Council of Mayors. These inventories were used to identify, locate and estimate the biomass available to the market. In addition, an extensive market study was carried out with the support of Canada Economic Development (CED), which identified the value-added products that are preferred, as well as specific market segments and potential buyers. Following an analysis, the berries have been distinguished for their nutritional qualities and for their high photochemical molecules, it was recognized that this would be an important avenue for development, and the development of several recipes has been tested and shows great potential.

In July of 2009, the Coasters Association received approval for a project entitled “Revival and diversification of activities and exploitation of resources on the Lower North Shore”. The objective of this project, funded by the Ministre des Affaires Municipales, des Régions et de L’occupation du Territoire, under the “Politique Nationale de la Ruralité 2007-2014” program, is to develop a small fruits and wild mushroom industry on the Lower North Shore while developing innovative products in the food and natural health sector (NHP).

This initiative has begun in the Municipality of Bonne Esperance, and will help stimulate and diversify the economy of the region through the development of a community cooperative (harvesting wild fruits and mushrooms, creating specific recipes and ensuring the final product is developed on the Lower North Shore). This is essential to ensure a successful industry and creating much needed long term jobs within the region.

In 2010, a project entitled “Development of Non-Timber Forest Products on the Lower North Shore”, was submitted and accepted by Ministre des Affaires Municipales, des Régions et de L’occupation du Territoire for Quebec Regions (DEC), under the Canada Economic Development Initiative of the Government of Canada’s Official Languages Minority Communities 2008-2013 to aid with the development of the wildberry industry as well as other long term non-timber forest product initiatives’ (ie: greenhouse, kelp, peat moss and fish-by-products). The development of sustainable industries using various Non-Timber Forest Products will help stimulate and diversify the economy of the region and create much needed long term jobs.

In 2011, our first group of products, **Jellies**, has been hitting the shelves in and around Montreal and Quebec City region (twenty one (21)) shops and in seven (7) stores on the Lower North Shore. Approximately 725 unites of Jellies have been distributed. The sampling of the **Purees** is also going well. More than twenty (20) different culinary chefs / artisan ice cream and sorbet makers / as well as fine chocolate makers have received samples thus far. The reaction is very positive and most are waiting for year round product availability. Both products are being well received, which is very encouraging. Buyers particularly like that the products are made with real fruits and have no artificial flavours added and the flavours are sort of “exotic” for the average consumers.

Letter to Teachers



Dear Teachers,

The Coasters Association Inc. hired two students during the summer to work for the wildberry project. The students took the initiative to take this opportunity as a way to further the youth's knowledge on the wildberry by creating a school kit for the teachers to incorporate the wildberry into their everyday curriculum. As the wildberry industry grows, it will create jobs for community members, however, as we are trying to build for the future of the community it is important to get the future of our community involved, the youth. The purpose of furthering the student's knowledge of the wildberry is the hope that they will someday come back to the coast for employment.

The school kit contains many different educational activities for all grades and subjects that will aid in learning more about the wildberry but also aid in the learning process of the students. The activities range from English spelling bees to science experiments and almost everything in between. The goal is to make it fun for the students to learn about their local wildberries while they are learning about the wildberries themselves and learning about how they will help the community grow in the future. Our objective is that the school kit will successfully further student's knowledge of the wildberry but that it will also further their knowledge in every other aspect possible and better their skills needed for completing their schooling. We greatly appreciate you taking the time to review this document and hope you and your students enjoy using the Berrylicious school kit!

Yours truly,

Pre-K and Kindergarten



Introduction to Wildberries

(For teachers to read to students)

The three main wildberries on the Lower North Shore are blackberries, redberries, and bakeapples. All three of these berries can be picked, and have been picked, for years by the community, friends, and family members of the Lower North Shore to either eat raw or cooked in different ways, such as pies, jams, muffins, puddings, and other desserts. They grow on both the islands and the mainland of the Lower North Shore. Blackberries, redberries, and bakeapples are known as wildberries because they grow in the wild, and they don't need help going from a seed to a berry. Did you know that a blackberry is also called a crowberry? Can you guess why that is? Because crows are black, and so are blackberries. Did you know that redberries are red like apples, but don't grow on trees? So, if you want to pick these, you may have to get down on your knees! Did you know that bakeapples are also called cloudbberries? And they look like raspberries, but are orange like oranges! So, get your buckets ready because we're going to be picking your brains for what you know about wildberries!



Who Am I?

A game to play with students to have them learn the wildberry names and what each berry looks like. Show students the papers with images of berries and the name of the berry. Then show them the paper without the berry name, and have them guess what the berry is. This will give the students the chance to learn how each berry is different in appearance. See Annex 1 for pictures.

Grade 1 and 2



Introduction to Wildberries

(For teachers to read to students)

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Spelling

Practice spelling using words associated with wildberries.

- Berry
- Red
- Black
- Pick
- Tub
- Eat
- Leaf
- Jam

Write these words on the chalkboard for students to see and/or hand out the sheet in Annex 4 for students to study. When ready, give the students the test also located in Annex 4.

Qui suis-je?

Teach the students how to say blackberry, redberry, and bakeapple in French. This will give them more knowledge on how to pronounce, not only these words, but many other French words. The é on Chicouté will show them that the é makes a distinct sound.

Enseignez aux étudiants comment à dire camarine noire, graine rouge, et chicouté en français. Cela leur donnera plus de connaissances sur comment prononcer, pas seulement ces mots, mais beaucoup d'autres mots français. Le é de « chicouté » va leur montrer que le é fait un son distinct.

Blackberry: Camarine noire

Redberry: Graine rouge

Bakeapple: Chicouté



Grade 3 and 4



Introduction to Wildberries

(For teachers to read to students)

The three main wildberries on the Lower North Shore are blackberries, redberreries, and bakeapples, but there are also two other berries, squashberries and marshberries. All five of these berries can be picked and have been picked for years by the community, friends, and family members of the Lower North Shore to either eat raw or cooked in different ways, such as pies, jams, muffins, puddings, and other desserts. They grow on both islands and the mainland of the Lower North Shore. They are known as wildberries because they grow in the wild, and they don't need help going from a seed to a berry. The blackberry, also known as the crowberry, appears in July and appears until the last snowfall. They are a good source of vitamin C, dietary fibre, and foliate. Redberries, also known as lingonberries and partridgeberries, grow on low evergreen shrubs with tiny rounded leaves. They ripen around September and October, and are high in vitamin C, dietary fibre, vitamin E, and antioxidants. Bakeapples are also known as cloudberreries. They begin to appear in July and August, and have high levels of vitamin C, B6, magnesium, dietary fibre, and antioxidants. The incredible thing about them is that they can withstand temperatures below -40°C . Squashberries, also known as the low bush cranberry, grow in moist areas. Their flowers are small and appear in June and early July, but the berries do not ripen until the end of July and beginning of August. They are a high source of dietary fibre and vitamin C. Marshberries are also known as meshberries or small cranberries. They grow in the fall, around October. They contain vitamin C, dietary fibre, vitamin E, and antioxidants. All these berries make delicious jams, pies, puddings, jellies, and other desserts.



My Favourite Berry

Have students write a short paragraph about their favourite berry and why. Encourage students to use words different than they normally use. Instead of “great” they could try another word such as “terrific” or “magnificent.” You may also encourage the students to use a thesaurus and dictionary for this exercise. This writing exercise may teach students to use new words in their everyday lives.

Wildberry Play

Have students practice this play to perform in front of the school, if desired. The play consists of two sections, following two different stories. The first story takes place in the summer and the second story takes place in the fall. For a copy of the play, see annex 6.

Qui suis-je?

Teach the students how to say the names of all the wildberries in French. This will give them more knowledge on how to pronounce, not only these words, but many other French words. The é on Chicouté will show them that the é makes a distinct sound.

Enseignez aux étudiants comment à dire les noms de toutes les baies sauvages en français. Cela leur donnera plus de connaissances sur comment prononcer, pas seulement ces mots, mais beaucoup d'autres mots français. Le é de « chicouté » va leur montrer que le é fait un son distinct.

Bakeapple – Chicouté
Marshberry – Petit atoca
Redberry – Graine rouge
Blackberry – Camarine noire
Squashberry – Pembina

Mots cachés

A fun activity for the students. Have them do a word search about wildberry related words. See annex 7 for a copy of the *Mots cachés*.

Une activité amusante pour les élèves. Les avons faire un mot caché des mots baies sauvages liées. Voir l'annexe 7 pour obtenir une copie de le mots cachés.



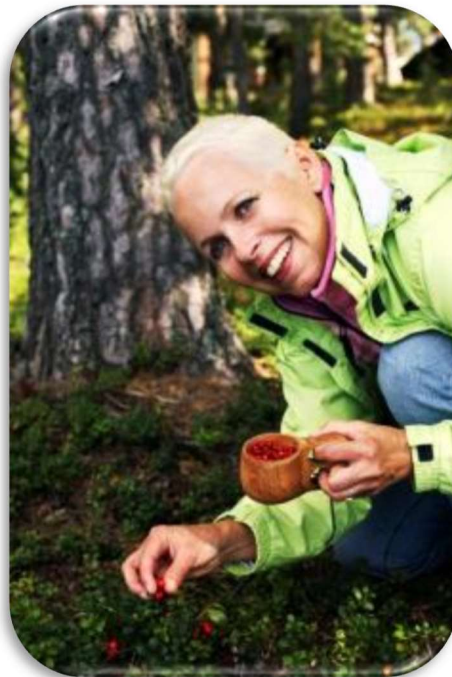
Grade 5 and 6



Introduction to Wildberries

(For teachers to read to students)

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Blackboard Fill-In

Write the following sentences on the blackboard, leaving the blanks. Have each student take turns going up to the board to fill in one of the blanks.

1. When you're walking around an island and notice a little red dot under your feet. You could be about to step on the precious _____.
a. Redberry
2. The only wild berry that can withstand temperatures as low as -40°C is a _____, a berry hard to miss because of its beautiful orange colour.
a. Bakeapple
3. Also known as a crowberry because of its black colour, _____s appear in July and last until the first snowfall.
a. Blackberries
4. _____s grow in marshlands and bogs and are known as a small cranberry.
a. Marshberries
5. In the community people go out by boat to the _____s to pick wild berries.
a. Islands
6. Wild berries are delicious treats on the Lower North Shore and you have most likely tried these yummy treats in your grandma's _____s, such as pies, cakes, and puddings.
a. Desserts
7. Delicious in jams and jellies, the _____ is very high in vitamin C.
a. Squashberry
8. Watch out for the white bird known as a _____ because it eats the wild berries.
a. Seagull
9. Wild berries are a very _____ snack because they have a lot of nutrients which are good for our bodies.
a. Healthy
10. Wild berries make excellent _____s to go on your toast in the morning.
a. Jams
11. The best time to _____ wild berries is in the summer and in the fall, before the first snow fall.
a. Pick

Spelling Bee

Let students know that they will be participating in a wildberry spelling bee. If desired, give each student a copy of the spelling bee words in annex 4 so they can study. On the day of the spelling bee, line each student up side by side at the front of the class. Choose one word out of a hat or bag as a random draw. Whichever word is chosen, have one student try to spell it. If that student spells it correctly, they remain in the competition. If they misspell it, they must sit down and are eliminated from the competition. This exercise will teach the students how to spell new words and possibly have them use these new words in their writing or everyday speaking.

Use the following words for the spelling bee:

- Bakeapple
- Cloudberry
- Blackberry
- Crowberry
- Redberry
- Partridgeberry
- Lingonberry
- Marshberry
- Meshberry
- Squashberry
- Wildberry
- Vitamin
- Nutrient
- Marshlands
- Island
- Mainland
- Delicious
- Wetlands
- Healthy



Qui suis-je?

Teach the students how to say the names of all the wildberries in French. This will give them more knowledge on how to pronounce, not only these words, but many other French words. The é on Chicouté will show them that the é makes a distinct sound.

Enseignez aux étudiants comment à dire les noms de toutes les baies sauvages en français. Cela leur donnera plus de connaissances sur comment prononcer, pas seulement ces mots, mais beaucoup d'autres mots français. Le é de « chicouté » va leur montrer que le é fait un son distinct.

Bakeapple – Chicouté
Marshberry – Petit atoca
Redberry – Graine rouge
Blackberry – Camarine noire
Squashberry – Pembina

Secondary 1 and 2



Introduction to Wildberries

(For teachers to read to students)

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Blind Taste Test

A copy of this lab for students can be found in annex 11.

Objective: To determine whether or not sugar helps distinguish the type of berry

Items needed:

- Bakeapples
- Redberry
- Blackberry
- Sugar
- Spoon
- Blindfold

Instructions:

1. Blindfold student, one student at a time. Have them pinch their nose.
2. Have student taste each berry, with and without sugar. Students must record their guesses.
3. Put away materials and clean up.
4. Complete a lab report as indicated by the teacher.



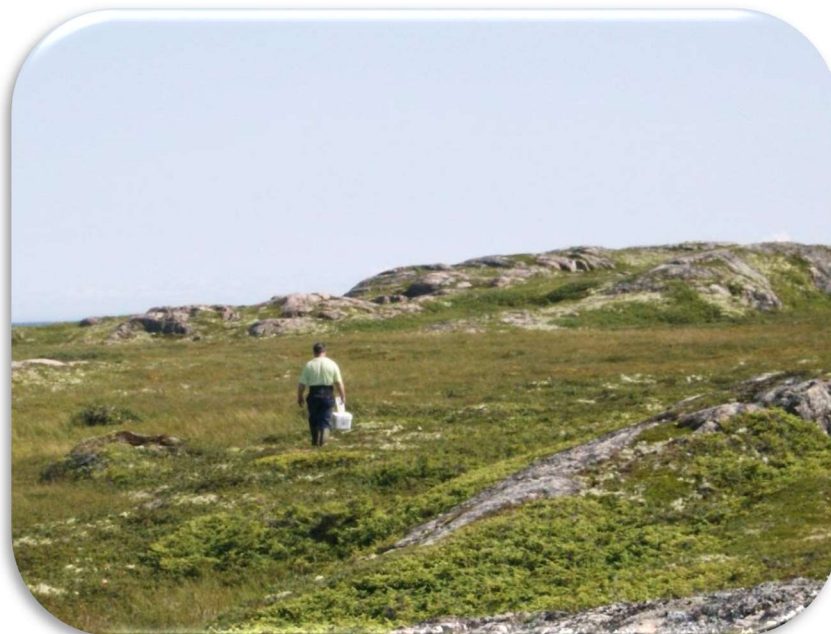
Secondary 3, 4 and 5



Introduction to Wildberries

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French

Jeopardy de baies sauvages

Draw a table on the chalkboard that resembles the Jeopardy board like the image on the right. Have the students break into groups and then decide which group will go first. Team 1 will choose a category (baies, nourriture, or en ramassant) and then an amount (100, 200, 300, 400, or 500). Whichever category and amount they choose, that question must be read out for that team to answer (ie. Baies – 100: Quels sont les cinq baies trouvées sur la Basse-Côte-Nord?) If they answer incorrectly, their own points get deducted the amount of points that that question was worth (ie. 100), the other teams have the chance to answer. Whichever team answers correctly, they receive the amount of points that was given for that question (ie. 100). When an amount is chosen, erase or cross out that amount to avoid confusion. Once all amounts are gone, the team with the most points wins. Questions and answers are below.

Baies	Nourriture	En Ramassant
100	100	100
200	200	200
300	300	300
400	400	400
500	500	500

- **Baies**

- **100:** Quels sont les cinq baies trouvées sur la Basse-Côte-Nord?
 - Chicouté, camarine noire, graine rouge, Pembina, et petit atoca
- **200:** Quelles sont les deux meilleures mois pour ramasser les chicoutés?
 - Juillet et août
- **300:** Quel type de conditions météo en hiver aide à baies poussent?
 - Neige
- **400:** En anglais, quel est le carmarine noir aussi connu comme?
 - Crowberry
- **500:** Tous les fruits sauvages sont une bonne source de quel nutriment?
 - Les fibres alimentaires

- **Nourriture**

- **100:** Fait de baies sauvages, vous mettez cela sur votre pain grillé le matin.
 - Confiture
- **200:** Vous ajoutez ceci à vos baies pour les rendre sucré.
 - Sucre
- **300:** Qu'est-ce que la baie la plus commune qui est mis en pudding?
 - Carmarine noir
- **400:** Quelle collation congelés sont Coop Solidarité Bioproduits veux le faire?
 - Sorbet
- **500:** Quel produit de baies sauvages est présentement vendu dans les magasins?
 - Gelées

Science

Wildberry pH Test Strips

A copy of instructions for students is located in annex 10.

Items needed:

- ½ cup of any kind of wildberries (blueberries, redberry, bakeapples, squashberries, marshberries)
- Small strips of white construction paper
- Small bowl
- Fork
- Teaspoon
- Paper towels
- Water
- 1 tbsp. vinegar
- 1 tbsp. bleach

Instructions:

1. Remove any stems and pour the berries in a bowl.
2. Crush the berries with a fork until they look like jam. Add a little water to thin out the juice.
3. Dip the strips of paper in the juice and make sure they are well coated.
4. Take the paper out and slide the strips between your thumb and finger to remove excess juice. Place them on paper towels to dry.
5. Once dry, remove any large pieces of pulp or berry skins from the strips.
6. To learn how the strips respond to acids (pH less than 7) and bases (pH greater than 7), dip one strip into vinegar and note the change in colour. This indicates that it is an acid.
7. Dip a new strip into bleach and note the change in colour. This colour indicates a base.
8. Take note of results.
9. Put away materials and clean up.
10. Complete a lab report as indicated the teacher.



Nutritional Values of Berries

Notes for students on nutritional value of berries are located in annex 10. Have students find definitions for underlined words in notes. A worksheet is provided for students to write their definitions. A copy of the definitions for teachers is also located in annex 10.

Have students choose a berry and research what diseases the nutritional values of that berry can aid in preventing.

Possible Wildberry Beauty Products

Have students research possible beauty products that can be made using wildberries. Using the nutritional value project, students should find which berries are best for beauty products.

POP

Bringing the Youth Back

Students must research programs and trades in post-secondary institutes that deal with careers in the wildberry industry. Have students choose a career or field from the list below or think of another career that may deal with the wildberry industry and research this career. A Powerpoint presentation or a poster should be made to show their findings. See annex 8 for the list of careers and fields for the students.

- Botanist
- Scientist
- Business management
- Accounting
- Forestry management
- Biodiversity

Contemporary World

Wildberry Opinion Essay

Students must research and interview people (ie. family, members of the community, etc.) for information on the development of the wildberry industry. A possible idea would be to have community members to come into the classroom to talk to the students. The question that must be answered in the essay is: “How does the development of the wildberry industry have the potential to aid the development of the local economy?” The opinions in the essay must be backed up using the information gathered from the research and interviews. See annex 11 for specification sheets to give to students.

Art

Mural

Students must paint a mural with the theme of how wildberries played a role with our ancestors. The mural will teach the students about the history of our ancestors as well as give them a chance to appreciate art.

Annexes



Annex 1: Berry Pictures for Who Am I?

Annex 2: Colouring Pages

Annex 3: Wildberry Song

Annex 4: Spelling

Annex 5: Trivia Worksheets

Annex 6: Wildberry Play

Annex 7: Most cachés/Mots croisés

Annex 8: Careers in the Wildberry Industry

Annex 9: Fake Money for “Inventing the Future”

Annex 10: Lab Sheets

Annex 11: Opinion Essay

Annex 1

Berry Pictures for Who Am I?

Annex 2

Colouring Pages

Annex 3

Wildberry Song

Name: _____

Date: _____

Wildberry Spelling Test

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____



Annex 5

Trivia Worksheets

Name: _____

Date: _____

Trivia – Who Am I? (Grade 5 and 6)

1. Name the five (5) berries that can be found on the Lower North Shore and is presently being developed in the region?

2. Name three (3) ways to use bakeapples?

3. Where can you pick Bakeapples?

4. What is another name for the Blackberry?

5. When is the best time to pick Redberries?

6. I grow in moist woods, along edges of water and streams. I am juicy, acidic, strong smelling and I make delicious jams & jellies. What berry am I?

7. I grow on low evergreen shrubs with tiny rounded leaves in dry, acidic soils of barren and coastal headlands. I am tart in flavour and high in vitamin C and antioxidants. What berry am I?

8. I can withstand cold temperatures down to well below -40°C. I grow in bogs, marshes and wet meadows. I am commonly used as a topping for cheesecake. I am rich in vitamin C and high in antioxidants. What berry am I?

9. I have purple-crimson colour flowers which appear from May to June; I appear in July and last until the first snowfall. My sweet flavour generally peaks after a frost and I am a good source of vitamin C, dietary fibre and foliate. What berry am I?

10. I grow in marshlands and bogs. I am speckled when I am in a green state but loose the spots when I ripen. I have a sharp acidic flavour and contain vitamin C and antioxidants. What berry am I?

11. The wildberries are being made into this common type of candy roll, which is made out of fruit flavours that can be found in grocery stores. What snack am I?

(Tommy and Skidder start going in circles around Billy and Brittany)

Brittany: Hey! Stop that! You're tearing up the ground!

Skidder: So what? It's just soil and moss.

Billy: It's not just soil and moss. It's our home!

Brittany: Yeah, and you're hurting all the berries.

Scene 2:

Narrator: Sommer, the little girl, and her parents pick bakeapples and blackberries every summer to eat. While Sommer's parents find a place to pick berries, Sommer wanders off and runs into Tommy the Four wheeler and Skidder the Ski-Doo. She sees them picking on Billy the Blackberry and Brittany the Bakeapple.

Sommer: Hey! What are you guys doing?

Tommy: What's it to you?

Skidder: Yeah, what are you? The island police?

Sommer: No, but it looks like we need an island police because you guys are killing all those berries with your four wheeler wheels and your ski-doo track!

Billy: If they keep tearing up the ground, we won't grow anymore! Then each year, there'll be less and less berries.

Sommer: Yeah, and since there's not enough fish for everyone to eat, berries are the only thing that we have left from our own land. If you guys keep coming on the islands, riding around and tearing up the ground there will be no berries left, just like there's no fish.

Tommy: Oh, I had never thought about it that way before.

Skidder: Yeah, maybe we should find a new place to ride.

Brittany: Finally! They've come to their senses!

Brittany and Billy: Thank you little girl!

Sommer: No problem guys. Now I have to go back and find my parents. See you later!

The End

Squirt: Marsha, you're looking awfully plump today.

Marsha: Why, thank you. It's all that rain we've been having lately. It goes straight to my roots!

Ruby (girly voice): Oh my God, all that rain made my leaves really soggy. Don't you think so, guys?

Squirt: Oh Ruby, you're always such a drama queen.

Marsha: Guys, do you hear that? It sounds like a boat.

Ruby (girly voice): Oh my God, another group of berry pickers coming to our island.

(Autumn and her family enter from left side of the stage)

Grandma: Okay, now we have to find a good berry picking spot!

Grandpa: Okay, I'll just tie the boat on and I'll be right up with you guys!

Damien (thinking out loud): Oh my God, this is so exciting! I'm gonna run! I'm gonna run!

(Damien the dog runs off towards the berries)

Autumn: Oh no! Damien come back!

(Autumn runs after Damien)

Scene 3:

Narrator: Damien runs around Ruby, Squirt, and Marsha, squishing all the other berries around them because he is so excited to be on a new island.

Ruby (girly voice): Oh my God, he's going to crumple my leaves!

Marsha: That's all you're worried about?

Squirt: This dog is going to kill all the berries, including us, and we're never going to grow back again if someone doesn't get rid of him!

Damien (thinking out loud): This is so much fun!

Autumn: Damien, you're such a silly dog.

Ruby (girly voice): Oh my God, no he's not! He's going to crumple all my leaves!

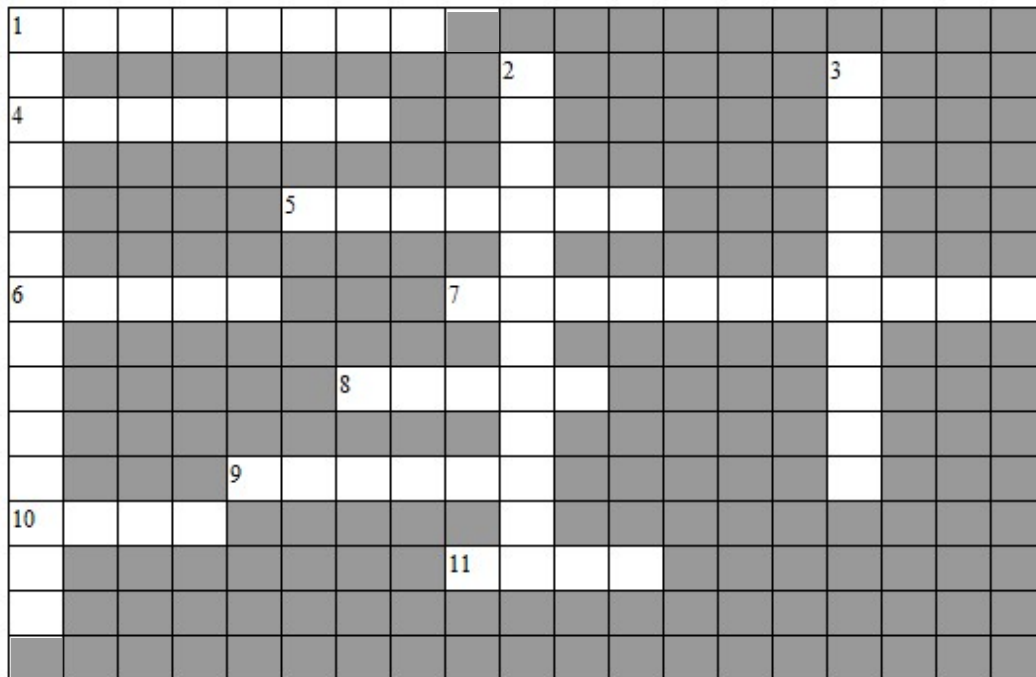
Autumn: Who said that?

Squirt: Down here little girl!

Annex 7

Mots cachés/Mots croisés

BAIES SAUVAGES



MOTS:

Camarine-noire
 Chicouté
 Pembina
 Petit-atoca
 Sucre
 Graine-rouge
 Bateau
 Seau
 Neige
 Mouette
 Confitures
 Iles

VERTICALE :

1. Je suis noire, prête à être cueillie en Juillet, et votre grand-mère probablement m'a mis dans un pouding. Qui suis-je?
 2. Je suis aussi connu comme un "airelle" en anglais, vous peut m'avoir mangé dans les tartes, et je suis rouge. Qui suis-je?
 3. Les baies sauvages font d'excellentes _____ pour aller sur votre pain grillé le matin.

HORIZONTAL :

1. Je suis orange et je ressemble une framboise. Qui suis-je?
 4. Je suis un oiseau blanc qui aime manger des baies sauvages. Qui suis-je?
 5. Je suis bon pour ramasser en Juillet et Août, je faire de la confiture délicieuse et gelées, et je suis rouge pâle. Qui suis-je?
 6. Quand il ne suffit pas de ma beauté blanche chaque hiver, il n'y a pas assez de baies de l'été. Qui suis-je?
 7. Ma plante dispose de 4 pétales roses, je grandis dans les marais et les tourbières, et je suis rouge et boutonneux. Qui suis-je?
 8. Vous ajoutez moi à vos baies pour les rendre sucrée. Qui suis-je?
 9. Je suis une méthode de transport qui est utilisé pour aller aux îles de cueillir des baies. Qui suis-je?
 10. Dans la communauté, des gens sortir par bateau vers les _____ de cueillir des baies sauvages.
 11. Je suis ce que vous mettez vos baies lorsque vous allez cueillir. Qui suis-je?

Annex 8

Careers in the Wildberry Industry

Bringing the Youth Back

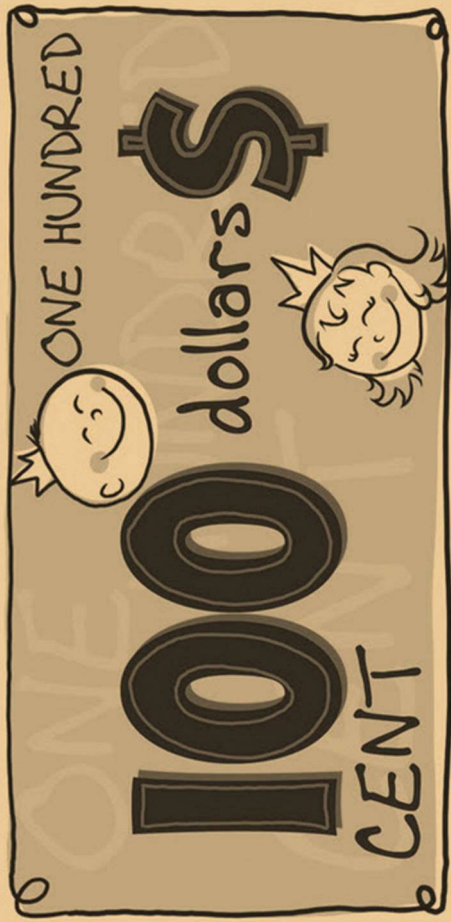
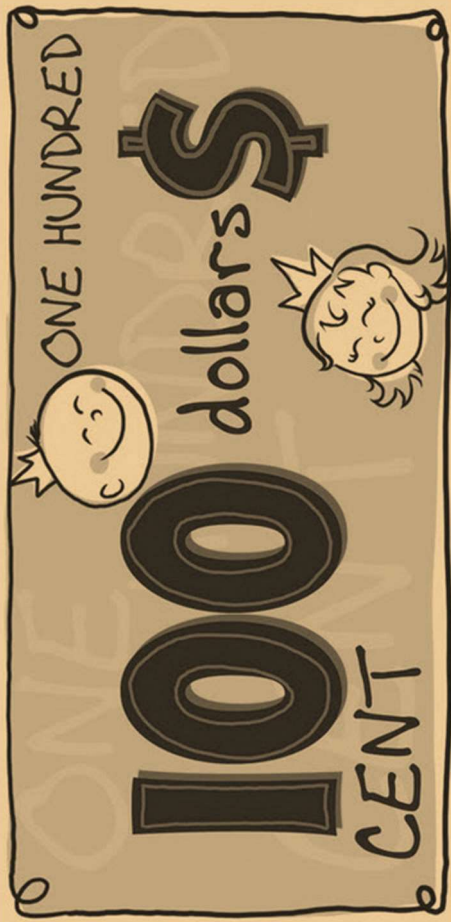
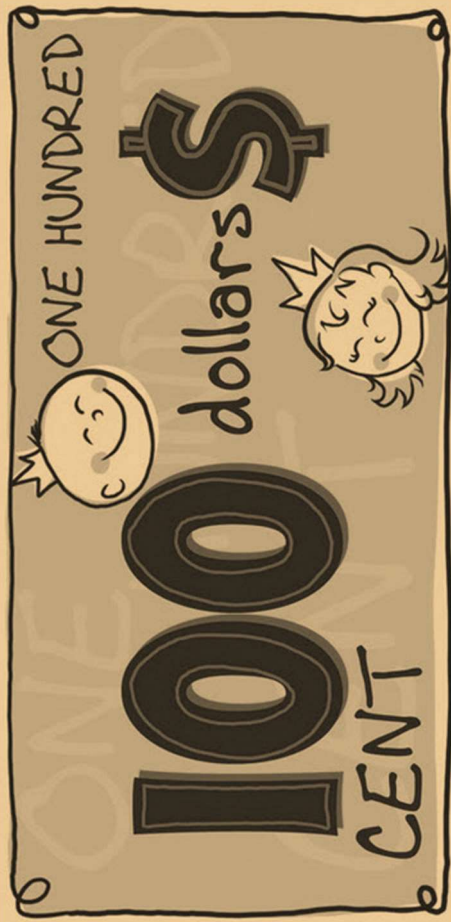
(POP)

Research programs and trades in post-secondary institutes that deal with careers in the wildberry industry. You must choose a career or field from the list below or think of another career that may deal with the wildberry industry and research this career. A Powerpoint presentation or a poster should be made to show your findings.

- Botanist
- Scientist
- Business management
- Accounting
- Forestry management
- Biodiversity







Name: _____

Date: _____

Blind Taste Test

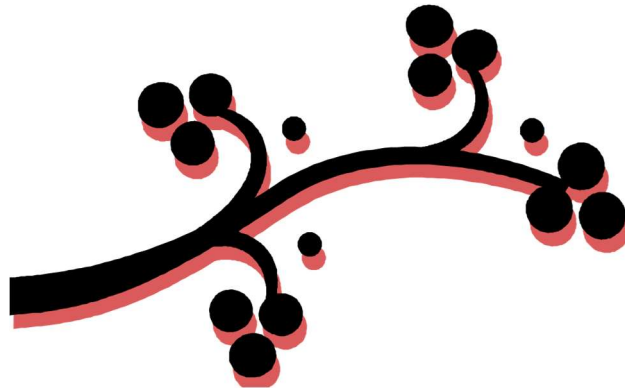
Objective: To determine whether or not sugar helps distinguish the type of berry

Items needed:

- Bakeapples
- Redberry
- Blackberry
- Sugar
- Spoon
- Blindfold

Instructions:

1. Blindfold student, one student at a time. Have them pinch their nose.
2. Have student taste each berry, with and without sugar. Between each taste test, have the student take a drink of water to rinse their mouth of taste. Students must record their guesses.
3. Put away materials and clean up.
4. Complete a lab report as indicated by your teacher.



Nutritional Value of Berries

(Give notes to students or write them on board and have them look up the definitions for the underlined words for homework or in class)

Blackberry - a good source of vitamin C, dietary fibre and folate

Bakeapple - are rich in Vitamin C, a good source of vitamin B6, magnesium and dietary fibre and high in antioxidants when ripe

Redberry - high in vitamin C, dietary fibre, tannins, anthocyanins and antioxidants, also a good source of vitamin E

Marshberry - Contain vitamin C, a source of dietary fibre, Vitamin E and antioxidants

Sqaushberry - Source of dietary fibre and very high in vitamin C

Anthocyanin (redberry)

- Powerful antioxidants
- Water soluble **pigment** that comes from a plant
- Antioxidant **flavonoids** that protect many body systems.
- Some of the strongest physiological effects of any plant compounds
- Anthocyanin's have the strongest antioxidizing power of 150 flavonoids
- Anti-inflammatory properties
- Ability to protect small and large blood vessels

Antioxidants (Marshberry, Bakeapple, and Redberry)

- Protect your cells
- Helps body to break down food
- Found especially in fruits and veggies
- Is a **molecule** that inhibits the **oxidation** of other molecules
- Oxidation – is a **chemical reaction** that transfers electrons or hydrogen from a substance to an **oxidizing agent**
- Oxidation reactions can produce free radicals
- Free radicals can start **chain reactions**
- When a chain reaction occurs in a cell it can cause damage or death to this cell
- Antioxidants terminate these chain reactions by removing **free radical** intermediates and inhibiting other oxidation reactions
 - They do this by being oxidized themselves, therefore, antioxidants are often **reducing agents**
- Plants and animals maintain complex systems of multiple types of antioxidants:
 - Glutathione – preventing damage to important cellular components (free radicals)
 - Vitamin E – fat **soluble** antioxidant that stops the production of reactive oxygen species
 - Enzymes:
 - Catalase
 - Superoxide dismutase

- Magnesium is needed for more than 300 **biochemical** reactions in the body
- It helps keep normal muscle and nerve function, keeps heart rhythm steady, supports a healthy immune system, and keeps bones strong
- Magnesium helps regulate blood sugar levels, promotes normal blood pressure and is known to be involved in energy **metabolism** and **protein synthesis**
- Green vegetables are good sources of magnesium
 - Nuts and seeds
 - Beans and peas
 - Tap water
- Having enough body stores of magnesium may be protective against **disorders** such as cardiovascular disease and immune dysfunction
- Signs of magnesium deficiency are loss of appetite, nausea, vomiting, fatigue, and weakness
- Worsen signs are numbness, tingling, muscle contractions and cramps, seizures, personality changes, abnormal heart rhythms, and coronary spasms can occur
- It helps regulate calcium levels
- Certain medical conditions can lower the bodies magnesium, such as; intestinal virus, gastro diseases (irritable bowel syndrome & ulcerative colitis), diabetes, pancreatitis, hyperthyroidism and kidney disease
- Too much coffee, soda, salt, alcohol, heavy menstrual periods, excessive sweating and prolonged stress can lower magnesium levels
- More magnesium in the diet may protect against developing type 2 diabetes
- Magnesium is essential to heart health
- Eating foods that are rich in magnesium on a regular basis is said to lower blood pressure

Vitamin B6 (Bakeapple)

- Helps the body make **antibodies**
- Helps maintain normal nerve function
- Helps make **hemoglobin**
- A vitamin B6 deficiency can cause a form of **anemia**
- Help break down proteins
 - The more protein you eat, the more vitamin B6 you need
- Keeps blood sugar (glucose) in normal ranges
- Large doses of vitamin B6 can cause:
 - Difficulty coordinating movement
 - Numbness
 - Sensory changes
- Deficiency of this vitamin can cause:
 - Confusion
 - Depression
 - Irritability
 - Mouth and tongue sores

Dietary Fibre (Marshberry, Redberry, Blackberry, Bakeapple, and Squashberry)

- Fruit is a soluble fibre
 - Helpful in preventing atherosclerosis by reducing high cholesterol & **triglycerides**, thereby decreasing one's risk of heart disease and stroke

Nutritional Value of Berries

(TEACHER'S COPY – Give students sheet with list of these words and they need to find the BEST suited definition for each word)

Pigment –

Flavonoids –

Molecule –

Oxidation –

Chemical reaction –

Chain reaction –

Oxidizing agent –

Free radical –

Reducing agent –

Soluble –

Oxidative stress –

Neurodegenerative diseases –

Alzheimer's disease –

Parkinson's disease –

Altitude sickness –

Nutrient –

Ultraviolet –

Collagen –

Immune system –

Deficiency –

DNA –

Fat soluble –

Bile –

Name: _____

Date: _____

Nutritional Value of Berries

Write definitions for each word

Pigment –

Flavonoids –

Molecule –

Oxidation –

Chemical reaction –

Chain reaction –

Oxidizing agent –

Free radical –

Collagen –

Immune system –

Deficiency –

DNA –

Fat soluble –

Bile –

Biochemical –

Metabolism –

Protein synthesis –

