

# STILETTO

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# ECONOMIC IMPACT ASSESSMENT

**Bleuets NB Blueberries**

**September 2022**

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# OVERVIEW

## A NEW BRUNSWICK STAPLE

Blueberries are generally found in two varieties: wild and cultivated. Wild, or lowbush, blueberries are a global rarity. The plant and its industry are generally confined to the northeastern region of North America, with most cultivation and industry growth occurring in Maine, Nova Scotia, Prince Edward Island, Quebec, and of course, New Brunswick. Wild blueberries have been native to the province for thousands of years and were a common food staple for New Brunswick's Indigenous peoples.

Wild blueberries boast a sweeter and more potent flavour compared to their cultivated counterparts and are considered a superfruit. Because wild blueberries grow in soil with low pH, there is excess mineral uptake by the fruit, resulting in high concentrations of minerals, vitamins, and micronutrients within the berries. For example, wild blueberries are rich in antioxidants, which prevent cell damage when consumed, reducing the risk of cancer, heart disease, diabetes, and other significant health risks.<sup>1</sup> Researchers have even found a link between wild blueberry consumption and brain health, with daily consumption associated with improved memory, mood, and attention, especially in young people.<sup>2</sup>

Wild blueberries thrive in flat, coastal regions, as the ocean reduces the risk of frost.<sup>3,4</sup> As such, wild blueberries grow abundantly in New Brunswick, with several strong growing regions across the province. However, New Brunswick's Northeast region, particularly Gloucester and parts of Northumberland counties, has the highest concentration of production. The Southeast and Southwest regions in the province were the first to develop the current industry in New Brunswick in the late 1960s, but large portions of Crown land were made available for blueberry production in the Northeast, which led to the emergence of this area as the largest production region.<sup>5</sup> In fact, 64.8 percent of the province's primary production of wild blueberries comes from the Northeast.

## CURRENT INDUSTRY STRENGTH

The wild blueberry industry in New Brunswick is strong relative to that of other growing regions and other agricultural sectors in the province. The wild blueberry sector has experienced significant gains in farmland over the past several years with a 10-year average annual growth rate in cultivated land of 2.4 percent, outpacing the national average of only 1.2 percent.<sup>6</sup>

### **An expanding New Brunswick agricultural sector**

From 2011-16, the area of land dedicated to fruits, berries, and nuts in New Brunswick rose by 52.4 percent (to 45,480 acres); this was the largest percentage

and acreage increase in Canada for that time, and the majority of this gain (55.6%) was attributable to blueberries, accounting for 95.4 percent of all land used for fruit berries, and nut cultivation.<sup>7</sup>

**Figure 1: Percentage of components of cropland, New Brunswick, 2011-16<sup>8</sup>**

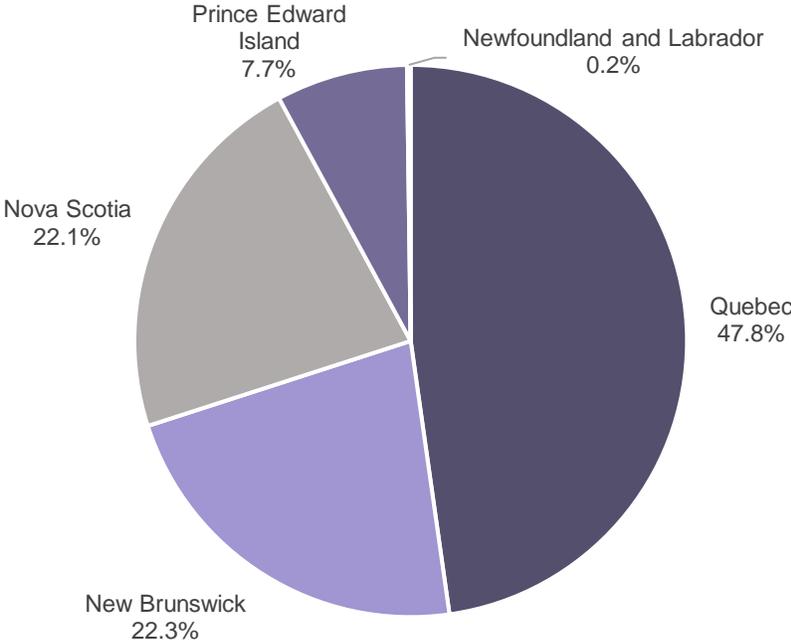
Component of Cropland	Percentage of Cropland (%)	
	2011	2016
Field crops	40.8	39.2
Hay	49.7	46.6
Vegetables	0.5	0.5
Fruits, berries, and nuts	8.5	13.2
Sod and nursery	0.4	0.4
<b>Total cropland</b>	<b>100.0</b>	<b>100.0</b>

Source: Statistics Canada

**Among Canada’s leaders by acreage**

As of the 2021 Agricultural Census, New Brunswick had the second-highest acreage of land dedicated to lowbush blueberry production in Canada. In fact, 22.3 percent of all cultivated land dedicated to lowbush blueberry production in Canada is in New Brunswick (Figure 2).<sup>9</sup>

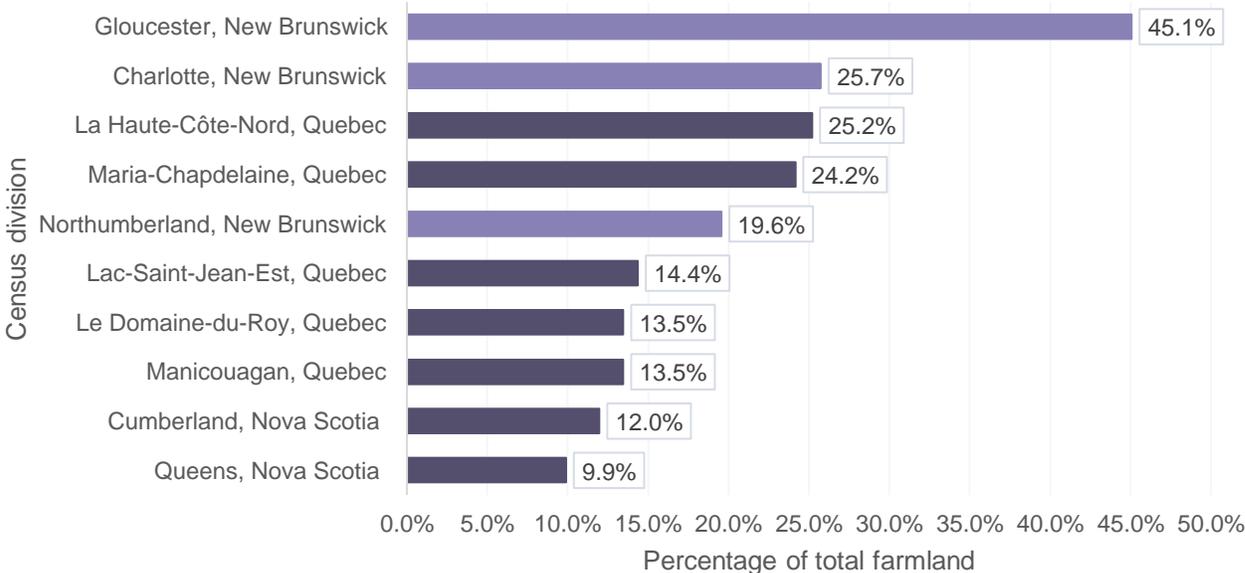
**Figure 2: Total acres of lowbush blueberries, percentage per province, 2021<sup>10</sup>**



Source: Statistics Canada

Furthermore, Gloucester County has the highest percentage of cropland dedicated to wild blueberry growth among all Canadian census divisions and the third-highest acreage of wild blueberry cropland among all census divisions in Canada.<sup>11</sup> As Figure 3 indicates, wild blueberries compose 45.1 percent of all cropland in the county, compared to 24.2 percent of cropland in Maria-Chapdelaine census division in Quebec, which has the highest acreage among Canadian counties.<sup>12</sup>

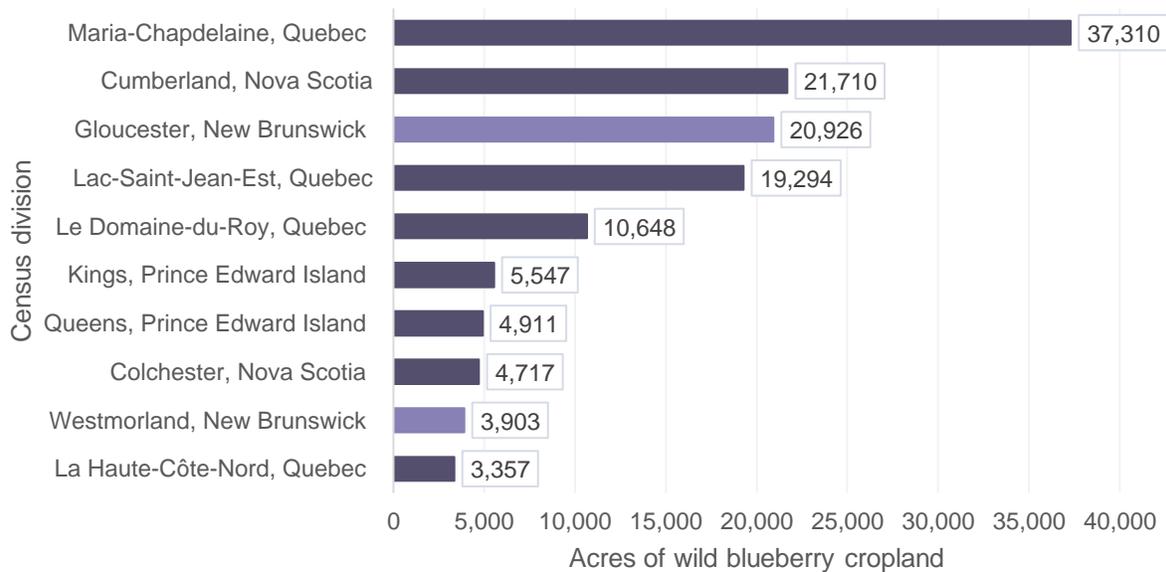
**Figure 3: Lowbush blueberry cropland as a percentage of total farmland (in acres) by census division (top 10), 2021<sup>13</sup>**



Source: Statistics Canada

As Figure 4 shows, the two strongest New Brunswick counties by acreage are Gloucester, with 20,926 acres, and Westmorland, with 3,903 acres.<sup>14</sup> The third-largest lowbush blueberry growing region in the province is Charlotte County.<sup>15</sup> As of the 2021 Census of Agriculture, the region has 2,896 total acres.<sup>16</sup> The County had previously been the second-largest producer in the province, with 3,785 acres in 2011 (based on Census reporting).<sup>17</sup> As the Census shows, acres of blueberry production in that County has declined between 2011-21, while acreage in Westmorland County expanded in that time, from 2,245 in 2011 to 3,903 by 2021.<sup>18,19</sup> However, Charlotte remains a strong growing region.

**Figure 4: Total acres of lowbush blueberries by census division (top 10), 2021<sup>20</sup>**



Source: Statistics Canada

Overall, the province boasts 40,583 acres of wild blueberry cropland, with an estimated 28,000 acres in the Northeast. However, ongoing and predicted land development operations will increase the total acreage. Three specific development operations are discussed in the following report. A total of 2,500 acres is currently being developed, which will continue development until 2027. An additional 3,000 acres began development in 2018 and will begin production in 2025. Finally, 6,000 total acres is expected to begin commercial production in 2031. All of these development operations will take place in the Northeast. Given the region’s established topographical and general industry strength, the benefits of expanded production are numerous. The following sections outline the significant economic impacts and social benefits of current and forecasted production of wild blueberries in the Northeast region and the province generally.

## ECONOMIC IMPACT ASSESSMENT

The economic impact model discussed in the following sections is based on Statistics Canada’s input-output tables. These tables offer a detailed summary of how spending in each sector flows throughout the provincial and national economy. The following model uses current and forecasted industry revenues as an estimate of industry expenditures to determine the total impacts of the industry in the economy. Total impacts include:

- **Direct impacts:** These measure the value added to the economy that results directly from the revenue created by farmers and processors in the industry, and the wages earned by workers directly employed in the industry.
- **Indirect impacts:** These measure the value added to the economy through demand by firms for intermediate goods and support services, otherwise known as the supply chain. For example, the production of blueberries requires the services of pollinators, equipment manufacturers and / or rentals, etc.
- **Induced impacts:** These measure the effects of workers in the aforesaid intermediate industries spending their wages, which in turn generates employment, income, taxes and other value for the firms and industries that benefit from this induced spending.

The model uses the input-output tables to determine the gross domestic product (GDP), employment, and indirect taxes generated by industry operations. The model further measures the taxes on income and consumer spending generated as a result of the wild blueberry industry.

## Measuring impact in two streams

**Production of blueberries in New Brunswick takes place in two stages: primary production, and value-added processing.** Primary production involves cultivation and harvesting, while value-added processing takes place when the harvested blueberries are transported to processing plants to be sorted and frozen. Value-added processing also involves any additional value-added production, such as using wild blueberries to create new products, such as jams, baked goods, or wine. The value-added stage may also take the form of U-pick and farm stand operations, which several farms operate across the province.

These production stages correspond to two separate industries (Figure 5).

**Figure 5: Wild blueberry production stages and their corresponding input-output classifications<sup>21</sup>**

Production Stage	Input-Output Classification
<b>Primary production</b>	[BS111A00] Crop production (except cannabis, greenhouse, nursery, and floricultural production)
<b>Value-added processing</b>	[BS311400] Fruit and vegetable preserving and specialty food manufacturing

Source: Statistics Canada

As such, the impacts are determined for each stage separately using the individual input-output tables for each stage. All figures are in constant 2022 Canadian dollars, unless otherwise specified.

# CURRENT IMPACTS

Wild blueberries are grown throughout New Brunswick, but as stated above, 64.8 percent of all provincial production comes from the Northeast region of the province. To demonstrate the impact of Northeast production on the province's overall production, economic impacts for the Northeast region and the province have been calculated separately.

## CURRENT IMPACTS: NEW BRUNSWICK

### Primary production

New Brunswick wild blueberries experienced a strong economic performance overall in 2021. Impacts were particularly strong in 2021, with a 10-year high farm gate price of \$0.85 per pound at minimum, and province-wide production of nearly 54.0 million pounds, 35.0 million pounds of which came from the Northeast. While original estimates of the 2021 farm gate price were set at \$0.85 per pound, more recent estimates suggest that in some instances, the final price was settled at an even higher rate. For the purposes of the model of current impacts, the minimum price of \$0.85 per pound is used. As a result of this price and the production of 54.0 million pounds, direct industry output that year was at least \$29.8 million, an over 200.0 percent increase over the output in 2017 (\$8.3 million).

This jump was largely due to the fact that 2017 recorded the lowest farm gate price over the past 10 years (2012-21) at only \$0.24 per pound. The low price was the result of three previous bumper years (2014-16), which flooded the market with an over-supply in cold storage, combined with drought conditions in 2017 that lowered the quality of the berries.<sup>22,23</sup> Although the actual volume of production in 2017 (53.0 million pounds) was not drastically lower than that of 2021 (54.0 million pounds), the low quality and existing over-supply resulted in the significantly lower price of \$0.24 per pound.

Steady increases in cultivated lands also played a role in the industry gains between 2017-21. In 2017, 39,219 acres were dedicated to wild blueberry crops, compared to 40,583 acres by 2021.

The 10-year high farm gate price per pound of at least \$0.85 and production volume of 54.0 million pounds contributed to the highest province-wide industry revenue in 10 years, \$46.0 million.<sup>24,25,26</sup> Based on these figures, the economic impacts in 2021 primary production have been estimated and are presented in Figure 6.

**Figure 6: Summary of total economic impacts of wild blueberry primary production (direct, indirect, and induced), New Brunswick, 2021<sup>27</sup>**

Measure	2017 Impacts	2021 Impacts
Direct output	\$12,731,000	\$46,037,000
Provincial GDP	\$9,612,000	\$32,088,000
Total labour income	\$4,303,000	\$16,481,000
Direct FTE employment	87	303
Total FTE employment	126	450
PIT, HST, and property taxes (household)	\$713,592	\$2,733,000
Taxes on products and production	\$891,000	\$3,314,664
Total taxes	\$1,605,000	\$6,048,000
Provincial and municipal share of taxes	\$1,029,000	\$3,877,000
Total household spending	\$3,195,000	\$12,495,000
Food	\$650,482	\$2,037,000
Shelter	\$1,040,000	\$3,879,000
Transportation	\$991,000	\$3,565,000
Health and personal care	\$287,000	\$1,132,000
Recreation	\$270,000	\$1,138,000

Source: Stiletto Analysis

### *GDP contribution*

In 2021, wild blueberry primary production in New Brunswick contributed an estimated \$32.1 million to New Brunswick's total GDP. This measure includes direct, indirect, and induced GDP impacts. As previously noted, this GDP contribution marks a dramatic increase from the GDP generated in 2017 (\$9.6 million).

### *Employment impacts*

New Brunswick's total wild blueberry primary production also creates high employment impacts within the province. In 2021 alone, production contributed to 450 full time equivalent (FTE) positions. This figure included 304 direct FTE positions and 146 indirect and induced FTE employment. Because much of the work in this area is seasonal, the 304 direct FTE jobs accounted for an estimated 2,762 individuals.

It should be noted that the FTE estimates presented here are based on the value of output by producers, and what the FTE supported by output of that value based on the industry average. The actual number of workers in a wild blueberry operation is usually based on the number of acres of cropland. As such, the FTE employment

impact estimates for primary production presented here, and elsewhere in the report, are likely quite conservative.

Primary production also generated significant labour income for workers supported by the industry. In 2021, the province's wild blueberry industry generated \$16.5 million in labour income, nearly four times the labour income generated five years earlier in 2017. For farm owners apportioning a salary for themselves, this income is captured in the labour income impact, as well as income paid to their workers. In addition, farmers may also collect dividend income from their gross operating surplus. For the crop production industry, an estimated 17.8 percent of output is direct gross operating surplus for farm owners. Based on 2021 output, this amounts to \$8.2 million, which can be used by farmers to pay down debts, reinvest in the farm, or taken out as dividend income.

### *Tax contribution*

Wild blueberry production generates taxes in the province through taxes on employment income generated by the industry and through taxes on products and taxes on production. Taxes on income (PIT, HST, and property taxes) generated by primary industry surpassed \$2.7 million in 2021, \$1.7 million of which went to municipal and provincial governments.

Total taxes on products and production created by 2021 primary production were over \$3.3 million (including direct, indirect, and induced effects). Of this amount, \$2.7 million went to municipal and provincial governments.

The overall tax contribution of New Brunswick primary production totalled \$6.0 million in 2021, which included \$3.9 million for municipal and provincial governments. This revenue was compared to only \$1.6 million generated in 2017, with \$1.0 million going to municipal and provincial governments.

### *Household spending impacts*

Spending impacts were estimated based on total labour income generated. Wild blueberry primary production spurred an estimated \$12.5 million in household spending in 2021 compared to only \$3.2 million in household spending generated in 2017. This spending was distributed across several areas, including over \$2.0 million in food expenditures, \$3.9 million in shelter costs, and \$3.6 million in spending on transportation throughout the province. The health and personal care sectors benefitted from over \$1.1 million in spending, while households spent an additional \$1.1 million on recreation.

## **Value-added processing and production**

Province-wide value-added output reached \$36.0 million in 2021, compared to only \$12.7 million in 2017. This output was based on total primary production of 54.0 million pounds, generating \$46.0 million in revenue. The \$36.0 million in value-

added revenue flowed throughout the provincial economy, spurring significant economic benefits, presented in Figure 7.

**Figure 7: Summary of total economic impacts of value-added wild blueberry production and processing (direct, indirect, and induced), New Brunswick, 2017-21<sup>28</sup>**

Measure	2017	2021
Direct output	\$9,932,000	\$35,915,000
Provincial GDP	\$6,545,000	\$23,058,000
Total labour income	\$3,019,000	\$12,858,000
Direct FTE employment	30	120
Total FTE employment	55	215
PIT, HST, and property taxes (household)	\$804,000	\$3,423,000
Taxes on products and production	\$526,000	\$2,155,000
Total taxes	\$1,330,000	\$5,577,000
Provincial and municipal share of taxes	\$941,000	\$3,928,000
Total household spending	\$2,289,000	\$9,748,000
Food	\$373,000	\$1,589,000
Shelter	\$711,000	\$3,026,000
Transportation	\$653,000	\$2,781,000
Health and personal care	\$207,000	\$883,000
Recreation	\$208,000	\$888,000

Source: Stiletto Analysis

### *GDP impact*

Value-added processing and production contributed \$35.9 million to New Brunswick's GDP in 2021 through direct, indirect, and induced effects. This represents a 200.0 percent increase over the 2017 GDP contribution of only \$9.9 million.

### *Labour impact*

Value-added operations in New Brunswick supported 215 FTE employment across the province, including 120 FTE directly employed (1,092 individual workers). FTE employment increased by nearly 300.0 percent between 2017-21.

The employment supported by value-added production increased total labour income across the province to \$12.9 million in 2021, compared to only \$3.0 million in 2017.

### *Taxation impact*

The significant labour income generated by value-added production in turn contributed to government revenue through taxes. In 2021, value-added operations boosted government revenue to a total of \$5.6 million, including \$3.9 million to municipal governments and the province. Taxes on income (PIT, HST, property taxes) totalled \$3.4 million, while indirect taxes (on products and production) totalled \$2.2 million.

### *Household spending impact*

Value-added operations contributed to \$9.7 million in household spending across the province in 2021. This spending included \$1.6 million on food, \$3.0 million on shelter, and \$2.8 million on transportation. The health and personal care sector saw \$883,000 in consumer spending, while recreation industries benefitted from \$888,000 in spending.

## **CURRENT IMPACTS: NORTHEAST NEW BRUNSWICK**

### **Primary production**

The operations of wild blueberry farmers in the Northeast region of New Brunswick have generated significant impacts for the province. Of the total provincial output in 2021, \$29.8 million comes from the Northeast.

Figure 8 presents a summary of the economic impacts of industry output in 2021 and 2017. As the figure illustrates, the lower price in 2017 resulted in significantly lower output value and lower resulting impacts for the economy relative to subsequent years.

**Figure 8: Summary of total economic impacts (direct, indirect, and induced) from wild blueberry primary production, Northeast New Brunswick, 2017-21<sup>29</sup>**

Measure	2017 Impacts	2021 Impacts
Direct output	\$8,275,000	\$29,750,000
Provincial GDP	\$6,248,000	\$20,736,000
Total labour income	\$2,797,000	\$10,651,000
Direct FTE employment	56	196
Total FTE employment	82	291
PIT, HST, and property taxes (household)	\$385,000	\$1,766,000
Taxes on products and production	\$579,000	\$2,142,000
Total taxes	\$964,000	\$3,908,000
Provincial and municipal share of taxes	\$616,000	\$2,505,000
Total household spending	\$2,077,000	\$8,075,000
Food	\$314,000	\$1,316,000

Measure	2017 Impacts	2021 Impacts
Shelter	\$676,000	\$2,507,000
Transportation	\$644,000	\$2,304,000
Health and personal care	\$187,000	\$732,000
Recreation	\$176,000	\$735,000

Source: Stiletto Analysis

### *GDP impacts*

In 2021, the Northeast region generated \$20.7 million in total provincial GDP through primary production of wild blueberries. This figure includes direct, indirect, and induced effects. The 2021 GDP amount is compared to only \$6.2 million in total GDP generated in 2017, an increase of over 200.0 percent.

### *Employment impacts*

Wild blueberry farm operations also generate significant employment impacts. In 2021, primary production in the Northeast supported 196 FTE positions in direct employment (within the region), and another 95 FTE positions through indirect and induced effects. Because of the seasonal nature of many of the direct industry jobs, the 196 FTE in direct employment accounted for an estimated 1,785 individual workers in the Northeast region. This figure is compared to only 56 FTE in direct employment supported by the region's industry in 2017 (only 513 individuals).

As noted above, these direct employment impacts should be regarded as conservative. These estimates are based on average direct employment that would be seen at industry output of this level. However, employment in the wild blueberry production industry is based on the number of acres rather than output value. As such, although the estimates are accurate to crop production, the actual direct employment supported is likely higher.

As a result of the employment supported by the industry, significant labour income was generated. In 2021, primary production supported a total of \$10.7 million in labour income (including direct, indirect, and induced effects), compared to the \$2.8 million generated in 2017. This labour income represents income paid to workers, as well as income of farm owners, if they are apportioning a salary for themselves. Farm owners in the Northeast also generated an estimated \$5.3 million in direct gross operating surplus, which could be used to pay off debts, reinvested in the farm, and / or taken as dividend income.

### *Taxation impacts*

Primary production generates taxes for governments through the labour income generated by operations and through indirect taxes on products and production.

In 2021, primary production in the Northeast generated \$3.9 million in total taxes to municipal, provincial, and federal governments. This included \$1.8 million produced in personal income tax (PIT), HST, and property taxes, \$1.1 million of which remained in New Brunswick, going to municipal and provincial government.

A total of \$2.1 million was generated through taxes on products and production. Of this, \$1.7 million was directed to municipal and provincial governments, while the remaining \$429,000 flowed to the federal government.

*Household spending impacts*

The Northeast’s primary production also stimulates significant household spending through the generation of labour income. Total household spending impacts increased by over 200.0 percent between 2017-21, with households across the province spending \$8.1 million attributable to wild blueberry production in the Northeast. This spending included \$1.3 million in food expenditures, \$2.5 million in shelter costs, \$2.3 million in transportation spending, and \$731,557 in spending on health and personal care. An additional \$735,218 was generated in recreation spending.

**Value-added processing and production**

The majority of New Brunswick processing takes place in St. Isidore, at Acadian Wild Blueberry, a processing facility owned by Oxford Frozen Foods, which opened in 2016. The facility can process up to 1.5 million pounds of fresh blueberries per day and has a cold storage facility that can hold as much as 45 million pounds of product.<sup>30,31</sup>

Exact data on expenditures or revenue from value-added production are difficult to acquire. However, the additional revenue generated from value-added production is closely related to the revenue created through primary production. According to a previous economic impact assessment, for every \$1.00 of revenue created through primary production, an additional \$0.78 is generated through value-added processing revenue. This ratio is used to estimate the revenues from value-added production in 2017 and 2021 that result from primary production in the Northeast, and their resulting economic impacts, presented in Figure 9.

**Figure 9: Summary of total economic impacts (direct, indirect, and induced) of value-added wild blueberry production and processing, Northeast New Brunswick, 2017-21<sup>32</sup>**

Measure	2017	2021
Direct output	\$6,456,000	\$23,209,000
Provincial GDP	\$4,254,000	\$14,900,000
Total labour income	\$1,963,000	\$8,309,000
Direct FTE employment	19	78

Measure	2017	2021
<b>Total FTE employment</b>	36	139
<b>PIT, HST, and property taxes (household)</b>	\$522,000	\$2,212,000
<b>Taxes on products and production</b>	\$342,000	\$1,393,000
<b>Total taxes</b>	\$865,000	\$3,604,000
<b>Provincial and municipal share of taxes</b>	\$612,000	\$2,539,000
<b>Total household spending</b>	\$1,488,000	\$6,299,000
<b>Food</b>	\$243,000	\$1,027,000
<b>Shelter</b>	\$462,000	\$1,956,000
<b>Transportation</b>	\$425,000	\$1,797,000
<b>Health and personal care</b>	\$135,000	\$571,000
<b>Recreation</b>	\$135,000	\$574,000

Source: Stiletto Analysis

### *GDP impact*

Value-added processing increased provincial GDP by \$23.2 million in 2021 through direct, indirect, and induced effects. Similar to the increase noted in primary production, the increase in the GDP generated through value-added production between 2017-21 was over 200.0 percent.

### *Labour impact*

Value-added processing in 2021 supported 139 FTE employment, including 78 direct FTE jobs, a significant increase from the FTE jobs supported in 2017. This direct FTE employment represented an estimated 710 individual workers.

The labour income generated from total employment was over \$8.3 million, including \$5.6 million in income for those employed within the Northeast region (67.5%). The increase in total labour income supported by value-added production between 2017-21 was over 300.0 percent, an even higher increase than that of output (259%).

### *Taxation impact*

Value-added operations in 2021 increased government tax revenue by as much as \$3.6 million, which included \$2.5 million remaining within the province for municipal and provincial governments.

Taxes on income increased in proportion to the increase in labour income, totalling \$2.2 million in 2021. Indirect taxes (on products and production) boosted government revenue by \$1.4 million.

### *Household spending impact*

Total household spending generated by value-added operations in 2021 was over four times what it was in 2017, with the industry supporting household spending of \$6.3 million that year. This figure included \$1.0 million in spending on food, \$2.0 million on shelter, \$1.8 million on transportation, and over \$1.1 million on health and personal care and recreation.

## SUMMARY OF CURRENT IMPACTS

To demonstrate the total economic impacts of the wild blueberry industry in New Brunswick, the impacts of primary and value-added production are combined in Figure 10.

**Figure 10: Current total economic impacts, primary and value-added production and processing impacts combined (direct, indirect, and induced), 2021<sup>33</sup>**

Measure	Total 2021 Production	
	Northeast New Brunswick	New Brunswick
Direct output	\$52,959,000	\$81,952,000
Provincial GDP	\$35,636,000	\$55,145,000
Total labour income	\$18,959,000	\$29,339,000
Direct FTE employment	274	424
Total FTE employment	429	664
PIT, HST, and property taxes (household)	\$3,978,000	\$6,156,000
Taxes on products and production	\$3,535,000	\$5,470,000
Total taxes	\$7,512,000	\$11,625,000
Provincial and municipal share of taxes	\$5,044,000	\$7,805,000
Total household spending	\$14,374,000	\$22,244,000
Food	\$2,343,000	\$3,625,000
Shelter	\$4,462,000	\$6,905,000
Transportation	\$4,101,000	\$6,346,000
Health and personal care	\$1,302,000	\$2,015,000
Recreation	\$1,309,000	\$2,025,000

Source: Stiletto Analysis

### *GDP contribution*

In Northeast New Brunswick, total production contributed a total of \$53.0 million to provincial GDP in 2021. Overall province-wide production generated \$82.0 million for New Brunswick's GDP, meaning that 64.6 percent of the industry's provincial GDP contribution was the result of output in the Northeast.

### *Employment impacts*

Total Northeast production supported the employment of 429 FTE positions across the province, including 274 directly employed in the region (64.6% of provincial total). Province-wide production supported the FTE employment of 664 positions, with 424 directly employed in the industry, or an estimated 3,858 individual workers.

Labour income generated by 2021 total production in the Northeast was \$19.0 million, while province-wide, production supported \$29.3 million worth of labour income.

### *Tax contribution*

Taxes generated by total 2021 production in the Northeast surpassed \$7.5 million, including \$5.0 million in provincial and municipal taxes. Total New Brunswick production contributed \$11.6 million in taxes, with \$7.8 million going to provincial and municipal governments. Again, nearly 65 percent of all taxes generated by the industry were the result of Northeast production.

### *Household spending impacts*

Total household spending resulting from Northeast production amounted to \$14.4 million, while overall New Brunswick production generated a total of \$22.2 million in household spending.

# FORECASTED IMPACTS

## ASSUMPTIONS

To forecast the future impacts of wild blueberry production in New Brunswick, several assumptions and predictions have been made regarding acres of land cultivated, production per acre, and farm gate price.

### Land development assumption

There are three major land development operations considered in the model. For the purpose of this assessment, new land development has been identified for the Northeast. While new land development may take place throughout the province outside the Northeast, there is a higher level of industry confidence in the developments discussed in the Northeast region. The three major development operations included in the model are as follows:

- Operation 1: 5,500 total acres (500 acres come into commercial production annually from 2023-33);
- Operation 2: 3,000 total acres come into commercial production in 2025; and
- Operation 3: 6,000 total acres (3,000 acres come into commercial production annually from 2030-31).

The forecasted production impacts consider the economic impact of primary production on existing land and on the new land development operations listed above.

The development of the land itself will also generate economic impacts even before the land comes into commercial production, as the development requires significant expenditures to level and manage the land to bring the crops to the production stage. The impacts of these expenditures are also modelled.

### Productivity assumption

Based on data provided by BNBB, productivity is forecasted at 3,000 pounds per acre from 2022-26. Aside from a slightly reduced production predicted in 2022 due to lower availability of pollinators, the province predicts that favourable environmental conditions, combined with enhanced productivity and land gains will result in increasing annual production. By 2027, enhanced productivity is expected to result in an average of 3,500 pounds per acre from that year onward.

Figure 11 provides a summary of the forecasted acreage of land for blueberry crops and the resulting predicted total production in the Northeast and the rest of the province from 2022-33, the years for which a reliable prediction of acreage and productivity is available.

**Figure 11: Forecasted total acres of wild blueberry farmland, bearing acres, and production, Northeast New Brunswick and New Brunswick total, 2022-33<sup>34</sup>**

Year	Total Acres		Bearing Acres		Production	
	Northeast NB	NB Total	Northeast NB	NB Total	Northeast NB	NB Total
2021	28,000	40,583	14,000	18,719	35,000,000	53,995,000
2022	28,000	40,600	14,000	20,500	30,000,000*	49,500,000*
2023	28,500	41,100	14,250	20,750	42,700,000	62,200,000
2024	29,000	41,600	14,500	21,000	43,500,000	63,000,000
2025	32,500	45,100	16,250	22,750	48,700,000	68,200,000
2026	33,000	45,600	16,500	23,000	49,500,000	69,000,000
2027	33,500	46,100	16,750	23,250	58,600,000	81,350,000
2028	34,000	46,600	17,000	23,500	59,500,000	82,250,000
2029	34,500	47,100	17,250	23,750	60,400,000	83,150,000
2030	38,000	50,600	19,000	25,500	66,500,000	89,250,000
2031	41,500	54,100	20,750	27,250	72,600,000	95,350,000
2032	42,000	54,600	21,000	27,500	73,500,000	96,250,000
2033	42,500	55,100	21,250	27,750	74,400,000	97,150,000

Source: BNBB

\*Lower production is predicted for 2022 due to low pollination

## Price assumption

An assumption has also been made for the farm gate value per pound. While the farm gate value fluctuates annually, the model assumes a steady price of \$0.75 per pound in constant 2022 dollars. The value in 2021 was a 10-year high of \$0.85 per pound and the average over the past three years was \$0.72.<sup>35,36,37</sup> A linear forecast using historic prices from 2012-21 predicts that by 2042, the price per pound will be approximately \$0.72, but this prediction also relies on periods with unusually low prices in 2016-17.<sup>38</sup>

Meanwhile, producers and industry stakeholders are optimistic about demand for wild blueberries over the next several years, within the Atlantic provinces and globally. For example, the executive director of the Wild Blueberry Association of North America (WBANA) stated that demand “went through the roof” in 2021, causing processors to clear out their storage.<sup>39</sup> He predicted that demand will remain strong for the next several years.<sup>40</sup> In fact, some large producers in Maine are even expanding their operations to keep up with rising demand for wild blueberries.<sup>41</sup> Between 2012-21, the compound annual growth rate (CAGR) of global exports is about 11.0 percent, and global demand is expected to continue this increase.<sup>42</sup>

Retail prices have also increased consistently. In the US, between April 2020 and April 2021, the price of blueberries increased by 9.4 percent and then by another 6.7 percent between April 2021 and April 2022. While recent inflation has certainly accelerated this price rise, it is not the sole cause.<sup>43</sup>

Given these factors, the price assumption of \$0.75 per pound considers the current industry optimism and growing local and international demand, while remaining relatively consistent with historic prices.

## **Value-added production assumption**

The current economic impacts of value-added production discussed in the previous section are based on the existing relationship between revenues generated from primary production and revenues generated from value-added production. As mentioned previously, based on the five-year average revenue from value-added processing (2017-21), there is an estimated \$0.78 generated in value-added revenue for every \$1.00 of primary production revenue. To predict the future economic impacts of value-added production, the model assumes that this ratio remains constant from 2022-33.

However, these value-added estimates that follow may be conservative estimates, as it is a priority of BNBB and the industry generally to develop more value-added production in the province (thereby increasing the value-added revenue), particularly in the Northeast. Additional value-added production would include increasing U-Pick operations, wineries, other gastro-tourism operations, and farm stands. Opportunities could even exist for nutraceutical development in the province.

Expanding value-added operations would further increase the economic footprint of the industry in the province. Furthermore, this expansion could offset the sometimes negative effects of bumper years such as those seen in 2014-16, which contributed to the low 2017 price as a result of over-supply in cold storage. By increasing the use of wild blueberries in other products and operations, large volumes of the fruit may be less likely to remain in storage over long periods of time.

## **FORECASTED IMPACTS: NEW BRUNSWICK**

### **Primary production**

Given the assumptions outlined above, total primary production in New Brunswick is forecasted to be 97.2 million pounds by 2033, resulting in projected industry revenues of \$72.9 million that year. The forecasted economic impacts of this output, as well as the cumulative impacts from province-wide primary production from 2022-33 are shown in Figure 12.

The figure presents:

- The current annual economic impacts of province-wide primary production in 2021 for comparison;

- The forecasted annual economic impacts of province-wide primary production by 2033; and
- The forecasted cumulative economic impacts of province-wide primary production that is predicted to take place between 2022-33.

The predicted impacts are high, particularly the cumulative impacts over time. These outcomes are not guaranteed. They are based on the assumptions outlined in previous sections, which, though reasonable, are not assured. As such, the economic impacts presented in Figure 12 demonstrate the potential value to the provincial economy of continued and expanded wild blueberry production.

**Figure 12: Forecasted economic impacts of primary production of wild blueberries (direct, indirect, and induced), New Brunswick, 2022-33<sup>44</sup>**

Measure	Current Total Annual Impact	Total Predicted Annual Production Impact	Predicted Cumulative Production Impact
	2021	2033	2022-33
Direct output	\$46,037,000	\$72,863,000	\$702,488,000
Provincial GDP	\$32,088,000	\$50,785,000	\$489,634,000
Total labour income	\$16,481,000	\$26,085,000	\$251,491,000
Direct FTE employment*	303	480	4,631
Total FTE employment*	450	712	6,862
PIT, HST, and property taxes (household)	\$2,733,000	\$4,326,000	\$41,704,000
Taxes on products and production	\$3,314,664	\$5,246,000	\$50,579,000
Total taxes	\$6,048,000	\$9,572,000	\$92,284,000
Provincial and municipal share of taxes	\$3,877,000	\$6,923,000	\$66,743,000
Total household spending	\$12,495,000	\$19,776,000	\$190,670,000
Food	\$2,037,000	\$3,223,000	\$31,075,000
Shelter	\$3,879,000	\$6,139,000	\$59,192,000
Transportation	\$3,565,000	\$5,642,000	\$54,399,000
Health and personal care	\$1,132,000	\$1,792,000	\$17,274,000
Recreation	\$1,138,000	\$1,801,000	\$17,361,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

*GDP contribution*

Total primary production in the province is expected to boost provincial GDP by as much as \$50.8 million in 2033. Over the 12-year period, production is expected to generate \$489.6 million in cumulative GDP.

### *Employment impacts*

New Brunswick primary production is forecasted to support 712 FTE employment across the province in 2033, including 480 directly employed in the industry, or 4,368 individual workers. Furthermore, the cumulative impacts of production on employment are expected to be quite high, with primary production from 2022-33 supporting 6,862 person years of employment.

The forecasted labour income generated is also significant. In 2033 alone, labour income supported by the industry is expected to reach \$26.1 million. This figure includes any income of farm owners that they apportion as a salary for themselves. Between 2022-33, the labour income generated as a result of the province's primary production activities is predicted to be as high as \$251.5 million. Farm owners may also collect dividend income from their gross operating surplus, which would amount to \$13.0 million in 2033, and a cumulative total of \$125.0 million from 2022-33.

### *Tax contribution*

Given the high production volume and resulting labour income, government can expect to make significant gains in tax income from the province's primary production. The model predicts that by 2022, total taxes will amount to \$9.6 million, with \$6.9 million going to the provincial and municipal governments.

Over the 12-year forecast period, cumulative tax revenues are predicted to reach \$92.3 million, including a provincial and municipal share of \$66.7 million. This includes \$41.7 million in taxes on income and another \$50.6 million in indirect taxes.

### *Household spending impacts*

The province's primary production is also expected to support high household spending. According to the model, by 2033, the industry will generate \$19.8 million in total household spending, with \$3.2 going towards food expenditures, \$6.1 towards shelter costs, and another \$5.6 million in transportation spending.

Cumulatively, households are expected spend a total of \$190.7 million over 12 years as a result of the primary production activities across the province.

## **Value-added production and processing**

Value-added production across the province is expected to generate an estimated \$56.8 million in revenue by 2033. The annual value-added revenue has also been estimated for 2022-33, at \$548.0 million. The forecasted economic impacts of these are shown in Figure 13.

The figure presents:

- The current annual economic impacts of value-added production and processing that takes place across the province in 2021 for comparison;
- The forecasted annual economic impacts of value-added production and processing in New Brunswick by the year 2033; and
- The forecasted cumulative economic impacts of value-added production and processing over the 12-year period from 2022-33.

As previously discussed, these economic impacts are based on assumptions outlined in earlier sections. The impacts are not assured, and changes in future price and production will result in changes in the impacts of the industry on the economy.

**Figure 13: Forecasted economic impacts of value-added production and processing of wild blueberries (direct, indirect, and induced), New Brunswick, 2022-33<sup>45</sup>**

Measure	Current Total Annual Impact	Total Predicted Annual Production Impacts	Predicted Cumulative Production Impacts
	2021	2033	2022-33
Direct output	\$35,915,000	\$56,843,000	\$548,040,000
Provincial GDP	\$23,058,000	\$36,493,000	\$351,842,000
Total labour income	\$12,858,000	\$20,350,000	\$196,198,000
Direct FTE employment*	120	191	1,838
Total FTE employment*	215	340	3,278
PIT, HST, and property taxes (household)	\$3,423,000	\$5,417,000	\$52,226,000
Taxes on products and production	\$2,155,000	\$3,411,000	\$32,882,000
Total taxes	\$5,577,000	\$8,827,000	\$85,108,000
Provincial and municipal share of taxes	\$3,928,000	\$3,046,000	\$59,943,000
Total household spending	\$9,748,000	\$15,428,000	\$148,750,000
Food	\$1,589,000	\$2,515,000	\$24,243,000
Shelter	\$3,026,000	\$4,790,000	\$46,178,000
Transportation	\$2,781,000	\$4,402,000	\$42,439,000
Health and personal care	\$883,000	\$1,398,000	\$13,476,000
Recreation	\$888,000	\$1,405,000	\$13,544,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

*GDP contribution*

The increasing revenue generated from value-added production across the province is expected to boost New Brunswick’s GDP by \$36.5 million 2033. Over 12 years, the annual contributions to GDP are predicted to result in a cumulative contribution of \$351.8 million between 2022-33.

*Employment impacts*

The province’s value-added production are also expected to create significant and increasing employment impacts. By 2033, FTE employment supported by the value-added operations is predicted to be 340, including 191 directly employed in the industry (1,738 workers). Over time, these operations should support a total of 3,278 person years of employment (2022-33).

Labour income supported by forecasted value-added activity is also forecasted to be high; by 2033, the sector is expected to generate \$20.4 million in labour income. Over the 12-year forecast period, cumulative labour income is expected to reach \$196.2 million in total.

*Tax contribution*

Overall taxes generated by New Brunswick’s value-added production are forecasted to reach \$8.8 million by 2033, with \$3.0 million going to provincial and municipal governments.

The cumulative tax revenue to governments between 2022-33 is predicted to be as high as \$85.1 million, which includes \$52.2 million from PIT, HST, and property taxes, as well as \$32.9 million from taxes on products and production. Over this period, provincial and municipal governments will see \$59.9 million of the total taxes.

*Household spending impacts*

Total forecasted household spending generated in 2033 is predicted to be \$15.4 million, with \$2.5 million going towards food, \$4.8 million toward shelter, and \$4.4 million to transportation. An another \$2.8 million is predicted to be spent on health, personal care, and recreation.

Over the 12-year period from 2022-33, cumulative household spending is predicted to reach \$148.8 million.

**FORECASTED IMPACTS: NORTHEAST NEW BRUNSWICK**

**Primary production**

From the assumptions outlined in the previous section, the model forecasts the economic impacts resulting from primary production on the 6,000 acres of newly developed land, the cumulative impacts of production on the new land from 2030-

33, the annual impacts of total primary production in the Northeast by 2033 (which includes the newly developed land), and finally, the cumulative impacts of primary production expected to take place from 2022-33. These impacts are shown in Figure 14.

The figure shows:

- The annual economic impact of primary production in 2021 for comparison purposes;
- The forecasted annual economic impacts of primary production that will take place on the newly developed 6,000 acres of land in 2033;
- The forecasted cumulative economic impacts arising over the course of four years from 2030-33, when the new land first comes into production;
- The forecasted annual economic impacts of total primary production taking place on all land in the Northeast, including the newly developed land, in 2033; and
- The forecasted cumulative economic impacts of primary production in the Northeast over the 12-year period from 2022-33, including the cumulative impacts of the newly developed land.

The impacts shown, in particular the cumulative impacts, are high. It should be noted that these are predictions based on the price, land, and productivity assumptions outlined above. These figures are not guaranteed, as changes in these aforementioned factors will necessarily impact how the industry effects the economy.

**Figure 14: Forecasted economic impacts of primary production of wild blueberries (direct, indirect, and induced), Northeast New Brunswick, 2022-33<sup>46</sup>**

Measure	Current Total Annual Impact	Annual Impacts from Production on New Land Developed	Cumulative Impacts From Production on New Land Developed	Total Annual Production Impacts	Cumulative Total Production Impacts
	2021	2033	2030-33	2033	2022-33
Direct output	\$29,750,000	\$15,750,000	\$55,125,000	\$55,800,000	\$509,925,000
Provincial GDP	\$20,736,000	\$10,978,000	\$38,422,000	\$38,893,000	\$355,418,000
Total labour income	\$10,651,000	\$5,639,000	\$19,735,000	\$19,976,000	\$182,553,000
Direct FTE employment*	196	104	363	368	3,361
Total FTE employment*	291	154	538	545	4,981

Measure	Current Total Annual Impact	Annual Impacts from Production on New Land Developed	Cumulative Impacts From Production on New Land Developed	Total Annual Production Impacts	Cumulative Total Production Impacts
	2021	2033	2030-33	2033	2022-33
<b>PIT, HST, and property taxes (household)</b>	\$1,766,000	\$935,000	\$3,273,000	\$3,313,000	\$30,273,000
<b>Taxes on products and production</b>	\$2,142,000	\$1,134,000	\$3,969,000	\$4,018,000	\$36,715,000
<b>Total taxes</b>	\$3,908,000	\$2,069,000	\$7,242,000	\$7,330,000	\$66,987,000
<b>Provincial and municipal share of taxes</b>	\$2,505,000	\$1,326,000	\$4,642,000	\$5,302,000	\$48,448,000
<b>Total household spending</b>	\$8,075,000	\$4,275,000	\$14,962,000	\$15,145,000	\$138,404,000
<b>Food</b>	\$1,316,000	\$697,000	\$2,439,000	\$2,468,000	\$22,557,000
<b>Shelter</b>	\$2,507,000	\$1,327,000	\$4,645,000	\$4,702,000	\$42,966,000
<b>Transportation</b>	\$2,304,000	\$1,220,000	\$4,269,000	\$4,321,000	\$39,487,000
<b>Health and personal care</b>	\$732,000	\$387,000	\$1,356,000	\$1,372,000	\$12,539,000
<b>Recreation</b>	\$735,000	\$389,000	\$1,362,000	\$1,379,000	\$12,602,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

### *GDP contribution*

By the year 2033, total GDP contribution of primary production of wild blueberries in the Northeast is predicted to reach \$55.8 million. Of this, \$15.8 million (28.3%) will come from production on the 6,000 acres of new land developed.

From 2022-33, the cumulative impacts of production on total provincial GDP are expected to reach \$509.9 million over the 12 years of production. This figure includes the cumulative impacts of production on the 6,000 acres of new land. From the time that the additional 6,000 acres begin to come into commercial production in 2030 to 2033, the cumulative GDP contribution of primary production on this new land is predicted to be \$38.4 million.

### *Employment impacts*

Total FTE employment by 2033 is forecasted to be significantly higher than in 2021 at 545 positions, including 368 direct FTE jobs in the Northeast region (3,349 workers). This estimate is even higher than the total FTE jobs supported by province-wide production in 2021 of 450. The production on newly developed land alone will support 154 FTE jobs across the province, and 104 FTE jobs directly in the Northeast region (946 workers). Over the 12-year period from 2022-33, primary production in the Northeast will support a total of 4,981 person years of employment across New Brunswick, 3,361 of which will be in the Northeast. Included in this total are the cumulative employment impacts arising from production on the newly developed land; from 2030-33, this production will support an estimated 538 person years of employment, including 363 directly in the Northeast.

The employment supported is expected to generate high labour income throughout the province. Total labour income in 2033 is predicted at \$20.0 million, \$5.6 million of which is attributable to production on the newly developed 6,000 acres of land (25.6%). Between 2022-33, primary production in the Northeast is forecasted to generate \$182.6 million in total labour income. These labour income impacts would include any income of farm owners that they apportion to themselves. In addition to this income, farm owners in the Northeast may also collect dividend income from their gross operating surplus, which amounts to an estimated \$9.9 million annually in 2033, and a cumulative \$90.8 million between 2022-33.

### *Tax contribution*

The expanded land and production will result in significant revenue for government through taxes on products and production as well as on income. By 2033, governments are expected to gain \$3.3 million in PIT, HST, and property taxes, and an additional \$4.0 million from taxes on products and production. This revenue amounts to a total boost of \$7.3 million that year, with \$5.3 million going to the municipal and provincial governments. Production on new land alone will generate a total \$2.0 million in total taxes in 2033.

Over the 12-year period, \$67.0 million in total taxes is expected, with \$48.4 million going to New Brunswick's municipal and provincial governments. From 2030-33, an estimated \$7.2 million will be generated in total taxes as a result of primary production on the 6,000 acres of newly developed land.

### *Household spending impacts*

The increased labour income generated by expanded production will also spur higher amounts of household spending. Total spending in 2033 is predicted to be over \$15.1 million, \$4.3 million of which will be the result of the production on new land.

Between 2022-33, cumulative household spending is estimated at \$138.4 million, including \$22.6 million in food expenditures, \$43.0 million in shelter costs, and \$39.5 million in transportation spending. Of total cumulative household spending, between

2030-33, \$15.0 million will be the result of primary production on newly developed land.

## Value-added processing and production

As a result of the expanded production and new land development in the Northeast, value-added processing and production is also expected to generate significant gains for the Northeast region. Given the estimated annual revenue from primary production from 2022-33, the revenues from value-added production have been forecasted, and the resulting economic impacts are presented in Figure 15.

The figure includes:

- The current annual economic impact of value-added production and processing arising from Northeast primary production in 2021, for comparison;
- The forecasted annual economic impacts of value-added processing and production that are expected to result from primary production on newly developed land by 2033;
- The cumulative economic impacts of value-added production and processing resulting from the newly developed land, that occur over the four-years between 2030-33;
- The forecasted annual economic impacts of value-added production and processing that result from total primary production in the Northeast (which includes the newly developed land) by the year 2033; and
- The forecasted cumulative economic impacts of value-added production and processing that result from total primary production across the Northeast, occurring from 2022-33.

As noted above, these impacts are based on the aforementioned assumptions, and are not guaranteed.

**Figure 15: Forecasted economic impacts of value-added production and processing of wild blueberries (direct, indirect, and induced), Northeast New Brunswick, 2022-33<sup>47</sup>**

Measure	Current Total Annual Impact	Impacts from Value-Added Production on New Land Developed	Cumulative Impacts from Production on New Land Developed	Total Value-Added Production Impacts	Cumulative Total Value-Added Production Impacts
	2021	2033	2030-33	2033	2022-33
<b>Direct output</b>	\$23,209,000	\$12,287,000	\$42,998,000	\$43,532,000	\$397,814,000
<b>Provincial GDP</b>	\$14,900,000	\$7,888,000	\$27,604,000	\$27,947,000	\$255,396,000
<b>Total labour income</b>	\$8,309,000	\$4,399,000	\$15,393,000	\$15,584,000	\$142,417,000

Measure	Current Total Annual Impact	Impacts from Value-Added Production on New Land Developed	Cumulative Impacts from Production on New Land Developed	Total Value-Added Production Impacts	Cumulative Total Value-Added Production Impacts
	2021	2033	2030-33	2033	2022-33
Direct FTE employment*	78	41	144	146	1,334
Total FTE employment*	139	73	257	260	2,379
PIT, HST, and property taxes (household)	\$2,212,000	\$1,171,000	\$4,097,000	\$4,148,000	\$37,910,000
Taxes on products and production	\$1,393,000	\$737,000	\$2,580,000	\$2,612,000	\$23,869,000
Total taxes	\$3,604,000	\$1,908,000	\$6,677,000	\$6,760,000	\$61,779,000
Provincial and municipal share of taxes	\$2,539,000	\$1,344,000	\$4,703,000	\$4,761,000	\$43,512,000
Total household spending	\$6,299,000	\$3,335,000	\$11,670,000	\$11,815,000	\$107,975,000
Food	\$1,027,000	\$545,000	\$1,902,000	\$1,926,000	\$17,598,000
Shelter	\$1,956,000	\$1,035,000	\$3,623,000	\$3,668,000	\$33,520,000
Transportation	\$1,797,000	\$951,000	\$3,330,000	\$3,371,000	\$30,806,000
Health and personal care	\$571,000	\$302,000	\$1,057,000	\$1,070,000	\$9,782,000
Recreation	\$574,000	\$304,000	\$1,063,000	\$1,076,000	\$9,831,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

### GDP contribution

Overall, value-added production and processing in the Northeast is forecasted to contribute 27.9 million to provincial GDP. Of this, \$7.9 million will be a result of revenues generated from the 6,000 acres of land development.

Over the 12-year period, value-added processing is forecasted to have a generous impact on provincial GDP, predicted to be \$255.4 million between 2022-33. Between

2030-33, the 6,000 acres of newly developed land will result in value-added production that contributes \$27.6 million in total GDP.

### *Employment impacts*

The value-added revenue in 2033 is expected to support a total of 260 FTE positions, including 146 FTE direct employment (1,329 workers). Of this total employment, 73 positions are generated as a result of the expanded production on the 6,000 acres of new land. Cumulatively, the value-added production of wild blueberries will support a total of 2,379 person years of employment from 2022-33, including 257 person years of employment between 2030-33 as a result of the newly developed land.

The resulting labour income is also notable; \$15.6 million is expected to be generated in 2033, including \$4.4 million as a result of the new development. Over the forecasted period, total labour income will surpass \$142.4 million.

### *Tax contribution*

The government will benefit from forecasted increases in value-added production, which will generate further government revenue. By 2033, the government is expected to receive a total of \$6.8 million in taxes, including \$4.2 million in taxes on income and another \$2.6 million in indirect taxes. Of the total taxes collected that year, \$1.9 million will result from the new land development.

The cumulative tax contribution is expected to reach \$61.8 million over 12 years, with \$43.5 million remaining in New Brunswick for municipal and provincial governments. The 6,000 acres of newly developed land will result in value-added production that generates \$6.7 million in total taxes between 2030-33.

### *Household spending impacts*

In total, value-added processing from the region will spur an estimated \$11.8 million in household spending, \$3.3 million of which is attributable to new land development.

From 2022-33, value-added processing will result in household spending of \$108.0 million, including \$17.6 million on food, \$33.5 million on shelter, and \$30.8 million on transportation. Between 2030-33, an estimated \$11.7 million is predicted in household spending as a result of the newly developed acres.

## **LAND DEVELOPMENT**

To achieve the forecasted economic gains of the three operations, significant expenditure is required from the wild blueberry industry to clear, level, and establish land for commercial production. This process also generates economic impacts for the province.

Land development typically takes an average of eight years, with different activities and associated costs taking place at each stage of development. Year 8 marks the first commercial production year. The economic impacts of land development are based on the total expenditures associated with the development operation over the entire development period. These expenditures are estimated using the total number of acres developed and the average cost per acre for each development activity (Figure 16).

**Figure 16: Cost per acre of wild blueberry crop land development, years 1-8<sup>48</sup>**

Year	Development Activity	Development Cost Per Acre
1	Land clearing	\$1,200
2	Land levelling	\$1,000
3	Land establishment – pruning, pest management	\$400
4	Land establishment – pruning, pest management	\$400
5	Land establishment – pruning, pest management	\$200
6	Land establishment – pruning, pest management	\$200
7	Land establishment – pruning, pest management	\$200
8	Production – pruning, pest management, pollination	\$900
<b>Total land development cost per acre</b>		<b>\$4,500</b>

Source: BNBB Internal Data

The analysis considers the economic impacts of three land development operations, one which is already underway, and two which are expected to begin in the coming years. The economic impacts of each operation are presented in the following sections.

**Operation 1: 5,500 acres (2016-33)**

The first land development operation modelled is the development of 5,500 acres over the period of 2016 to 2033. This operation is being conducted on privately held and leased land in Northeast New Brunswick. The development of this land began in 2016 with 500 acres beginning development, followed by another 500 acres beginning development each year thereafter until 2026 (Figure 17).

Following the established eight-year land development timeline, the first 500 acres of this development operation will come into commercial production in 2023, with 500 acres per year coming into commercial production until 2033.

**Figure 17: Operation 1 (5,500 acres), private and leased land development timeline (direct, indirect, and induced impacts), 2016-27<sup>49</sup>**

Year of Initial Development	Number of Acres	First Year of Commercial Production
2016	500	2023
2017	500	2024
2018	500	2025
2019	500	2026
2020	500	2027
2021	500	2028
2022	500	2029
2023	500	2030
2024	500	2031
2025	500	2032
2026	500	2033

Source: BNBB Internal Data

Based on the total cost of development per acre, the development of 5,500 acres will result in expenditures of \$24.3 million between 2016-26. Of this total, \$7.8 million was spent from 2016-21, while another \$16.5 million in spending is forecasted for 2022-27. This activity results in significant economic impacts, as presented in Figure 18.

**Figure 18: Operation 1 (5,500 acres), past and forecasted economic impacts agricultural land development (direct, indirect, and induced impacts), 2016-33<sup>50</sup>**

Measure	5,500 Acre Development Expenditure		
	Past Expenditure	Future Expenditure	Total Expenditure
	2016-21	2022-33	2016-33
Direct output	\$7,800,000	\$16,500,000	\$24,300,000
Provincial GDP	\$6,872,000	\$14,537,000	\$21,408,000
Total labour income	\$3,143,000	\$6,650,000	\$9,793,000
Direct FTE employment*	77	163	240
Total FTE employment*	93	197	291
PIT, HST, and property taxes (household)	\$584,000	\$1,236,000	\$1,820,000
Taxes on products and production	\$390,000	\$825,000	\$1,215,000
Total taxes	\$974,000	\$2,061,000	\$3,035,000
Provincial and municipal share of taxes	\$719,000	\$1,522,000	\$2,241,000

Measure	5,500 Acre Development Expenditure		
	Past Expenditure	Future Expenditure	Total Expenditure
	2016-21	2022-33	2016-33
<b>Total household spending</b>	\$2,383,000	\$5,041,000	\$7,425,000
<b>Food</b>	\$388,000	\$822,000	\$1,210,000
<b>Shelter</b>	\$740,000	\$1,565,000	\$2,305,000
<b>Transportation</b>	\$680,000	\$1,438,000	\$2,118,000
<b>Health and personal care</b>	\$216,000	\$457,000	\$673,000
<b>Recreation</b>	\$217,000	\$459,000	\$676,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

### *GDP contribution*

The ongoing development of a total of 5,500 acres in Northeast New Brunswick requires \$24.3 million in total spending between 2016-33. The injection of this into the New Brunswick economy will generate \$21.4 million in total GDP over that 18-year period. Of this total GDP impact, \$6.9 million has already been generated between 2018-21, while the remaining \$14.5 million is forecasted to occur as a result of future expenditures.

### *Employment impacts*

This development is also anticipated to support the direct employment of 240 people in the Northeast, and a total of 291 people in all of New Brunswick.

By supporting the FTE employment of 291 people in the province, the development will also support significant labour income of \$9.8 million.

### *Tax contribution*

The ongoing 5,500-acre development operation is also expected to generate \$3.0 million in total taxes, \$2.2 million of which will remain in New Brunswick, going towards provincial and municipal governments.

### *Household spending impacts*

Finally, the labour income supported by the development project in turn generates significant household spending of \$7.4 million. This includes \$1.2 million on food, \$42.3 million on shelter, and \$2.1 million on transportation.

## **Operation 2: 3,000 Acres (2018-25)**

The second development considered in the model includes 3,000 acres of land in the Northeast (from the last RFP in 2018). The development of these acres began in 2018 and will therefore begin commercial production in 2025.

The estimated expenditure associated with this development is \$13.5 million, \$9.0 million of which is related to development activity that took place from 2018-21, and \$4.5 million of which is expected from 2022-25. The past and forecasted economic impacts of this development are presented in Figure 19.

**Figure 19: Operation 2 (3,000 acres), past and forecasted economic impacts of agricultural land development, 2018-25**

Measure	3,000 Acre Development Expenditure		
	Past Expenditure	Future Expenditure	Total Expenditure
	2018-21	2022-25	2018-25
Direct output	\$9,000,000	\$4,500,000	\$13,500,000
Provincial GDP	\$7,929,000	\$3,965,000	\$11,894,000
Total labour income	\$3,627,000	\$1,814,000	\$5,441,000
Direct FTE employment*	89	45	134
Total FTE employment*	108	54	162
PIT, HST, and property taxes (household)	\$674,000	\$337,000	\$1,011,000
Taxes on products and production	\$450,000	\$225,000	\$675,000
Total taxes	\$1,124,000	\$562,000	\$1,686,000
Provincial and municipal share of taxes	\$830,000	\$415,000	\$1,245,000
Total household spending	\$2,750,000	\$1,375,000	\$4,125,000
Food	\$448,000	\$224,000	\$672,000
Shelter	\$854,000	\$427,000	\$1,280,000
Transportation	\$785,000	\$392,000	\$1,177,000
Health and personal care	\$249,000	\$125,000	\$374,000
Recreation	\$250,000	\$125,000	\$376,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

### *GDP contribution*

The 3,000-acre development between 2018-25 generates total GDP of 13.5 million for the province. Of this, \$7.9 million has already been supported, while another \$4.0 million is expected based on future expenditures.

### *Labour impacts*

This development also supports employment across the province. An estimated 134 FTE employment is related to the project, and an additional 28 FTE are supported across the province through indirect and induced effects.

*Tax contribution*

The taxes generated by the land development are also notable, with \$1.7 million in taxes going to governments, including \$1.2 million going to New Brunswick’s provincial and municipal governments.

*Household spending impacts*

The project will also generate an estimated \$4.1 million of household spending across the province, as the additional employment supports spending by workers.

**Operation 3: 6,000 Acres (2023-31)**

The largest land development operation included in the analysis is a total of 6,000 acres in the Northeast. The first 3,000 acres of this development is expected to come into commercial production in 2030, with the remaining 3,000 acres coming into production the following year in 2031. Given these targets, initial development of the first 3,000 acres will begin in 2023, with the development of the other 3,000 acres beginning in 2024 (Figure 20).

**Figure 20: Operation 3 (6,000 acres), land development timeline, 2023-31<sup>51</sup>**

Year of Initial Development	Number of Acres	First Year of Commercial Production
2023	3,000	2030
2024	3,000	2031

Source: BBNB Internal Data

In order to develop a total of 6,000 acres, an estimated expenditure of \$27.0 million between 2023-31 is required. The forecasted economic impact of this expenditure is presented in Figure 21.

**Figure 21: Operation 3 (6,000 acres), forecasted economic impacts of agricultural land development, 2023-31<sup>52</sup>**

Measure	6,000 Acre Development Expenditure
	2023-31
Direct output	\$27,000,000
Provincial GDP	\$23,787,000
Total labour income	\$10,881,000

Measure	6,000 Acre Development Expenditure
	2023-31
Direct FTE employment*	267
Total FTE employment*	323
PIT, HST, and property taxes (household)	\$2,022,000
Taxes on products and production	\$1,350,000
Total taxes	\$3,372,000
Provincial and municipal share of taxes	\$2,490,000
Total household spending	\$8,250,000
Food	\$1,345,000
Shelter	\$2,561,000
Transportation	\$2,354,000
Health and personal care	\$747,000
Recreation	\$751,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

### *GDP contribution*

As the largest land development operation, this land development will require significant expenditure, which will in turn generate the highest GDP contribution. By developing this land between 2023-31, the wild blueberry industry is forecasted to generate \$23.8 million in total GDP through direct, indirect, and induced effects.

### *Labour impacts*

The development of 6,000 acres is expected to support an estimated 323 FTE employment positions, with 267 directly related to the project.

In supporting this employment, the development also makes significant contributions in labour income. An estimated total of \$10.9 million in labour income is predicted between 2023-31 as a result of the development.

### *Tax contribution*

As a result of the development, a total of \$3.4 million is expected to be generated in taxes, through taxes on products, production, and income. Of this, an estimated \$2.5 million will flow to New Brunswick's provincial and municipal governments.

### *Household spending impacts*

Finally, an estimated \$8.3 million in household spending is expected to be supported by the land development operation. Of this, \$1.3 million is expected in spending on food, \$2.6 million on shelter, and \$2.4 million on transportation. In addition, health and personal care, and recreation sectors are predicted to see a combined \$1.5 million in additional spending.

## SUMMARY OF FORECASTED IMPACTS

To show the impacts of total production, the impacts of primary and value-added production are combined and shown in Figure 22. Given full development of new land in the Northeast combined with eventual productivity gains of 3,500 pounds per acre, total provincial output is predicted to reach \$129.7 million in 2033, of which \$99.3 million will be from Northeast production (76.6% of the provincial total).

Furthermore, over the period from 2022-33, it is predicted that the cumulative total output will amount to \$1.3 billion over 12 years, including \$907.7 million generated from Northeast production (72.5% of provincial production).

These impacts are all based on the assumptions discussed previously and are not assured, as changes in future price and production will result in economic impacts different from those presented.

**Figure 22: Summary of impacts of forecasted total production (direct, indirect, and induced), 2022-33<sup>53</sup>**

Measure	Northeast New Brunswick		New Brunswick	
	By 2033 per annum	2022-33 (cumulative)	By 2033 per annum	2022-33 (cumulative)
Direct output	\$99,332,000	\$907,739,000	\$129,706,000	\$1,250,527,000
Provincial GDP	\$66,840,000	\$610,814,000	\$87,278,000	\$841,475,000
Total labour income	\$35,561,000	\$324,971,000	\$46,435,000	\$447,689,000
Direct FTE employment*	514	4,696	671	6,469
Total FTE employment*	805	7,360	1,052	10,140
PIT, HST, and property taxes (household)	\$7,461,000	\$68,182,000	\$9,742,000	\$93,930,000
Taxes on products and production	\$6,630,000	\$60,583,000	\$8,657,000	\$83,461,000
Total taxes	\$14,091,000	\$128,766,000	\$18,399,000	\$177,391,000
Provincial and municipal share of taxes	\$10,063,000	\$91,960,000	\$13,140,000	\$126,686,000
Total household spending	\$26,961,000	\$246,379,000	\$35,205,000	\$339,419,000
Food	\$4,394,000	\$40,155,000	\$5,738,000	\$55,319,000
Shelter	\$8,370,000	\$76,486,000	\$10,929,000	\$105,369,000
Transportation	\$7,692,000	\$70,293,000	\$10,044,000	\$96,837,000

Measure	Northeast New Brunswick		New Brunswick	
	By 2033 per annum	2022-33 (cumulative)	By 2033 per annum	2022-33 (cumulative)
Health and personal care	\$2,443,000	\$22,321,000	\$3,189,000	\$30,751,000
Recreation	\$2,455,000	\$22,433,000	\$3,205,000	\$30,905,000

Source: Stiletto Analysis

\*Cumulative FTE impacts measured as person years of employment

### *GDP contribution*

Total GDP generated by all production in the Northeast in 2033 is forecasted to be substantial, at \$66.8 million, while New Brunswick production in the same year is forecasted at \$87.3 million.

Cumulative GDP created between 2022-33 from Northeast production is expected to amount to \$610.8 million, while province-wide, cumulative GDP will surpass \$1.2 billion.

### *Employment impacts*

Total Northeast production will support an estimated 805 FTE employment in 2033 (including 514 directly employed in the Northeast, or 4,677 workers), and 7,360 person years of employment between 2022-33. Province-wide total production is expected to support 1,052 FTE employment in 2033, as well as 10,140 person years of employment over the 12-year period.

Labour income generated by Northeast production is predicted to be \$35.6 million by 2033, while cumulative labour income generated will be \$325.0 million. Over \$46.4 million in labour income in 2033 will be attributable to total production, while \$447.7 million will be generated between 2022-33.

### *Tax contribution*

The Northeast's production is expected to result in a total tax contribution of \$14.1 million in 2033, and \$128.8 million between 2022-33. Total provincial production is predicted to generate \$18.4 million in taxes in 2033 and \$177.4 million in taxes between 2022-33.

### *Household spending impacts*

Household spending attributable to Northeast production is forecasted to reach \$27.0 million by 2022, while total provincial production will spur \$35.2 million in the same year. Cumulative household spending across the province will surpass \$339.4 between 2022-33, \$246.4 million of which is a result of production in the Northeast.

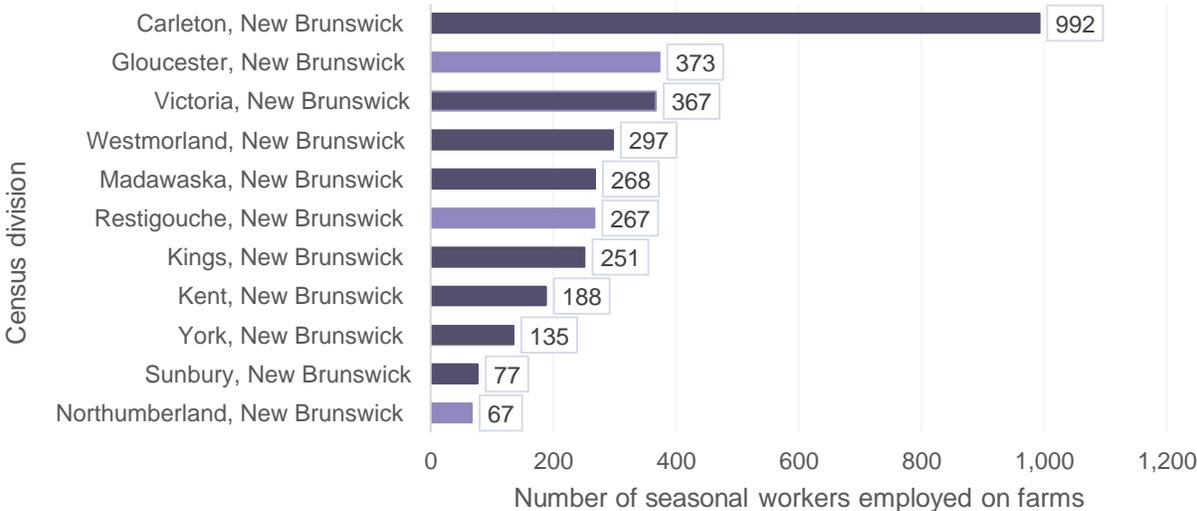
# SOCIAL IMPACTS FOR COMMUNITIES

While the economic impacts of the wild blueberry industry are many, just as critical are the social and economic benefits the industry brings to the communities in which it operates – benefits that are not necessarily captured in economic data. The following sections detail the additional benefits to the province and communities.

## PROVIDING JOB OPPORTUNITIES FOR SEASONAL WORKFORCE AND OTHER INDUSTRIES

In 2021, 61.2 percent of New Brunswick’s total agricultural workforce comprised seasonal or temporary workers. As Figure 23 shows, farms in Gloucester CD (census division), which dominates Northeast New Brunswick wild blueberry production, employed an estimated 373 temporary / seasonal workers in 2021. Including the seasonal workers employed in Restigouche and Northumberland CDs (which include areas of the Northeast), an estimated total of 707 seasonal workers were employed in the region that year. According to these figures, in the Northeast region of the province, an estimated 76.8 percent of the agricultural workforce is seasonal, and in Gloucester CD, this figure is just under 80.0 percent.

**Figure 23: Number of seasonal or temporary workers employed by farms by census division, 2021<sup>54</sup>**



Source: Statistics Canada

As such, the operations of the wild blueberry industry throughout the province, but especially in the Northeast, provide an extended work period for seasonal workers, who often also work in other natural resource and agriculture sectors during other parts of the year. Furthermore, seasonal work is more common among older

workers in New Brunswick (55 years and older), who tend to have lower labour force participation compared to their younger counterparts. In addition, seasonal workers can sometimes be vulnerable to labour market dynamics, which can influence the availability of employment insurance benefits (EI) for seasonal workers.<sup>55</sup> The existing and future expansion of wild blueberry production in the province therefore serves to provide an extended employment opportunity to a sometimes vulnerable subset of the provincial workforce.

## SOCIO-ECONOMIC GAINS FOR COMMUNITIES

### Growing employment and income in the Northeast

Not only does the wild blueberry industry support seasonal workers, but it also supports the economic development of the communities in which it operates. The Northeast region of the province, particularly the Acadian Peninsula, faces many challenges, such as an aging workforce and a lack of new housing construction. However, recent economic data from the Peninsula reveal a more positive story. According to tax filer data published by the Canada Revenue Agency (CRA), the total employment income in the region has increased on par with the rest of the province, with a growth of 31.0 percent from 2010-19 (Figure 24).<sup>56</sup>

During the same period, total employment in the area increased by 22.0 percent and self-employment income in the Acadian Peninsula increased by an impressive 84.2 percent, in concurrence with a 13.0 percent increase in self-employment.<sup>57</sup>

**Figure 24: Selected economic trends in the Acadian Peninsula and New Brunswick, 2010-19<sup>58</sup>**

Trend	Acadian Peninsula	New Brunswick
<b>Employment income</b>		
2010	\$641,878,000	\$12,838,282,000
2019	\$841,049,000	\$16,768,737,000
Percentage change	31.0%	31.0%
<b>Self-employment income</b>		
2010	\$29,090,000	\$559,823,000
2019	\$53,601,000	\$661,177,000
Percentage change	84.2%	18.1%
<b>Persons self-employed</b>		
2010	2,330	38,540
2019	2,630	41,870
Percentage change	13.0%	8.6%

Source: Canada Revenue Agency

Although the wild blueberry industry is not the direct or sole cause of this economic development, it has certainly contributed to it through the industry expenditures in the Northeast region, which generate high output and economic activity and support employment, as has been shown in the economic impact model. For example, of the total GDP generated throughout the province in 2021 as a result of Northeast production (\$20.7 million), \$11.5 million in GDP is generated in the Northeast region. Similarly, \$6.3 million of the total labour income from Northeast production is generated directly in the Northeast. By 2033, the model predicts that direct labour income generated in the Northeast as a result of expanded primary production will reach \$11.8 million, and \$107.6 million over 12 years (2022-33).

## Reducing low-income levels

Another significant community gain is the significant reduction in low-income levels in Gloucester County. In 2015, an estimated 5.5 percent of County residents fell into the low-income category based on low-income cut-offs after tax, representing approximately 4,185 people.<sup>59</sup> As of the 2021 Census of Population, the prevalence of residents in the low-income category was far lower at 3.2 percent, or 2,430 individuals.<sup>60</sup> This means that an estimated 1,755 people in the county are no longer in the low-income category, a decrease of 41.9 percent.

Again, the region's blueberry industry cannot claim full responsibility for this reduction. However, its operations injected \$53.0 million in direct output into the economy in 2021 and supplied 274 direct FTE positions within the community, corresponding to approximately 2,493 individual workers that benefitted from additional seasonal work opportunities.<sup>61</sup> As a result of this activity, an estimated \$6.3 million in direct labour income was supported within the County.<sup>62</sup> As a major industry in the region, wild blueberry operations support employment, income, and generate spending in the area's economy, which helps to increase income levels.

## Boosting tourism

Wild blueberry operations also provide opportunities to boost tourism to rural areas. Although a majority of value-added operations (e.g., U-pick, farm stands, wineries) take place outside of the Northeast region, expanding production allows the opportunity for farmers and other local businesses to expand into value-added markets, particularly gastro-tourism. These markets present a valuable opportunity for local operations to grow their revenue streams. In fact, in 2021, the global culinary tourism market was valued at \$696.5 billion USD.<sup>63</sup> Researchers predict that by only 2027, this market value will reach \$1.8 trillion USD.<sup>64</sup>

Given the superior flavour and health benefits of wild blueberries relative to cultivated varieties, and the fact that these berries are only available within a small region of the world, New Brunswick (and particularly the Northeast) has an opportunity to expand into this market with increased production. Doing so could

potentially bring thousands of tourists to rural areas of the province during peak harvest season. For example, in one season, a single agri-tourism operation by Truman Blueberry Farms managed to attract over 100,000 tourists to the small rural community of Aulac, New Brunswick.<sup>65</sup> This tourism means more money spent supporting local businesses and in turn, further economic impacts for the region.

## **PRESERVING NEW BRUNSWICK'S NATURAL HERITAGE**

In addition to the valuable economic and social impacts it produces, New Brunswick's wild blueberry industry is a part of the province's rich history. The region's unique natural environment makes the province one of only a handful of places in the world that has the ability to produce wild blueberries, and this tradition is woven into the fabric of the region. Supporting and expanding operations will ensure that New Brunswick's wild blueberry industry continues to be a core part of the province's economy and culture long into the future.

# ENDNOTES

All hyperlinks within have been validated as of the date of this research report.

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- <sup>49</sup> BNBB Internal Data
- <sup>50</sup> Stiletto Analysis, 2022
- <sup>51</sup> BNBB Internal Data
- <sup>52</sup> Stiletto Analysis, 2022
- <sup>53</sup> Stiletto Analysis, 2022
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- <sup>61</sup> Stiletto Analysis, 2022
- <sup>62</sup> Stiletto Analysis, 2022
- <sup>63</sup> “Global Culinary Tourism Market (2022 to 2027) – Industry Trends, Share, Size, Growth, Opportunity and Forecasts,” Research and Markets, February 2, 2022, <https://www.globenewswire.com/news-release/2022/02/02/2377627/28124/en/Global-Culinary-Tourism-Market-2022-to-2027-Industry-Trends-Share-Size-Growth-Opportunity-and-Forecasts.html>
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- <sup>65</sup> BNBB internal data