(1) Final Report: EARI-13-010
Innovative weed control methods to improve the competitiveness of wild blueberry production
5 year project: April 1, 2013-March 31, 2018
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(3) Summary

The wild blueberry industry is a vibrant and growing industry in New Brunswick. Weed issues, both in established production and new development, continue to be a significant limitation to wild blueberry production. Current industry priorities reflect a need to integrate new innovative weed management strategies within the existing weed control framework based on hexazinone use. This project consisted of multiple, 'stand-alone' herbicide research trials designed to evaluate control options for specific weed issues. Fifty separate reports were compiled in response to the project objectives, including over six hundred individual treatments evaluated. Weeds of interest included hawkweed, sheep sorrel, spreading dogbane, fescues, ticklegrass, poverty oatgrass, lambkill, rhodora and many other common weeds found within wild blueberry production in New Brunswick. Trials evaluated innovative products, application timings and sequences for the blueberry industry. The information helped to improve the production recommendations for New Brunswick wild blueberry producers and has been incorporated into multiple articles, presentations, fact sheets and the Wild Blueberry IPM Weed Management Guide. Trial data supported regulatory applications for many innovative herbicides within wild blueberry, including nicosulfuron/rimsulfuron, glufosinate, flazasulfuron and indaziflam. In addition, trials evaluated the use of tank mixtures and repeated applications, ensuring sustainable herbicide use and protection against weed resistance. Using the information gained from this project, New Brunswick wild blueberry producers are able to manage weed issues in a more economical and environmentally sensitive manner.

(4) Introduction

The wild blueberry industry is a vibrant and growing industry in New Brunswick. Current production has increased to 39,000 acres across New Brunswick involving 300 producers producing an estimated 82 million pounds of fruit generating an estimated farm-gate value of $25 million in 2016. Weed issues, both in established production and new development, continue to be a significant limitation to wild blueberry production in New Brunswick. Weed populations cause yield reductions, hamper harvest, interfere with pollinators and act as alternative hosts for select diseases. Published reports suggest that weed density and diversity is increasing in wild blueberry fields. Typical herbicide practices, including the reliance on hexazinone, have been associated with potential environmental concerns and the threat of weed resistance development. Producers are in need of innovative, cost effective weed control practices. As wild blueberry is a relatively minor crop in the global agricultural industry, local research is essential to adopt management tools for wild blueberry production. The development of more integrated approaches to weed management will result in more effective weed

management strategies which in turn enhance the competitiveness, sustainability and profitability of New Brunswick.

(5) Project Objective

To generate weed control and crop tolerance data for a range of herbicides and application timings which will support the registration of innovative and cost-effective weed management tools in wild blueberry production. This project will evaluate tank-mix partners and control options for hard to control weeds currently found in New Brunswick blueberry production.

(6) Project Deliverables

The project will deliver multiple, stand-alone herbicide trials for which results can be used to support product registration within wild blueberries. This information will be shared with other partners to complement existing registration programs. Information gained through this research will be widely distributed to the New Brunswick blueberry industry through field days, workshops, meetings, fact sheets and project reports. Information will also support the update of the Wild Blueberry IPM Weed Management Guide.

(7) Materials and Methods

This project consisted of multiple, ‘stand-alone’ herbicide research trials designed to evaluate control options for specific weed issues. This allows the examination of a broad range of issues while not compromising experiment quality. Multiple locations allowed for a broad examination of product performance, minimized localized site-effects and allowed testing across the production region. Each trial has a separate report, which outlines specific materials and methods used within that trial. A general description of materials and methods are outlined below.

Locations: Trials were located throughout the wild blueberry production regions of New Brunswick, including the Albert, Charlotte, Gloucester, Kent, Kings, Northumberland, Queens and Westmorland counties. Specific trial locations were dependant on grower interest, weed spectrum and crop stage.

Material & Methods: These experiments were mainly product screening trials targeted for specific, problematic weed issues within current production practices. Innovative herbicides to blueberry production and multiple application timings (fall, pre- and post-emergence) were examined through these experiments. Randomized complete block experiments with 2 x 6 m plots were used. Products were selected based on previous research and industry consultation.

Rating Schedule: For each trial location, there was an initial site evaluation to ensure that the area was suitable for research purposes followed by the determination of the specific plot areas. Treatment application occurred based on the protocol for the experiment (dependant on proper plant stage/timing). Plot areas were evaluated for visual crop injury and weed control ratings over at least four distinct rating timings (7-14 days after application [DAA], 21-35 DAA, 42-63 DAA and 63+ DAA) when warranted. These ratings were evaluated on a scale of 0-100 where 0 represented no injury or

weed control and 100 represented complete control or complete crop loss. An analysis of variance was performed on all data and means separated using the least significant difference test (LSD $P<0.05$). Yield measurements, when warranted, were recorded by weight of hand harvested representative areas.

(8) Results and Discussion

The information below was collected from small plot experimental evaluations. **Some treatments are not registered for use and investigations are still on-going, so not all treatments are recommended for field use.** For recommendations of currently registered products and methods, producers should discuss management plans with NBDAAF staff or refer to the Wild Blueberry IPM Weed Management Guide or the Wild Blueberry Weed Control Selection Guide, available from the www.gnb.ca website.

Over the project period, fifty separate herbicide trials were conducted in wild blueberry fields in response to the project objective. Individual reports from each trial are available upon request. A short synopsis of each trial occurs below.

2011-108: Evaluation of mowing height and glyphosate formulation for fall control of lambkill in wild blueberries in 2011. There was no difference noted between the glyphosate formulations, where improved control was demonstrated by adding Agral 90 or Sylgard. LI700 did not improve control. This response should be verified in future trial work. Mowing as close to the ground as possible significantly improved weed control, regardless of glyphosate treatment. The specific reason for this improved control is not known and further examination of this phenomenon is warranted.

2011-109: Evaluation of fall herbicide options for hawkweed control in wild blueberries in 2011. As the trial area was over-sprayed, only early season evaluations were displayed. Terbacil had limited activity, while the lower rate of clopyralid and triclopyr had lower levels of control as compared to glyphosate, dicamba and other effective treatments.

2011-110: Evaluation of fall application of flumioxazin in combination with spring herbicide treatments for red fescue control in the sprout year of wild blueberries in 2012. Propyzamide was the best option for controlling red fescue. Nicosulfuron/rimsulfuron, foramsulfuron and terbacil all have potential for control, although they may have to be used in combination with other treatments. There was no advantage to layering any treatment with flumioxazin for red fescue control. Hexazinone and nicosulfuron/rimsulfuron had the highest ratings for sheep sorrel control. Flumioxazin offered moderate control while terbacil and foramsulfuron had low control levels.

2012-101: Evaluation of foramsulfuron application timing for red fescue control in wild blueberries in 2012. There was a reduction in control when foramsulfuron was applied at the typical hexazinone application timing (early May) or the typical fluazifop application timing (mid June). Growers may have to adjust application timings when applying foramsulfuron for fescue control. Adding foramsulfuron after a pre-emergent glufosinate treatment or multiple foramsulfuron applications improved fescue control.

2012-102: Evaluation of innovative herbicide options for fine-leaf sheep fescue control in wild blueberries in 2012. There was a high level of fine-leaf sheep fescue control

following hexazinone treatment. Terbacil suppressed fine-leaf sheep fescue, with improved control when used in combination with nicosulfuron/rimsulfuron, glufosinate or hexazinone. Foramsulfuron also suppressed the grass and had significantly improved control when used following pre-emergent terbacil or glufosinate. When applied in the spring, propyzamide and pyroxsulam had limited control. Hexazinone alone provided a high level of sheep sorrel control. Terbacil alone had limited activity on sheep sorrel, although activity was improved to control when combined with nicosulfuron/rimsulfuron and to suppression when combined with glufosinate. Pyroxsulam suppressed sheep sorrel while foramsulfuron and propyzamide were not effective.

2012-103: Evaluation of tank mix options for hexazinone and terbacil applied before wild blueberry emergence in 2012. Hexazinone suppressed the grass species present. Adding nicosulfuron/rimsulfuron, flumioxazin or terbacil increased grass control. Hexazinone alone had a high level of broadleaf weed control with no improvement shown by including any of the tested tank mix partners. Terbacil alone had good control and no tank mix partner significantly improved grass control. Terbacil alone had limited broadleaf activity. Adding any of the tested tank mix partners improved broadleaf weed suppression.

2012-104: Evaluation of spring herbicide options for hawkweed control in wild blueberries in 2012. A high level of hawkweed control was shown from all clopyralid treatments, and there was no difference between clopyralid application rates of timings by the end of the sprout year. Terbacil suppressed hawkweed, where control was increased when combined with nicosulfuron/rimsulfuron, clopyralid or glufosinate. Foramsulfuron and pyroxsulam had limited suppression of hawkweed when applied alone.

2012-105: Evaluation of spring herbicide options for huckleberry control in wild blueberries in 2012. Aminopyralid and triclopyr caused significant blueberry injury following a post-emergent application. As these were the only treatments with acceptable weed control, other application timings and methods should be examined to improve crop tolerance.

2012-106: Evaluation of post-harvest and spring herbicides to control hawkweed in the sprout year of wild blueberries in 2013. A trial was established in the fall of 2012 in a field within the Gauvreau region of New Brunswick. Treatments were either applied in the late fall prior to pruning or in the following spring as the blueberry plants were beginning to emerge. Only dicamba application caused crop injury over 10%. Fall glyphosate controlled hawkweed over all sprout year ratings, while fall dicamba control declined to suppression on the final sprout year rating date. Fall terbacil was not effective while spring terbacil suppressed hawkweed within the sprout year. Adding clopyralid or glufosinate to terbacil significantly increased the level of hawkweed control over terbacil alone on all sprout year ratings. Hexazinone alone had limited control of hawkweed but improved with the addition of glufosinate, clopyralid or nicosulfuron/rimsulfuron. Control generally declined for all treatments in the crop year. Glyphosate, terbacil/clopyralid, and terbacil/glufosinate had consistent control of hawkweed in the crop year. Multiple herbicide applications will be required for consistent management of hawkweed species in wild blueberry production.

2012-107: Evaluation of glyphosate rate and formulation on control of lambkill in wild blueberries in the fall of 2012. A trial was established in the fall of 2012 in a commercial wild blueberry field in the Lavillette region of North-eastern New Brunswick to evaluate other glyphosate formulations and rates. Treatments included five different glyphosate formulation types applied at three application rates (450 g ai/ha, 900 g ai/ha, 1800 g ai/ha). All treatments would be safe for use on wild blueberry at this application timing. All use rates and formulations of glyphosate had lambkill control on June 20, 2013. Herbicide activity at the 450 g ai/ha declined on July 11 2013, while 900 and 1800 g ai/ha remained at control. Lambkill control declined on the final two sprout year ratings, with no difference noted between similar use rates of the chosen glyphosate formulations. The level of sprout year control was less than previous glyphosate evaluation and should be repeated under other application conditions. The field selected for treatment was an abandoned field area just beginning to re-enter commercial production. Lambkill plants would be more mature than a typical blueberry field and may be less susceptible to glyphosate application.

2013-101: Evaluation of Tank Mixes Options with Hexazinone Within Newly Cleared Wild Blueberries in 2013. In the summer of 2013, a trial was established near Aulac, New Brunswick in an newly established wild blueberry field to evaluate tank mix options applied with hexazinone. Blueberry populations were extremely variable within the newly cleared field area, so crop injury ratings are not reported. Hexazinone rate, tank mix partner and the interaction of these two factors were all significant for black bulrush (*Scirpus atrocinctus*) and overall weed control. Hexazinone application significantly increased black bulrush control within the sprout year, although did not result in commercially acceptable black bulrush control. Nicosulfuron/rimsulfuron, halosulfuron and mesotrione had varying levels of suppression of black bulrush. Other weeds present within the plot area were inconsistent, so an overall level of weed control was recorded for each treatment. Hexazinone alone suppressed weeds by the end of the sprout year, with no tank mix improving overall weed control over hexazinone alone on the final rating date. All tank mix partners increased weed control over the untreated areas. Nicosulfuron/rimsulfuron, halosulfuron and mesotrione significantly suppressed weeds over all sprout year ratings. Glufosinate had increased control on early ratings, but declined as the trial progressed. Control of a mixed weed population with these tank mix herbicides is seen as a benefit to blueberry producers, as a wide range of weeds can be present in native stands of wild blueberries.

2013-102: Evaluation of Tank Mixes Options with Terbacil for Fine-leaf Sheep Fescue Control Within Sprout Year Wild Blueberries in 2013. In the spring of 2013, a trial was established near Rockport, New Brunswick in a commercial wild blueberry field entering the vegetative phase of production following a spring burning for pruning. The trial was designed as a two way factorial, with the main factor being the terbacil rate and the second factor was tank mix partner. No blueberry crop injury was noted for any treatment over all sprout year rating periods. Terbacil application significantly improved fescue control over the untreated area for all sprout year ratings. Nicosulfuron/rimsulfuron, glufosinate and pyroxsulam had a level of suppression within the sprout year. The addition of glufosinate, nicosulfuron/rimsulfuron, pyroxsulam, indaziflam or glufosinate/indaziflam to terbacil significantly improved weed control over terbacil alone on the final sprout year rating date.

2013-103: Evaluation of Layering Pre-emergent and Post-emergent Herbicides for Control of Red Fescue in the Sprout Year of Wild Blueberries in 2013. In the spring of 2013, a trial was established near Fairfield, New Brunswick in a commercial wild blueberry field entering the vegetative phase of production following a spring mowing for pruning. No significant yield effect was detected, although the tank mixture and repeated application treatments were among the highest yields recorded. Foramsulfuron application suppressed red fescue. Terbacil and nicosulfuron/rimsulfuron alone suppressed red fescue with a significant increase in control when applied as a tank mix. Control from nicosulfuron/rimsulfuron alone declined in the following crop year. Glufosinate application suppressed red fescue on the first two rating dates, but control declined as the season progressed. Control increased when glufosinate was tank mixed with terbacil. Foramsulfuron treatment following a pre-emergent application of either glufosinate or terbacil resulted in an increased level of weed control over the final three sprout year rating periods. Layering herbicide treatments improved control of red fescue within this trial. Tank mix alone or followed by treatments had significantly increased weed control as compared to the single herbicide treatments.

2013-104: Evaluation of Tank Mix Options with Hexazinone for Black Bulrush Control in Wild Blueberries in 2013. In the spring of 2013, a trial was established near Pennfield, New Brunswick in an established wild blueberry field. All products evaluated would be safe for use in wild blueberry production. Hexazinone was variable in control of black bulrush and was not commercially acceptable in this trial. Halosulfuron, mesotrione and nicosulfuron/rimsulfuron had varying levels of suppression of black bulrush. The use of the tank mixes did not improve control for black bulrush, although a tank mix may broaden the spectrum of control and offer a lower cost of application to growers.

2013-106: Evaluation of Glufosinate, Indaziflam, Hexazinone and Terbacil Applied Alone and in Mixtures in the Sprout Year of Wild Blueberries in 2013. In the spring of 2013, a trial was established near New River, New Brunswick in an established wild blueberry field entering the vegetative phase of production following mowing for pruning. Slight injury was observed following the highest application of glufosinate on June 13, 2013, but the plot areas recovered over subsequent sprout year evaluations. All treatments would be commercially acceptable from a crop injury perspective. No treatment resulted in significant yield effect. Terbacil activity increased as the trial progressed and provided a commercially acceptable level of poverty oatgrass control by the end of the trial period. Hexazinone activity declined as the trial progressed and had a low level of activity on the poverty oatgrass population. The innovative herbicides only had minimal control of poverty oatgrass. There was no benefit to add terbacil to any tank mix partner. Including a tank mix partner with hexazinone improved control over most rating periods, but not to a commercially significant level.

2013-107: Evaluation of Foramsulfuron Formulation and Fertilizer Addition for Control of Fine-leaf Sheep Fescue in the Sprout Year of Wild Blueberries in 2013. The source of fertilizer and foramsulfuron formulation was evaluated for the management of fescues in wild blueberry near Rockport, NB. All herbicides and mixtures evaluated would be safe for use in wild blueberry production. Foramsulfuron controlled fine-leaf sheep fescue over the sprout year and only the liquid formulation of foramsulfuron decreased control when applied without additional foliar fertilizer. There was no difference between

fertilizer rate or source (urea ammonium nitrate or ammonium sulphate) over the sprout year evaluations. Weed control was excellent with foramsulfuron treatments, due to an ideal application timing. Trial should be replicated under less ideal application conditions to determine if fertilizer treatment differences could be found under those conditions.

2014-101: Evaluation of Hexazinone Rate and Tank Mix Options Within Wild Blueberries in 2014 – Southwest Region. All treatments would have acceptable crop injury in the sprout year. Overall weed populations were low across the trial area, making control recommendations difficult. In addition, fine-leaf sheep fescue is typically less sensitive to herbicide application than ticklegrass, reducing the reliability of the combined grass weed control rating. Lower application rates of hexazinone suppressed both grass and broadleaf weeds while higher rates controlled them within the sprout year. There was no benefit to increasing hexazinone rates beyond those currently registered. Adding Agral 90 to hexazinone did not improve weed control. Applications of terbacil, glufosinate and to a lesser extent nicosulfuron/ rimsulfuron improved grass control as compared to hexazinone applied alone. The tank mixtures of hexazinone plus mesotrione, terbacil, flumioxazin and glufosinate significantly increased broadleaf weed control compared to hexazinone applied alone over the final three sprout year ratings. Additional tank mix partners improved weed control compared to the 1440 g ai/ha rate of hexazinone, depending on the weed susceptibility to the tank mix partner.

2014-102: Evaluation of Hexazinone Rate and Tank Mix Options Within Wild Blueberries in 2014 – Southeast Region. The highest rate of hexazinone, hexazinone/halosulfuron and hexazinone/flumioxazin caused significant injury. By the final sprout year rating, the amount of crop injury was reduced. All other treatments would be commercially acceptable by the end of the sprout year. The low presence of grasses in the trial area may influence the conclusions for this trial. There was a consistent rate effect present for hexazinone over the sprout year where the highest registered rate suppressed grasses. Increasing the rate did not significantly improve grass control on the final two sprout year rating dates. Adding Agral 90 did not improve grass control. Nicosulfuron/rimsulfuron, terbacil and glufosinate significantly increased grass control over the sprout year. The other tank mix treatments were not as effective for grass control.

2014-103: Evaluation of Hexazinone Rate and Tank Mix Options Within Wild Blueberries in 2014 – Northeast Region. Glufosinate caused significant crop injury on the first rating date, but the injury decreased as the trial progressed. All treatments would be commercially acceptable from a crop injury perspective. Hexazinone effects were rate dependant, where the lowest two rates were not effective and the highest two rates suppressed ticklegrass. There was no benefit to adding Agral 90 to hexazinone. Nicosulfuron/ rimsulfuron, terbacil and glufosinate significantly increased control of ticklegrass. Hexazinone was largely ineffective in controlling hawkweed. The tank mix of glufosinate/hexazinone controlled the population over the first two rating dates, but the effect was reduced to suppression on the final sprout year rating. Terbacil, nicosulfuron/ rimsulfuron and to a lesser extend mesotrione, suppressed hawkweed over the sprout year. No consistent benefit was shown within the remaining tank mix treatments. Both the ticklegrass and hawkweed populations were not adequately controlled by hexazinone, and resistant populations may be the cause of these control failures.

2014-104: Evaluation of Post-Emergent Herbicides Following Hexazinone Application in Wild Blueberries in 2014. All treatments would be commercially acceptable from a crop injury perspective. Early application of nicosulfuron/rimsulfuron and foramsulfuron controlled grass species on the majority of sprout year rating dates. The late application of foramsulfuron decreased efficacy to suppression. Mesotrione had limited grass control and no activity was observed when applied after clopyralid. A slight reduction in grass control was noted on the final sprout year rating in the tank mix of foramsulfuron/mesotrione. Clopyralid had a high level of vetch control in the sprout year. Nicosulfuron/rimsulfuron and foramsulfuron had little activity on vetch while mesotrione suppressed the weed with no difference between application timings. No single application controlled both weed species present. Tank mixes or repeated applications were required to control both grasses and vetch in the sprout year. The decreased grass control in the foramsulfuron/mesotrione tank mix should be evaluated further, to determine if this lower efficacy is found under multiple application conditions or weed species.

2014-105: Evaluation of Hexazinone and Terbacil Rates and Tank Mixes in Wild Blueberries in 2014 – Southeast Region. All treatments would be commercially acceptable in wild blueberry production. The field area for the trial was a relatively new wild blueberry field with high weed pressure which may contribute to the low level of weed control in the trial. Hexazinone alone had limited grass control. The low rate of terbacil suppressed grasses while the high rate controlled them. The tank mix of terbacil with hexazinone resulted in similar grass control to the equivalent terbacil treatment when applied alone. There was increased broadleaf weed control from the higher hexazinone rate, although not to a commercially significant level. Terbacil was largely ineffective for broadleaf control at the lower use rate and its effectiveness was improved slightly at the higher application rate. A tank mix at the low rate of both terbacil and hexazinone significantly improved broadleaf weed control. The high rate of terbacil with either rate of hexazinone improved broadleaf control over the equivalent single applications. Nicosulfuron/rimsulfuron had limited suppression of both broadleaves and grasses. No significant benefit was derived from the tank mix treatments with this herbicide.

2014-106: Evaluation of Hexazinone and Terbacil Rates and Tank Mixes in Wild Blueberries in 2014 – Southwest Region. All treatments would be commercially acceptable in wild blueberry production. Hexazinone alone at 1440 g ai/ha had limited grass suppression. Suppression improved at the higher use rate. There was little difference in application rate for broadleaf weed control. The low rate of terbacil suppressed grass and the high rate controlled grass within the sprout year. Terbacil alone had limited broadleaf activity. Within the tank mix treatments, using the low rate of terbacil in conjunction with the high rate of hexazinone significantly improved grass control. At a low rate of terbacil and hexazinone, the tank mix did not increase broadleaf weed control. There was no significant grass control benefit to tank mixing with high use rates of terbacil. With a high rate of hexazinone combined with a low rate of terbacil, there was a significant increase in broadleaf weed control on the final two sprout year ratings. The increased weed control was more pronounced at the higher rates of terbacil mixed with hexazinone. Nicosulfuron/rimsulfuron suppressed weed populations and there was no significant benefit within the tank mix treatments with this herbicide.

Growers should evaluate the utility of tank mixes based on field history and weed spectrum present, as there was no consistent benefit shown for tank mixing. In addition, the cost effectiveness of a second herbicide pass with a post-emergent herbicide should be compared with the pre-emergent tank mixes. These treatments should be evaluated under a broad range of application conditions to determine the most effective treatments.

2014-107: Evaluation of Hexazinone and Glufosinate Application Timing Within Sprout Year Applications in Wild Blueberries in 2014. There was no injury following applications made before blueberry emergence. Slight injury followed application at early emergence and non-acceptable early crop injury followed application after blueberry sprout emergence. Nonetheless, all herbicide treatments would be commercially acceptable by the end of the sprout year and tank mixes did not cause higher crop injury. The mixed weed population within a newly cleared section of wild blueberry land makes the conclusions for weed control more difficult. All hexazinone application timings resulted in similar weed control over the majority of application timings. Glufosinate application was more effective closer to the application, as control declined as the trial progressed. Applying both herbicides simultaneously resulted in higher weed control, although not always at a significant level.

2015-101: Evaluation of Tank Mix Options With Hexazinone for Wild Blueberries in 2015 – Southwest Region. Many recent herbicide registrations allow for an additional herbicide to be applied as a pre-emergent treatment, along with hexazinone. In the summer of 2015, a trial was established near Pennfield, New Brunswick to evaluate herbicide options used in conjunction with hexazinone. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring. Hexazinone alone had slight suppression of ticklegrass, with no consistent difference between the low and high rate. Terbacil alone had control of ticklegrass, while nicosulfuron/rimsulfuron suppressed the weed and glufosinate had early suppression followed by regrowth. The combined use with hexazinone improved weed control from glufosinate and nicosulfuron/rimsulfuron, with no additional benefit observed by adding hexazinone to terbacil. A different weed spectrum could result in different conclusions, so additional work to evaluate tank mix partners with hexazinone is warranted.

2015-102: Evaluation of Herbicides For Ticklegrass Control Within Wild Blueberries in 2015. Ticklegrass can be problematic in the sprout year and may require a secondary application of a grass-specific product for improved control. In the summer of 2015, a trial was established near Lord and Foy, New Brunswick to evaluate sprout year control options for ticklegrass. All herbicides evaluated would be safe for use in wild blueberry, under the application conditions of this trial. Both rates of hexazinone resulted in a low suppression of ticklegrass with no significant difference between the 1440 or 1920 g ai/ha application rates. Adding nicosulfuron/rimsulfuron or indaziflam to hexazinone increased ticklegrass control, but only to a level of suppression. Both the low and high application rate of terbacil resulted in excellent ticklegrass control. Adding hexazinone to terbacil did not improve ticklegrass control. The addition of a late post-emergent spray, either fluazifop, sethoxydim or foramsulfuron, to hexazinone improved grass control over hexazinone alone. The late application date for the post-emergent herbicides may have reduced control of ticklegrass.

2015-103: Evaluation of Additives With Hexazinone for Wild Blueberries in 2015. In the summer of 2015, a trial was established near Chipman, New Brunswick to evaluate additives to enhance weed control from hexazinone. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. No significant difference was noted between crop yield measurements. The registered rates of hexazinone (1440 and 1920 g ai/ha) were improved over the lower rate of hexazinone (960 g ai/ha) for both grass and broadleaf weeds. The addition of soybean oil did not improve broadleaf or grass weed control when combined with hexazinone application, while glufosinate application did increase weed control when used with hexazinone.

2015-104: Evaluation of Herbicides for the Control of Spreading Dogbane in Wild Blueberries in 2015 – Southwest Region. Spreading dogbane is difficult to manage in wild blueberry production due to its perennial growth habit, spreading rhizomes and variable growth habit. In the summer of 2015, a trial was established near Pennfield, New Brunswick to evaluate control options for spreading dogbane. Bicyclopyrone application resulted in a slight bleaching injury following application. By the end of the sprout year, all treatments had acceptable crop injury. No significant difference in crop yield was found. Spreading dogbane control was highly variable. Mesotrione, nicosulfuron/rimsulfuron and foramsulfuron all had some activity on spreading dogbane, but the weed recovered by the end of the sprout year. The repeated mesotrione treatments had slightly better weed control than a single mesotrione application. Mesotrione alone suppressed ticklegrass over the sprout year, and had improved control when mesotrione was applied twice. Nicosulfuron/rimsulfuron suppressed ticklegrass and there was no improvement when mesotrione was added. Foramsulfuron alone had grass control over the final rating dates and there was no improvement when adding mesotrione. Additional trial work on layering herbicide options to improve spreading dogbane control, including a longer period of time in between repeated applications, is warranted.

2015-105: Evaluation of Herbicides for the Control of Spreading Dogbane in Wild Blueberries in 2015 – Southeast Region. Spreading dogbane is difficult to manage in wild blueberry production due to its perennial growth habit, spreading rhizomes and variable growth habit. In the summer of 2015, a trial was established near Aldouane, New Brunswick to evaluate herbicide options for the control of spreading dogbane. Bicyclopyrone and nicosulfuron/rimsulfuron had crop injury following application. All treatments would be commercially acceptable by the final sprout year rating date. Spreading dogbane control in this trial was variable. Mesotrione treatment suppressed spreading dogbane, with a similar trend in both the early and late applications. Repeated application of mesotrione had higher weed control on two of the four sprout rating dates than the late application of mesotrione alone. Bicyclopyrone had lower control than mesotrione. Adding bicyclopyrone to mesotrione, either as a tank mix or a following treatment, did not significantly improve weed control. Nicosulfuron/rimsulfuron had a low level of suppression. Adding mesotrione improved weed control early, but this benefit declined on further sprout year ratings. Foramsulfuron alone suppressed spreading dogbane on three of four sprout year rating dates. There was no significant benefit to the tank mix of mesotrione and foramsulfuron, but the repeated treatment had increased weed control on the final sprout year rating date. Control declined for most

treatments in the crop year rating. Additional trial work on layering herbicide options, including a longer period of time in between repeated applications, is warranted.

2015-106: Evaluation of Tank Mix Options With Hexazinone for Wild Blueberries in 2015 – Southeast Region. In the summer of 2015, a trial was established near Westcock, New Brunswick to evaluate herbicide options used in conjunction with hexazinone. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. There was no significant difference in perennial grass or goldenrod control between application rates of hexazinone evaluated in the sprout year. Glufosinate application had a high level of weed control on the first rating date, but declined as the trial progressed. Nicosulfuron/rimsulfuron suppressed perennial grasses and terbacil was highly effective for perennial grass control. Neither nicosulfuron/rimsulfuron nor terbacil offered acceptable goldenrod control. Adding tank mix partners to hexazinone improved perennial grass control. All products evaluated in this trial have weed control strengths and weaknesses, so the application as a tank mixture, or in conjunction with other post-emergent treatments, can improve overall weed control.

2015-107: Evaluation of Pre-emergent, Sprout Year Herbicide Options for Land Clearing Within Wild Blueberries in 2015. In the spring of 2015, a trial was established near Gauvreau, New Brunswick in a newly established wild blueberry. The inherent variability of newly cleared wild blueberry land makes interpretation of the results difficult. Flazasulfuron, dicamba/diflufenzopyr and saflufenacil treatments expressed crop injury concerns in this trial. This injury could be due to the advanced stage of the blueberry growth at application. More evaluations for these products, under improved application conditions, is warranted. All other treatments would have acceptable crop injury in the sprout year. Hexazinone application suppressed weeds and the addition of either nicosulfuron or terbacil had improved control. There was no consistent benefit to the use of hexazinone/terbacil/ nicosulfuron/rimsulfuron compared to the 2-way tank mixes evaluated. Flazasulfuron alone had a low level of weed control which was improved when used in a tank mixture with hexazinone. A similar trend was noted for bicyclopyrone and saflufenacil. Dicamba/diflufenzopyr suppressed weed populations alone and control increased in a tank mixture with hexazinone.

2015-108: Evaluation of Hexazinone and Tank Mix Options for Control of Sheep Sorrel in Wild Blueberries in 2015. In the spring of 2015, a trial was established near Fairisle, New Brunswick to evaluate sheep sorrel control from hexazinone and tank mix treatments. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. There was a high level of sheep sorrel control following hexazinone treatment in the sprout year and there was no significant benefit to the addition of any tank mix partner to hexazinone. Nicosulfuron/rimsulfuron or glufosinate alone had a low level of suppression, with improved suppression following pyroxsulam alone. Sulfentrazone alone and saflufenacil alone had a high level of control on the first three rating dates, but had declined to suppression by the end of the sprout year. Alternate application timings or rates could be evaluated to improve control of sheep sorrel within the production cycle.

2015-109: Evaluation of Fall Herbicides For Perennial Weed Control Within Newly Cleared Wild Blueberry Fields in 2015. There was initial crop injury following dicamba

and flazasulfuron application, but blueberry plants recovered before the end of the sprout year. All treatments would have commercially acceptable crop injury, as growers expect higher crop injury following dicamba application. Glyphosate and dicamba treatments significantly controlled lambkill over the first three ratings. Highest lambkill control was in the highest rate of dicamba or the dicamba plus glyphosate treatments. Glyphosate alone had no control of rhodora in this trial. All dicamba treatments significantly controlled rhodora on the first rating date, although control declined as the trial progressed. Only the highest rate of dicamba provided commercially acceptable rhodora suppression by the end of the sprout year. All remaining treatments were not effective for the weeds evaluated in this trial. Due to the limited control options for rhodora, further research trials are warranted to evaluate treatments to improve dicamba efficacy, including formulations, tank mixes and layering treatments.

2015-110: Evaluation of Layering Post-Harvest and Spring Herbicide Options for Hawkweed Control in the Sprout Year of Wild Blueberries in 2015-6. All treatments were safe for use in wild blueberry under the application conditions in this trial. The single herbicide application timing treatments had varying levels of suppression by the end of the sprout year. For the single treatments, clopyralid had the highest level of weed control with no difference in application timing in the sprout year evaluations. Layering herbicide application increased weed control for most treatments, although not consistently significantly higher than single treatments. Crop year results were highly variable with no consistency between treatments or rating dates. Variability in control levels found warrants further evaluation, especially in the evaluation of clopyralid, glufosinate and terbacil combined with different herbicide layers and application timings.

2016-101: Evaluation of Tank Mix Options for Broadleaf Control in Wild Blueberries in 2016. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. The trial area had a very high weed pressure and a high clay content of the soil, which may have reduced the weed control performance of the herbicides applied, especially considering the low use rates of the conventional herbicides. Limited grass control from hexazinone treatment was noted, although it was significantly improves over the untreated areas. Terbacil had the highest level of grass control, although only suppression on two of four rating dates. The tank mix treatments had low grass control. Saflufenacil had a high level of broadleaf weed control early, but control declined as the trial progressed. Sulfentrazone was not effective and bicyclopyrone had the highest level of weed control for the broadleaf weeds present. The conventional herbicide treatments had limited activity on sheep sorrel. Sulfentrazone and to a lesser extend saflufenacil had the highest level of sheep sorrel control. The potential of synergy from the terbacil/bicyclopyrone treatment, as shown by the grass control in the final sprout year rating, could be explored further.

2016-102: Evaluation of Tank Mix Options for Grass Control in Wild Blueberries in 2016. Injury was noted following flazasulfuron treatments on the second and third sprout year rating dates. Treatments recovered and all treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. Hexazinone and terbacil increased grass control over the untreated areas in the sprout year. Less control was observed in the nicosulfuron/rimsulfuron and indaziflam treatments. Terbacil alone significantly improved grass control as compared to

hexazinone on the final three sprout year rating dates. Indaziflam alone had limited grass control. Flazasulfuron and nicosulfuron/rimsulfuron suppressed grasses. Both of these herbicides significantly improved grass control when applied with hexazinone on the final sprout year rating date. Hexazinone had the highest level of broadleaf weed control. Flazasulfuron, nicosulfuron/rimsulfuron and to a lesser extent indaziflam suppressed broadleaf weeds, especially when applied as a tank mix with hexazinone.

2016-103: Evaluation of Mesotrione and Graminicide Tank Mix Options in Wild Blueberries in 2016, Southern New Brunswick. Treatments would be safe for wild blueberry production. Mesotrione application significantly improved ticklegrass control in the sprout year, but not to a commercially viable level. All tank mix treatments significantly increases ticklegrass control over the untreated area. Higher application rates of graminicides increased ticklegrass control in the sprout year. There was no different in grass control between fluazifop or sethoxydim, when comparing equivalent use rates. Nicosulfuron/rimsulfuron and foramsulfuron were similar to the high graminicide application rates over the entire sprout year. Adding mesotrione to a low rate of fluazifop or sethoxydim increased ticklegrass control, but the addition had no effect at the higher use rate. There was no consistent significant difference in ticklegrass control by adding mesotrione to either nicosulfuron/rimsulfuron or foramsulfuron in the sprout year. Mesotrione was highly effective for the control of narrow-leaved goldenrod. Both foramsulfuron and nicosulfuron/rimsulfuron significantly increased narrow-leaved goldenrod control as compared to the other tank mix treatments in the sprout year. From a growers perspective, the mesotrione/fluazifop tank mix is the least risky treatment, with performance similar to the products applied alone. Sethoxydim tank mixes may improve the activity of mesotrione, with weed control and crop injury impacts. Using the Group 2 herbicides may control broadleaf weeds alone and may improve the weed control spectrum in a tank mix with mesotrione.

2016-104: Evaluation of Mesotrione and Graminicide Tank Mix Options in Wild Blueberries in 2016, Northern New Brunswick. All treatments would be safe for wild blueberry production, although mesotrione and nicosulfuron/rimsulfuron treatments had detectable crop injury on the first sprout year rating date. All grass herbicide treatments increased poverty oatgrass control over the untreated area. Higher rates of fluazifop or sethoxydim improved grass control over the lower rate on three of four sprout year rating dates. The lower rate of fluazifop had increased grass control over the lower rate of sethoxydim on three of four sprout year rating dates. Nicosulfuron/rimsulfuron and foramsulfuron were statistically similar to each other were equivalent to the high rates of the Group 1 herbicides on three of four sprout year rating dates. Mesotrione alone had a low level of poverty oatgrass control. All single tank mix treatments had similar poverty oatgrass control to their equivalent tank mix with mesotrione in the sprout year. Foramsulfuron and nicosulfuron/rimsulfuron alone had similar cow wheat control to mesotrione, all highly effective for control of this weed in the sprout year. The Group 1 herbicides had no control of cow wheat. There was no benefit to adding the tank mix partner to mesotrione for cow wheat control. Growers may consider a tank mix for enhanced broadleaf control when using Group 1 herbicides. If cow wheat is the only broadleaf weed present, Group 2 herbicides were equivalent to mesotrione application so growers may choose to reduce costs and only apply the single herbicide.

2016-105: Evaluation of Mesotrione and Foramsulfuron Timings for the Control of Spreading Dogbane in Wild Blueberries in 2016. The trial was designed to evaluate grass control but grass evaluations did not occur due to inconsistent weed coverage in the trial area. Weed control of spreading dogbane was variable. Early mesotrione application improved weed control over the late application in the sprout year, while foramsulfuron had higher control when applied later. There was no benefit to tank mixes or layering herbicide treatments in the sprout year, under the application timings of this trial. No treatment offered commercially acceptable spreading dogbane control at the end of the sprout year, so future trials are warranted. Multiple applications of mesotrione, either with or without foramsulfuron, may improve control. With the current knowledge and product registrations, the best product application sequence for grower recommendations would be an early application of mesotrione (2-10 leaf stage of dogbane) followed by a late application of foramsulfuron when re-growth is noted (likely in early July).

2016-106: Evaluation of Herbicide Options for Bracken Fern Control in the Sprout Year of Wild Blueberries in 2016. No injury resulted from a mesotrione or foramsulfuron applications. There was significant injury to blueberries following tribenuron methyl, but plants recovered before the end of the sprout year. Bracken fern was suppressed following foramsulfuron applications, with early application exhibiting the highest control level. Mesotrione treatments had a higher level of weed control early after application, but also declined as the trial progressed through the sprout year. The highest weed control from mesotrione alone followed application at the fronds fully unfolded timing, although there was no significant difference between mesotrione application timings within the crop year. There was no bracken fern control benefit to following foramsulfuron with mesotrione but using mesotrione twice did significantly increase weed control. Tribenuron methyl had a low level of activity after application, but improved as the sprout year progressed and was control in the crop year. Repeated mesotrione applications were similar to tribenuron methyl application, which would be the commercial standard treatment for bracken fern control. Two applications of mesotrione in the sprout year significantly improved bracken fern control in the crop year, as compared to one application of mesotrione alone, with no difference between the application timings evaluated in this trial. The registration of two applications of mesotrione could improve the management of bracken fern in wild blueberry production in New Brunswick and provided bracken fern control similar to the commercial standard, tribenuron methyl.

2016-107: Improving Fall Applications of Dicamba for Rhodora Control in Wild Blueberry in 2016. Evaluating herbicide layers or alternative dicamba formulations may help improve rhodora control. In the fall of 2016, a trial was established near Lavillette, New Brunswick in an established wild blueberry field. The high level of crop injury following dicamba treatments was expected, as this treatment has caused significant blueberry injury soon after application, and growers accept this level of early injury. Dicamba rate did affect crop injury, with higher rates causing greater injury in early sprout year evaluations. There was no crop injury difference between formulations or additive treatments. All herbicide treatments had a high level of rhodora control over both June sprout year ratings. Differences between the high and low application rates of dicamba began to significantly separate on the July and August ratings, but there were

no consistent differences within the dicamba rate treatments. By the September rating, the formulations of dicamba were statistically similar in their control of rhodora, when looking at equivalent application rates. There was no advantage to adding glyphosate to the Xtendimax formulation of dicamba or adding hexazinone to dicamba treatments. Both flumioxazin and flazasulfuron tank mixes significantly reduced rhodora control as compared to Banvel II application alone on the September rating date. Rhodora control was significantly increased for the high dicamba application rate by including glufosinate but there was no significant difference for the lower application rate plus glufosinate. Based on the sprout year results, there would be no advantage to recommending any changes to the current recommendation of using a high rate of dicamba, with either formulation, to ensure higher rhodora control with the acceptance of a higher risk of early sprout year crop injury. The trial area will be monitored into the crop year to determine is weed control differences are more apparent in the crop season.

2017-101: Evaluation of Terbacil and Tank Mix Options for Hawkweed Control in Wild Blueberries in 2017. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. Terbacil application resulted in significantly higher hawkweed control over all sprout year ratings. The difference between the high rate and low rate of terbacil was significant on the final four sprout year ratings, where the highest rate of terbacil suppressed hawkweed populations. Clopyralid alone suppressed populations over the sprout year and there was no consistent significant benefit to the addition of terbacil to clopyralid. Glufosinate alone provided control on the first rating date, but control rapidly declined over subsequent sprout year ratings. Adding terbacil increased weed control on these subsequent sprout year ratings. Flazasulfuron application had a minimal impact on hawkweed populations in the sprout year and declined to a level similar to the untreated control by the third rating date. No treatment offered control of hawkweed by the end of the sprout year. Layering additional herbicide applications to pre-emergent treatments is warranted, especially for clopyralid, terbacil and glufosinate, which showed promise for hawkweed management in this trial.

2017-102: Evaluation of Hexazinone and Tank Mix Options for Control of Sheep Sorrel in Wild Blueberries in 2017. All treatments would be safe for wild blueberry production if applied before blueberry emergence in the spring of the sprout year. A high weed population, combined with inconsistent blueberry coverage in the field, makes recommendations difficult from this trial. There was no difference in hexazinone rates for sheep sorrel, grass or broadleaf weed control. Sulfentrazone and tribenuron methyl had the most promising control of sheep sorrel, with some suppression from glufosinate and indaziflam. Glufosinate and to a lesser extend indaziflam increased grass control in the sprout year. Sulfentrazone and tribenuron methyl were similar to the untreated control over the final four sprout year ratings. All tank mix treatments were statistically similar for broadleaf weed control on the final three sprout year rating dates and increased control over the untreated area.

2017-103: Evaluation of Layering Foramsulfuron and Mesotrione for the Control of Spreading Dogbane in Wild Blueberries in 2017. Temporary crop injury followed late mesotrione applications, but all treatments would be considered safe for use in wild blueberry production. Spreading dogbane control was more variable as the trial

progressed, where single treatments did not offer adequate control while layered herbicide treatments had increased control. For layered treatments, the mid followed by late timing resulted in lower spreading dogbane control as compared to early/mid or early/late treatment combinations for both mesotrione and foramsulfuron applications. Three spray application treatments were among the highest spreading dogbane control recorded over the sprout year. There was no significant difference between having foramsulfuron first or last in the three treatment sequence. By the end of the sprout year, foramsulfuron early followed by mesotrione mid and late had significantly higher weed control than all two spray programs. The low rate of mesotrione applied three times suppressed spreading dogbane, and was statistically similar to the two spray mesotrione early/mid and early/late by the end of the sprout year. Foramsulfuron was more effective than mesotrione for control of ticklegrass. Two and three application programs which included foramsulfuron had a high level of ticklegrass control in the sprout year. The repeated applications of mesotrione suppressed ticklegrass and the three applications at a lower rate had decreased control by the final sprout year rating as compared to the two mesotrione applications.

2017-104: Evaluation of Protoporphyrinogen Oxidase Inhibitor Herbicides in Wild Blueberries in 2017 – Southwest Region. Flumioxazin caused slight crop injury early, but all treatments would be commercially acceptable from a crop injury perspective. All herbicides had limited control on both grass and broadleaf weeds present, with hexazinone being the most effective herbicide in this trial. Future trial work with these herbicides should focus on different weed species, or more mature field areas with lower weed pressure.

2017-105: Evaluation of Protoporphyrinogen Oxidase Inhibitor Herbicides in Wild Blueberries in 2017 – Southeast Region. No crop injury measurements were recorded due to the inconsistent wild blueberry cover in the trial area. No herbicide evaluated was effective for black bulrush control. There was limited grass and broadleaf activity, so additional evaluations, focusing in on different weed species, may be warranted.

2017-106: Evaluation of Herbicide Options for a Low Input System Within Wild Blueberries in Southwest New Brunswick in 2017. All treatments were acceptable from a crop injury perspective. Hexazinone alone had a moderate control of both grass and broadleaf species in the sprout year, with no significant difference between the application rates. In general, having multiple application timings or modes of action increased weed control. Hexazinone/nicosulfuron/rimsulfuron had the highest weed control from single treatments while hexazinone followed by fluazifop/mesotrione had the highest weed control for repeated treatments. The application timings for repeated treatment may not have been ideal, as the application date was a compromise between untreated and treated plots. Each pre-emergent treatment could have a unique best post-emergent application timing, rather than one single timing for all post-emergent treatments.

2017-107: Evaluation of Herbicide Options for a Low Input System Within Wild Blueberries in Southeast New Brunswick in 2017. All treatments would be commercially acceptable from a crop injury perspective. There was a significant difference between hexazinone application rates for grass control on four of five sprout tear ratings while no difference in broadleaf control was found. Foramsulfuron/mesotrione, nicosulfuron/

rimsulfuron/mesotrione and fluazifop/mesotrione all had similar grass and broadleaf control over the sprout year. Foramsulfuron/mesotrione had increased broadleaf weed control over foramsulfuron alone on all sprout year rating dates. There was limited grass suppression from sulfentrazone alone and control was improved through the addition of nicosulfuron/rimsulfuron. Broadleaf control following sulfentrazone alone declined as the trial progressed and was similar to sulfentrazone/nicosulfuron/rimsulfuron on three of five rating dates. All hexazinone tank mix treatments as well as the sulfentrazone and glufosinate repeated treatments had a high level of grass control over the final four sprout year ratings dates.

2017-108: Evaluation of Herbicide Options for a Low Input System Within Wild Blueberries in Northeast New Brunswick in 2017. From a crop injury perspective, all treatments would be acceptable for use in wild blueberry production. Both rates of hexazinone had a similar high rate of grass control on the final two sprout year ratings, while there was a rate difference present for broadleaf control between the hexazinone treatments on the final three sprout year ratings. Less grass control was found in the foramsulfuron and nicosulfuron/rimsulfuron treatments as compared to the fluazifop treatments by the final sprout year rating. There was a significant increase in broadleaf control in the foramsulfuron/mesotrione treatment as compared to foramsulfuron alone. By the end of the sprout year, foramsulfuron/mesotrione, fluazifop/mesotrione and nicosulfuron/rimsulfuron/mesotrione all had similar broadleaf weed suppression. Sulfentrazone suppressed broadleaf weed populations in the sprout year and control was significantly improved by adding nicosulfuron/rimsulfuron over the final three sprout year rating dates. Hexazinone tank mix treatments had a similar grass control to hexazinone alone in the sprout year. Hexazinone followed by fluazifop/mesotrione significantly improved weed control over hexazinone alone over half of the sprout year rating dates.

2017-109: Evaluation of Fall Herbicide Treatments for Hawkweed Control in Wild Blueberries in 2017. A trial was initiated in the fall of 2017 with no trial results available at this time.

2017-110: Layering Terbacil, Clopyralid and Glufosinate Herbicide Treatments for Improved Control of Hawkweed in Wild Blueberries in 2017-8. A trial was initiated in the fall of 2017 with no trial results available at this time.

(9) Conclusion

Each individual trial helped to expand the knowledge base for specific weed species, herbicides and application timings. The information helped to improve the production recommendations for New Brunswick wild blueberry producers and has been incorporated into multiple articles, presentations, fact sheets and the Wild Blueberry IPM Weed Management Guide. Trial data supported regulatory approval for many innovative herbicides and application patterns within wild blueberry, including nicosulfuron/rimsulfuron, glufosinate, flazasulfuron and indaziflam. Trials also evaluated the use of tank mixtures and repeated applications, ensuring sustainable herbicide use and protection against weed resistance. Using the information gained from this project,

New Brunswick wild blueberry producers are able to manage weed issues in a more economical and environmentally sensitive manner.

(10) Required Next Steps

Despite these efforts, weeds continue to be a significant issue for wild blueberry production in New Brunswick. Weed populations adapt to current control practises and environmental conditions, making on-going evaluations of new 'gap' weeds necessary. Continued support for trial evaluation for these weeds and screening of new herbicides to the wild blueberry market is required. Information gained from other areas and crops can be applied to this industry, but cannot replace local evaluation and knowledge gained within this very unique production system. Specific future needs within the New Brunswick wild blueberry industry include the evaluation of low cost weed control methods, weed resistance management and continued product screening for new weed issues including hawkweeds, fescues and sheep sorrel.

(11) Communication

All final reports are available to the lowbush blueberry growers of New Brunswick from the author. Results are submitted for inclusion in the 2013-2017 Agricultural Research Abstracts from the NBDAAF. Trial information was included within the NBDAAF Crop Updates throughout the 2013-7 growing seasons. Experiments were discussed during the 2013 BNBB Summer Field Day on July 13, 2013; and the 2014-2017 BNBB Spring Tailgate sessions. Multiple small-scale plot tours occurred with local co-operators, extension personnel and the agri-chemical industry. Trial results were presented at the WSSA-CWSS Meeting on February 5, 2013 in Vancouver, BC; Canadian Weed Science Society Meeting on November 19 in Montreal, QC; Wild Blueberry Research and Extension Workers Meeting on October 22, 2015 in Bar Harbor, ME; 2016; Wild Blueberry Research and Extension Workers Meeting on October 21-22, 2016 in Fredericton, NB; the Canadian Weed Science Society Meeting on November 23, 2016 in Moncton, NB; 2017 Cavendish Growers Meeting, Parrsboro, NS on April 10, 2017; and the Canadian Weed Science Society Meeting on November 21-23, 2017 in Saskatoon, SK. Results were disseminated to multiple agro-chemical companies and were used at the AAFC-PMC 2013-8 Minor Use Priority Setting Meetings to assist in determining priorities for herbicide registration in lowbush blueberry. Information was presented to growers in the BNBB Newsletter and education sessions. Experimental results were used in development of fact sheet revisions, including the Wild Blueberry IPM Weed Management Guide.