NITROGEN MANAGEMENT – FERTILIZERS

Please note: *If your project involves seeding perennial legumes into existing pastures, please refer to the Rotational Grazing BMP project category.*

The RDAR On-Farm Climate Action Fund (OFCAF) program supports the adoption of new Beneficial Management Practices (BMPs) that improve nitrogen (N) fertilizer use efficiency. Improved N-fertilizer use efficiency decreases the opportunity for losses of N, such as nitrous oxide (N2O), a greenhouse gas, nitrate runoff and leaching, or loss through ammonia emission. OFCAF applicants may choose some or all the BMPs listed below and other BMPs related to Nitrogen Management, Cover Cropping, or Rotational Grazing.

Applicants may receive a maximum of $100,000 in OFCAF funding from all delivery partners across all BMP categories between 1 April 2022 and 31 March 2028. The minimum eligible project cost is $10,000 per application. Approved eligible expenditures are reimbursed at up to 85%, subject to applicable cost limits and the applicant's remaining OFCAF maximum.

For the 2027-2028 OFCAF program activities must:

- Have project start dates on or after 1 April 2027
- Be completed no later than 1 December 2027
- Have total eligible application costs of at least $10,000
- Meet all eligibility requirements listed in the current OFCAF Program Guide and below

The BMPs supported by OFCAF must be new to your farm or field. If the same BMP category was previously funded on the same Legal Land Description (LLD), it is ineligible. Applicants may request funding to support eligible practices listed in the current OFCAF Program Guide. Please outline how you will apply the new practices on your farm using the BMP Action Plan on page 5 of this document, including labelled maps that show legal land descriptions (LLDs) and field boundaries on an aerial photo or imagery. Any method of outlining and labelling can be used, as long as the fields are visible beneath. The Guide to Locating and Labelling BMP Action Plans provides further details. Your completed BMP Action Plan must be recommended by a qualified third-party adviser who is a Professional Agrologist (PAg) or Certified Crop Advisor (CCA); please reference the Guide to Accessing Agricultural Recommendations in Alberta. Your BMP Action Plan must be approved **in writing** by RDAR to be eligible for OFCAF funding.

Important Notes:

- Invoices and proof of payment must be on or after 1 April 2027
- You must receive RDAR's written approval of your application, confirm participation and accept implementation responsibilities before funding is considered active
- A project start date and a project completion date must be submitted within 14 days of written approval from RDAR. Funds may be reallocated to other applicants if the project is not accepted through the Pending Project Acceptance process in Agriculture Research Grant Organizer (ARGO).
- All paid invoices with photos, LLDs of pre-approved project fields and proof of payment must be submitted within 45 days of the project completion date, and no later than 15 January 2028
- Projects must be completed between 1 April 2027 and the applicant's project completion date, which must be no later than 1 December 2027.

In addition:

- Photographs with date stamps and GPS coordinates are required to document conditions before and after completing your project
- Applications for the purchase of drones to broadcast legumes or for split application of nitrogen (N) fertilizers (with dual nitrification and urease inhibitors) require extra documentation, see Section 5 (page 5) and Appendix (pages 6-9). Purchase of drones alone is not eligible for reimbursement; applicants must implement the BMP that coincides with the application.

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ELIGIBLE BENEFICIAL MANAGEMENT PRACTICES

1. **Nitrogen stabilizer products and Environmentally Smart Nitrogen (ESN)**
   - Nitrogen stabilizer products can improve N-fertilizer use efficiency by slowing the conversion of urea to ammonium and the conversion of ammonium to nitrate. This BMP only applies if the practice is new to the farm or new to the field.
     - Urease inhibitors[1] help to allow sufficient time for rainfall or irrigation to move urea into the soil and reduce the risk of N-losses through ammonia volatilization. Urease inhibitors can also decrease ammonia volatilization when N-fertilizer is banded at less than 3-inch depths.
     - Nitrification inhibitors[2] slow the conversion of ammonium to nitrate (nitrification), helping to reduce N-losses by runoff and leaching as well as by nitrous oxide emissions.
     - Dual inhibitor products listed below provide both urease and nitrification inhibition and are the only products that qualify for OFCAF funding.

   - ESN (Environmentally Smart Nitrogen) is a polymer-coated urea fertilizer product designed to gradually release urea in moist soil conditions. It is often applied in combination with straight urea, with the ESN gradually releasing a portion of the N-fertilizer following application. A minimum of $10,000 per application in 2027 is an eligible cost to cover the average increase of $160/MT for ESN compared to urea at the time of purchase. The ESN minimum is achieved with the purchase of approximately 62.5 metric tonnes or 137,789 lbs of product.

Eligible products include:

Dual Urease and Nitrification Inhibitor Products					Fertilizers
Active Stabilizer Plus	ArmU Advanced	SylLock Plus	Tribune	Excelis Maxx	Triple Kick (38% actual N)
NEON Soil	NEON Surface	NEON Air	Lynx	Nlock Advanced	Super U (46% actual N)
Trident V	Nitrolizer Duo	N-Forced Dry Duo	Secure	Vault 15/15	Environmentally Smart Nitrogen (ESN)
Eclipse Plus	Eclipse ND				

- Only the increased cost per pound of actual N treated with N-stabilizer product(s) is eligible. Amounts treated must be clearly specified on your invoice.
- ESN has a minimum eligible amount of $10,000 per application for 2027, based on the average increased cost for ESN compared to urea. In consultation with the industry, RDAR has estimated the extra cost to be $160 per metric tonne in spring 2027. This value may be adjusted for seasonal market premiums for ESN over urea.

Note: Applying both ESN and dual inhibitors on the same land area is **not** an eligible cost since the emissions reductions gained for each of the practices individually are higher than if they are applied together.

2. **Shifting from broadcast to banding or side-dressing N-fertilizer**

Moving N-fertilizer application from broadcast to banding before or during the seeding of annual crops improves N-use efficiency and is considered a BMP for N-fertilizer application. Side dress rather than broadcast application for row crops is also a BMP to improve N-use efficiency for row crop systems. This BMP only applies to farms or field situations where the routine practice is broadcast and the shift is to a banding or side-dressed application method for N-fertilizer

[1] Urease Inhibitors. Nutrient Source Specifics. IPNI publication No. 25. NSS-25 Urease Inhibitors.pdf (ipni.net)
[2] Nitrification Inhibitors. Nutrient Source Specifics. IPNI publication No. 26. NSS-26 Nitrification Inhibitors.pdf (ipni.net)

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2. **Shifting from broadcast to banding or side dressing N-fertilizer (continued)**

Eligible costs:

- Custom fertilizer banding or side-dressed application from a third-party operator[3]
- Equipment rental costs (for project acres only, does not include lease-to-purchase arrangements)
- The maximum eligible amount for changes from broadcast to either banding or side dressing N- fertilizer is $15,000
- Spring banding only (no fall banding)

3. **Split application of N-fertilizer**

Split application refers to applying an additional portion of the N-fertilizer needed following crop emergence to better match nutrient availability with crop uptake during the growing season. This is especially the case with long-season crops like corn but is also common with potatoes and other row crops where side dressing is the preferable method for split N-fertilizer application. Winter cereals are another situation where split application is a common practice, with a portion of the N-fertilizer applied at seeding and the remainder in spring after the winter cereal resumes growth. In-crop, surface-applied urea (46-0-0) or UAN (28-0-0) must be combined with both a urease and nitrification inhibitor to decrease the risk for N-loss. Single foliar application mid-season is ineligible.

Eligible costs:

- Applies only to farms or field situations where split application of N-fertilizer is not a routine practice
- Urea or liquid UAN fertilizer must be combined with a dual N-fertilizer inhibitor (see list of eligible products in the Nitrogen Stabilizer Products). The increased cost of the dual inhibitor is eligible for reimbursement.
- Custom fertilizer application from a third-party operator[3]
- Equipment rental costs (for project area only, does not include lease-to-purchase arrangements)
- Diagnostic testing for in-season rate adjustments, e.g., soil and tissue testing at an accredited lab. Please apply using the Nitrogen Management - Soil Testing and Mapping Template available on the OFCAF website

4. **Increasing perennial legumes in annual crop rotations (at least 50% legumes, up to $85/ac for seed costs)**

Another BMP to improve soil health and reduce the need for synthetic fertilizer N is to expand annual crop rotations to include perennial legumes for hay or pasture. Nitrogen-fixing, long-lived legumes like alfalfa, birdsfoot trefoil, cicer milkvetch, sainfoin, and clover are examples of forage species adapted to Alberta growing conditions that can be included in a crop rotation as a component of grass-legume mixes for hay or as a pure stand for hay production (e.g., alfalfa). Information about how perennial legumes can be integrated into crop rotations can be obtained from industry experts or online[4]. Please note that land rolling and biological products, such as inoculants, and establishing pasture are not eligible costs.

Eligible costs:

- Fields must be currently in annual crop rotations, recently terminated perennial fields are not eligible
- Perennial legumes must be at least 50% of the forage seed mixture for hay or pasture. Maximum of $85/ac for seed costs. OFCAF funding to improve *existing* perennial pasture is available using the Rotational Grazing BMP
- If red clover is to be seeded, it must be part of a perennial legume mix with a maximum of 50% red clover
- Fall seeding must be completed by 15 September to allow adequate time for crop growth before winter. May include custom seeding from a third-party operator or seeding equipment rental[5] (for project area only, no lease-to-purchase arrangements). Please describe in the "Other" box in the BMP Action Plan, including costs

[3] Allowable custom rate range for in-crop surface applied N: Up to $12/ac; fertilizer banding: Up to $25/ac. Rates are adapted from information in the 2022–23 Farm Machinery Custom and Rental Rate Guide. Saskatchewan Agriculture. Saskatchewan.ca/agriculture; and Alberta Custom Rates 2017 Custom Rates 2017 – Seeding | Alberta.ca

[4] Perennial Forage Establishment in Alberta. Agdex 120/22-3. Alberta Agriculture, Forestry and Rural Economic Development. 2005. Perennial Forage (gov.ab.ca)

[5] Eligible custom rate range for drill or direct seeding: Up to $30/ac; for broadcast: Up to $12/ac. In-kind labour by the applicant is not eligible. Rentals are eligible for the area and duration of the project only (no lease or rent-to-own).

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5. Drones for split applications of N-fertilizer or to increase perennial legumes in annual crop rotations

Split Application of N-fertilizer or Seeding Perennial Legumes with Drone – Quick Facts

- Maximum drone reimbursement: 50% up to $30,000
- Minimum area to be seeded or for split application of N-fertilizer: 80 acres
- Seed cost limit: $85/ac
- Drone must be purchased (not leased) with a spreader package
- A Transport Canada pilot certificate appropriate to the drone (a Pilot Certificate – Advanced Operations if the maximum take-off weight (MTOW), including payload, exceeds 25 kg) and evidence of the drone's Transport Canada Safety Assurance Declaration must be provided before approval. Applicants may submit an application before obtaining these.
- A Special Flight Operations Certificate for Remotely Piloted Aircraft Systems (SFOC-RPAS) is needed only for operations outside the advanced-operation rules, such as drones with an MTOW over 150 kg
- Video and GPS-stamped photos required for the final report

Eligible costs:

- Purchase of a new drone and spreader attachment for split N-fertilizers or perennial legume seeding through an authorized dealer.
- The drone must be used on a minimum of 80 acres to seed perennial legumes and/or to apply a second application of granular N-fertilizer (with a dual inhibitor to decrease the risk of N loss).
- Before approval, the applicant must provide: (a) a Transport Canada pilot certificate appropriate to the drone and the proposed operation (a Pilot Certificate – Advanced Operations is required for any drone with a maximum take-off weight (MTOW), including payload, of more than 25 kg); and (b) evidence that the drone model has the Transport Canada Remotely Piloted Aircraft System (RPAS) Safety Assurance Declaration that applies to the proposed operation. A Special Flight Operations Certificate (SFOC-RPAS) is required only where the proposed operation falls outside the basic, advanced, or Level 1 Complex operation rules, for example a drone with an MTOW over 150 kg, or an operation carrying a dangerous or hazardous payload. Applicants are responsible for confirming their regulatory requirements with Transport Canada.
- Standard power supplies and batteries (up to 3) for drones are included in the base package.
- The cost of a base station is an eligible expense; however, it will be included within the maximum drone cost share of 50% of eligible costs, to a maximum reimbursement of $30,000
- A maximum of one drone purchase is eligible across all program years (2026-2028)

Ineligible costs:

- Leasing costs of a drone and/or supporting equipment
- Drones purchased without a spreader package
- Fees for drone registration, training or pilot certification
- Costs associated with subscriptions, including base station subscription fees
- SFOC-RPAS issuance fees

Note: The drone purchase will not be eligible for reimbursement if the split application of N-fertilizer is not completed, and/or the perennial legume is not seeded, or if eligible invoices and proof of payment are not provided for the drone and product being applied (seed or inhibitor).

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NITROGEN MANAGEMENT FERTILIZERS - BMP ACTION PLAN

Please note: all costs must exclude GST. Use extra forms to add information and identify individual fields as needed.

Applicant Name:

New BMP Objective – check as appropriate:

Improve N source (product) ☐	Improve N placement (banding or side dress) ☐	Improve N timing (split in-crop)* ☐	Confirm BMP is on annual cropland ☐

Are BMPs new to the field?	Yes ☐ No ☐	Are BMPs new to the farm?	Yes ☐ No ☐

INCREASED COST OF NEW N PRODUCT**

Planned N use date:

Inhibitor Brand Name:	Rate (L/metric tonne of urea or L/metric tonne of UAN Solution):	Extra Cost ($/L or $/MT)**:

Field	Seeded Area	N Source	N Source Rate	Total BMP	Increased Cost**
(LLD)	(ac)	(Urea, UAN 28, ESN, etc)	(lb/ac or US gal/ac)	(lbs or US gal)	($/field)
Total		A) Total Product Cost**			$

COST OF SEED MIX (at least 50% legume, up to $85/ac)* AND CUSTOM APPLICATION OR EQUIPMENT RENTAL^**

Planned Seeding Date (mo/yr):	Seeding Method(s) Y/N:	Broadcast ☐	Drill or Direct Seed ☐

Field	Seeded Area	Field Currently in Annual Crop?	Seed Mix (at least 50 % legume)	Seed Cost (maximum of $85/ac)	Cost of Custom Seeding or Equipment Rental^	Cost per Field
(LLD)	(ac)	(Y or N)	(% each type)	($/ac)	($/ac)	($)
Total		B) Total Cost of Seed, Custom Application or Equipment Rental				$
					C) Cost of Drone^^	$

Is this Plan recommended by a Professional Agrologist (PAg) or Certified Crop Advisor (CCA)?	Yes	No	Have you included a labelled map?	Yes	No

Name:	PAg and/or CCA number:	Phone number:	Date:
		Email:	

D) Cost of Other and/or PAg or CCA costs ^^^	$
Total Cost of Project (A+B+C+D)	$

*Split (in crop) – If surface applied must include dual N stabilizers. **Eligible costs for dual inhibitors or ESN, must total at least $10,000 per application, and cannot be combined with other BMPs to reach this minimum. ESN and dual inhibitors on the same acres are ineligible. ^Custom rates: for banding: up to $25/ac to a maximum of $15,000 in 2027; for in-crop surface applied N: up to $12/ac; for drill or direct seeding: up to $30/ac; for broadcast or drone seeding: up to $12/ac. In-kind labour and lease or rent-to-own arrangements are not eligible costs. ^^Must complete Appendix (pages 6- 9) and seed perennial legumes and/or apply a second application of N-fertilizer on a minimum of 80 ac. ^^^ May include the cost of BMP Action Plan recommendation of up to 10% of the total cost of all eligible BMPs, to a maximum of $2,000 per applicant (total for 2022 to 2028).

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APPENDIX: SPLIT APPLICATION OF N-FERTILIZER OR SEEDING PERENNIAL LEGUMES IN ANNUAL CROP ROTATIONS WITH DRONE APPLICATION

Drones or Remotely Piloted Aircraft Systems (RPAS)

Transport Canada regulates drone registration and pilot certification through the Drone Management Portal.

Drone pilots must follow specific rules for each type of operation, as well as the basic safety rules that apply to all drones.

Eligibility Checklist:

	Yes	No
I have read Transport Canada's drone regulations. Drone pilots must follow specific rules for each type of operation, as well as the basic safety rules that apply to all drones.	☐	☐
I will hold a valid Transport Canada pilot certificate appropriate to the drone and the proposed operation, and will provide it before approval. If the drone's maximum take-off weight (MTOW), including payload, exceeds 25 kg, I will hold a Pilot Certificate – Advanced Operations, and the model will have the applicable Transport Canada Safety Assurance Declaration. If my operation requires a Special Flight Operations Certificate (SFOC-RPAS), I will obtain it and provide it before approval.	☐	☐
The drone registration number must be clearly marked on the drone and documented in the Final Report with a supporting photograph.	☐	☐
I understand that leasing a drone is not an eligible expense.	☐	☐
I agree to a site inspection to see the drone and the seeded field.	☐	☐
I understand that I must also apply for a minimum of 80 acres of perennial legume seed and/or 80 acres of split application of N-fertilizer as per the terms and conditions. If I do not seed the perennial legume crop and/or complete the split application of N-fertilizer, the drone will not be eligible.	☐	☐
I understand that I will need to submit eligible invoices and proof of payment for the seed purchased for this project and/or N-fertilizer (must be combined with both a urease and nitrification inhibitor to decrease the risk for N-loss).	☐	☐
I will submit a video and GPS-stamped pictures of the practice being completed by the drone. This is a requirement for the Final Report to be eligible for reimbursement.	☐	☐
I understand that the cost share for a drone used for split application of N-fertilizer and/or to seed perennial legumes is 50% up to a maximum reimbursement of $30,000.	☐	☐

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Please describe using a minimum of 50 words:

1. The drone manufacturer, model and specs, including the maximum take-off weight for spreading perennial legume seed or split application of N-fertilizer, with a full payload, and the Transport Canada Safety Assurance Declaration that applies to your proposed operation (attach evidence).

2. Your seeding plan with the drone (number of species in the perennial legume mix, seeding rate, time of application) or the plan for the split application of N-fertilizer.

3. How do you plan to seed multiple seed sizes with the drone?

4. How many passes will you be making to seed the perennial legume crop or for the split application of N-fertilizer?

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REGULATORY WARNING — SPRAY DRONES IN CANADA

This section explains your legal responsibilities and confirms that RDAR does not authorize or assume liability for drone use.

⚠ STOP — READ BEFORE YOU APPLY

- Drone spraying of pesticides is illegal unless the product label specifically says “aerial application use”. Using pesticides off-label violates the Pest Control Products Act.
- This application does not authorize unapproved spraying.
- You must comply with Transport Canada rules for drone operation and any provincial/territorial pesticide-applicator requirements.
- Carrying a dangerous or hazardous payload is a high-complexity operation that requires an SFOC-RPAS. Confirm with Transport Canada whether the product you will carry falls into this category. Pesticide label, provincial pesticide-applicator, and aerial application rules apply separately.

TERMS & CONDITIONS DRONE (RPAS) COMPLIANCE, RELEASE & INDEMNITY

COMPLIANCE, PROHIBITED USES, ASSUMPTION OF RISK, RELEASE AND INDEMNITY FOR DRONE USE

1. **Compliance With Law and Labels.** The Applicant represents, warrants, and covenants that it will comply with all applicable laws, regulations, and permits relating to the operation of drones (Remotely Piloted Aircraft Systems, “Drone ”) and the use and application of pest control products, including the Pest Control Products Act (Canada) and related regulations. Without limiting the foregoing, the Applicant shall not use any drone to apply a pesticide unless the current, Health Canada-approved product label expressly authorizes application by “Remotely Piloted Aircraft System (RPAS)” or “drone,” and the Applicant follows all label directions, limitations and drift-mitigation requirements. Use of a pesticide contrary to label directions is illegal.
2. **No Authorization or Endorsement.** RDAR and AAFC do not authorize, endorse, permit, or encourage the use of drones for any off-label or unapproved pesticide application. Funding, equipment support, or participation in any program or project under this application must not be construed as authorization for unapproved pesticide uses.
3. **Assumption of Risk.** The Applicant acknowledges that any off-label, unapproved, or otherwise non-compliant use of drones for pesticide application may pose safety, environmental, market-access, and legal risks, including potential fines or enforcement action, and voluntarily assumes all such risks.
4. **Release and Hold-Harmless.** To the maximum extent permitted by law, the Applicant releases and forever discharges RDAR, AAFC, and their respective directors, officers, employees, agents, contractors, and funders (collectively, the “Released Parties”) from any and all claims, losses, liabilities, penalties, damages, costs, and expenses arising from or relating to the Applicant’s (or its personnel’s or contractors’) use or misuse of drones, including any unapproved or off-label pesticide application or other non-compliant activity. For clarity, nothing in this Release limits liability for a Released Party’s gross negligence or wilful misconduct.
5. **Indemnity.** The Applicant shall defend, indemnify and hold harmless the Released Parties from and against all claims, demands, actions, losses, fines, penalties, liabilities, damages and costs (including reasonable legal fees) arising from or relating to: (a) the Applicant’s breach of this Agreement; (b) any drone operation; (c) any pesticide application; or (d) any regulatory non-compliance, including off-label pesticide use and violations under the Pest Control Products Act.
6. **Certification & Records.** Upon request, the Applicant will promptly provide evidence of (a) valid drone registration and pilot certification under Transport Canada rules, the applicable Safety Assurance Declaration, and, where required, an SFOC-RPAS; and (b) for any pesticide application by drone, the specific product label authorizing drone use and records demonstrating compliance with label directions and any applicable provincial or territorial requirements.
7. **Breach; Remedies.** Any breach of this clause is grounds for immediate rejection, termination, or repayment of funding or equipment support (as applicable), and may be reported to the relevant authorities.

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APPLICANT ATTESTATION

☐ Label Compliance. I will not use drones to apply any pesticide unless the product label expressly authorizes drone use and I follow the label directions in full.

☐ No Off-Label Use. I understand that off-label drone spraying is illegal under the Pest Control Products Act.

☐ Transport Canada Compliance. I will maintain the required drone registration and pilot certification, the applicable Safety Assurance Declaration, and, where required, an SFOC-RPAS, and provide proof upon request.

By signing below, the Applicant acknowledges and agrees to the above.

Authorized Signatory Name:

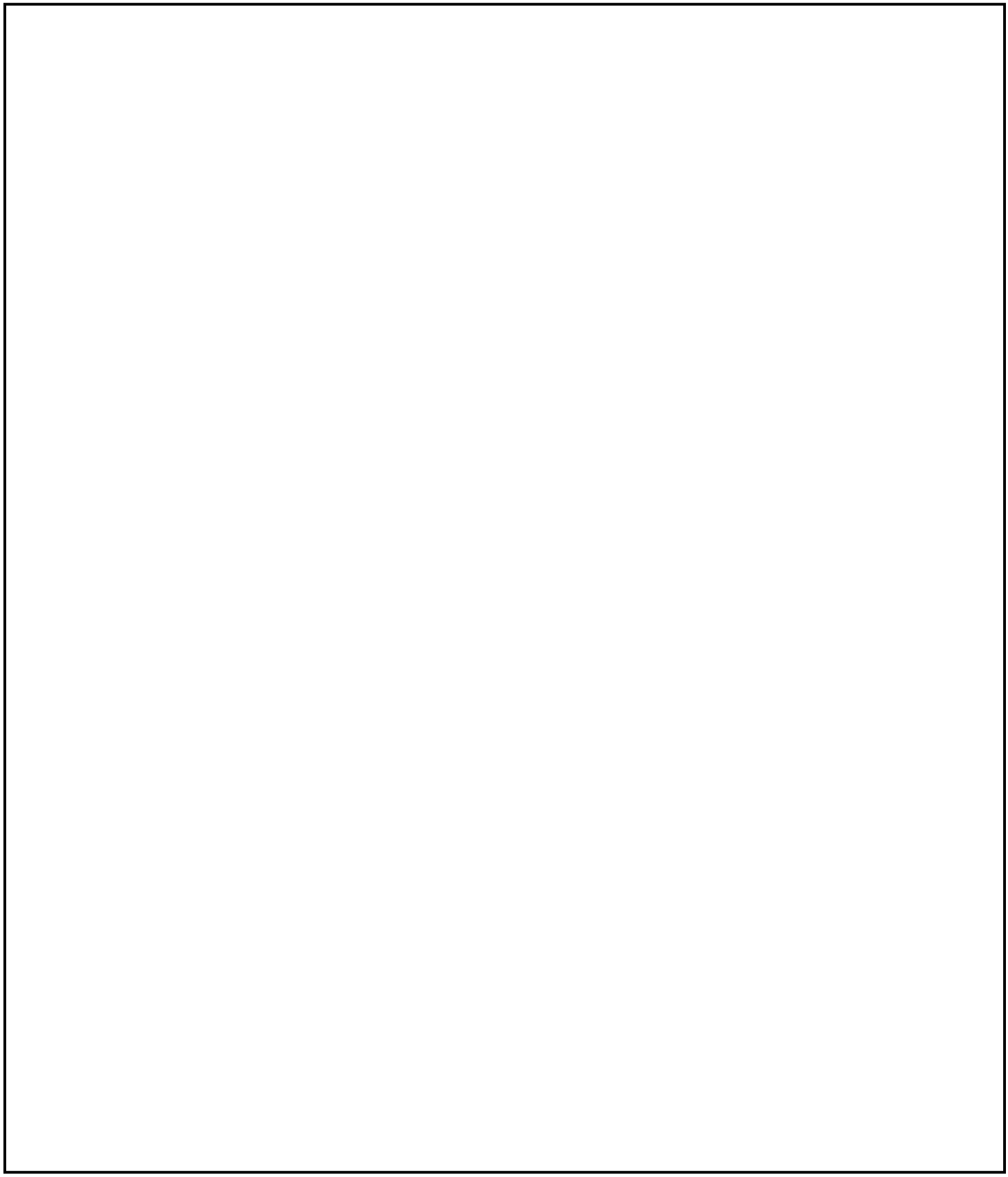
Title:

Organization:

Signature: Date:

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Map on an aerial photo or image showing the project fields, legal land locations, and field boundaries. Any method of outlining and labelling fields may be used as long as the fields are visible beneath. Further details are available in Guide to Locating and Labelling BMP Action Plans.



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