CORN

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Refer to page 12 for Fall or Spring Early Preplant Herbicides. **Refer to page 29 for additional herbicides to use in conventional or herbicide resistant corn**.				
Soil-Applied Herbicides				
acetochlor & dichlormid safener 	**1.25 to 2.75 pt 7EC** (1.1 to 2.4 lb) **1.5 to 3 pt 6.4EC** (1.2 to 2.4 lb)	Grass and some broadleaf weeds.	PPI, PRE, EPOST or Fall.	Weak on wild oat and wild mustard. Provides greater weed control compared to metolachlor or Outlook. Adjust rate for soil type. Shallow PPI gives more consistent weed control than PRE. Refer to label for tank-mix options. A1 B1 D1 D4 S4. Pages: 82-83.
metolachlor & dichlormid safener S-metolachlor & benoxacor safener	**1 to 2 pt** (0.95 to 1.9 lb)		PPI or PRE. Fall: After Sept 30 but before ground freezes.	S-metolachlor at an equal product/A rate may give greater weed control than metolachlor which has less lb ai/A. Poor wild oat and wild mustard control. Adjust rate for soil type. Provides less weed control than acetochlor products. Shallow PPI gives more consistent weed control than PRE. Refer to label for tank-mix options. A1 B1 D1 E5 S4. Pages: 82-83.
dimethenamid-P	**16 to 21 fl oz** (0.75 to 1 lb)		EPP, PPI or PRE.	A1 B1 D1 E5
Prowl **Prowl H2O** (pendimethalin)	**2.4 to 3.6 pt 3.3EC** **2.1 to 3 pt 3.8ACS** (1 to 1.5 lb)	Annual grass and some broadleaf weeds.	PRE or EPOST. Corn: Before 4-leaf stage. Weeds: Less than 1 inch tall.	DO NOT INCORPORATE. Seed corn at least 1.5 inches deep to ensure adequate separation of seed from herbicide. A1 B1 B6 D1 D14 Y14. Pages: 78-80, 82-83.
Python (flumetsulam)	**0.8 to 1.33 oz DG** (0.64 to 1.06 oz)	Annual broadleaf weeds including nightshade.	EPP, shallow PPI, PRE or POST. Corn: Early spike stage.	Refer to label for tank-mix options. Python and Hornet have no grass activity. C9 D1 S4 S7 X1 Y2. Pages: 78-80, 120-121.
Balance Flexx (isoxaflutole & isoxadifen safener) **RUP** **Registration Pending** 	**3 to 6 fl oz** (0.75 to 1.5 oz)	Many annual grass and broadleaf weeds.	EPP, PPI, PRE or POST up to 2-collar corn.	Adjust rate for soil texture and pH. Refer to label for tank-mix options. A1 D1 D6 S4 Y8. Pages: 78-80.
Balance Pro (isoxaflutole) **RUP** 	**1.5 to 3 fl oz** (0.75 to 1.5 oz)	Annual grass and broadleaf weeds including foxtails, pigweed, kochia, lambsquarters, and nightshade.	EPP, PPI or PRE. Corn: From 21 days before seeding until prior to corn emergence.	Adjust rate for soil texture and pH. Shallow PPI and cover seed completely with soil. Refer to label for tank-mix options and instructions to avoid corn injury from misapplication and stress conditions. A1 D1 D6 S4 Y8. Pages: 78-80.

Pages 78-80 = Crop rotation restrictions, Pages 82-83 = Generic and commercial names, Pages 120-121 = Herbicides resistant weeds.

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Refer to page 29 for additional herbicides to use in conventional or herbicide resistant corn.				
POST-Applied Herbicides				
atrazine + oil adjuvant **RUP**	**0.42 to 0.75 lb DF + 1 qt** (0.38 to 0.75 lb)	Annual broadleaf weeds.	POST. Corn: Up to 12 inches tall. Weeds: Up to 1.5 inches tall.	Apply with other POST broadleaf and/or grass herbicides. Improves control of many grass and broadleaf weeds. Atrazine may leave a soil residue and injure crops planted the following year. A7 D1 D5 Y2-7. Pages: 78-80, 82-83.
Aim (carfentrazone)	**0.5 fl oz EC** (0.128 oz)	Small pigweed and lambsquarters. Suppression of small kochia, nightshade, and wild buckwheat.	EPOST. Corn: Up to 12 inches tall. Weeds: Small.	Contact, non-residual herbicide requiring thorough coverage. Apply with other herbicides for broad-spectrum weed control. Most active in hot and sunny conditions. May cause speckling on corn leaves. Refer to label for tank-mix options and adjuvant use. A3 B4 D1 S3 S4-5 X1
Cadet (fluthiacet)	**0.4 to 0.9 fl oz EC** (0.045 to 0.1 oz)			
Resource (flumiclorac)	**2 to 3 fl oz EC** (0.215 to 0.32 oz)			
bromoxynil	**1 to 1.5 pt EC** (0.25 to 0.37 lb)			
dicamba	**0.5 to 1 pt** (0.25 to 0.5 lb ae)	Broadleaf weeds.	EPOST. Corn: From spike to 8 inches tall.	Apply 0.5 pt/A with drop nozzles when corn is 8 to 36 inches tall or 15 days prior to tassel. A3 A5-7 B5 D1 D8 X1 Y10. Pages: 78-80, 82-83, 120-121.
Status (dicamba & diflufenzopyr & isoxadifen safener)	**2.5 to 10 oz WDG** (0.0625 to 0.25 lb ae)		EPOST. Corn: From 4 to 36 inches tall (V4-V10).	Add NIS at 0.25% v/v or oil adjuvant at 1 to 2 pt/A + 1.25% v/v or AMS at 5 to 17 lb/100 gal water. Refer to label for tank-mix options. A3 A5-7 B5 D1 D8 X1 Y10. Pages: 78-80, 120-121.
Permit (halosulfuron)	**0.67 to 1.33 oz DF** (0.5 to 1 oz)	Most large-seeded broadleaf weeds and nutsedge.	POST. Corn: Up to 36 inches tall.	Add NIS at 0.25 to 0.5% v/v or oil adjuvant at 1 qt/A + 28% UAN at 2 to 4 qt/A. Refer to label for application information. A3 D1 X1 Y3. Pages: 78-80, 120-121.
Callisto (mesotrione)	**3 fl oz** (1.5 oz)	Most broadleaf weeds.	POST. Corn: Up to 30 inches tall or 8-leaf stage. Weeds: Small.	Add petroleum oil adjuvant at 1 qt/A + UAN at 2.5% v/v or AMS at 8.5 lb/100 gallons water. MSO or MSO blend adjuvants are not prohibited. Atrazine at 0.42 lb/A improves broadleaf weed control. A3 D1 D7 X1 Y9. Pages: 78-80.
Impact (topramezone)	**0.5 to 0.75 fl oz** (0.175 to 0.26 oz)	Most broadleaf weeds and foxtail.	POST. Corn: Up to 45 day PHI. Weeds: Small.	Add petroleum oil or MSO-type adjuvant at 1 to 1.5% v/v + 28% UAN at 1.25 to 2.5% v/v or AMS at 8.5 lb/A. Atrazine at 0.42 lb/A improves grass and broadleaf weed control. Refer to label for tank-mix options and other restrictions. A3 D1 D7 X1 Y9. Pages: 78-80.
Laudis (tembotrione & isoxadifen safener)	**2 to 3 fl oz** (0.88 to 1.31 oz)	Most broadleaf weeds and some grasses including barnyardgrass, yellow foxtail, proso millet. Partial green foxtail control.	POST. Corn: Up to V8. Weeds: Less than 3 to 4 inches tall.	Add MSO-type adjuvant at 1.25 pt/A or petroleum oil at 1% v/v + 28% UAN at 1.5 qt or AMS at 1.5 lb/A. Atrazine at 0.42 lb/A improves grass and broadleaf weed control. Refer to label for tank-mix options. A3 D1 D7 X1 Y9. Pages: 78-80.

Pages 78-80 = Crop rotation restrictions, Pages 82-83 = Generic and commercial names, Pages 120-121 = Herbicides resistant weeds.

CORN

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Refer to page 29 for additional herbicides to use in conventional or herbicide resistant corn.				
Accent **Nic-It** (nicosulfuron) **Accent Q** (nicosulfuron & isoxadifen safener)	**0.67 oz DF** **2 fl oz L** (0.5 oz) **0.67 to 1.8 oz DF** (0.36 to 1 oz)	Annual grasses, quackgrass and some broadleaf weeds.	POST. Corn: Up to 20 inches with 6 or fewer collars. Use drop nozzles on 20 to 36 inch corn.	Add oil adjuvant at 1 to 2 qt/A + 28% UAN at 2 qt/A or AMS at 2 lb/A or with basic pH blend adjuvant at 1% v/v. Do not apply to corn previously treated with Counter 15G insecticide. Refer to label for tank-mix options. A3 A5-8 D1-3 X1 Y3. Pages: 78-80, 120-121.
Steadfast (nicosulfuron & rimsulfuron) **Steadfast Q** (nicosulfuron & rimsulfuron & isoxadifen safener)	**0.75 oz DF** (0.375 & 0.188 oz) **1.5 oz DF** (0.93)		POST. Corn: Up to 12 inches tall with 5 or fewer collars.	Add oil adjuvant at 1 to 2 qt/A + 28% UAN at 2 qt/A or AMS at 2 lb/A or with basic pH blend adjuvant at 1% v/v. For corn hybrids of at least 77 day CRM. Refer to label for tank-mix options. A3 A5-8 D1-3 X1 Y3. Pages: 78-80, 120-121.
Option (foramsulfuron & isoxadifen safener)	**1.5 to 1.75 oz WG** (0.53 to 0.61 & 0.53 to 0.61 oz)		POST. Corn: 6 or fewer collars. Weeds: 1 to 3 inches tall.	Add an approved MSO-type adjuvant at 1.25 pt/A + liquid nitrogen fertilizer at 1.5 to 2 qt/A. All crops can be planted the following year. Tank-mixing atrazine will antagonize yellow foxtail control when applied to foxtail >2 inches tall. Refer to label for tank-mix options. A3 A5-8 D1-3 X1 Y3. Pages: 120-121.
NDSU Micro-rates				
Steadfast + dicamba + atrazine + MSO adjuvant **RUP** (nicosulfuron & thifensulfuron) or **Steadfast +** **Lumax** + adjuvant **RUP** (nicosulfuron & thifensulfuron) + (mesotrione & s-metolachlor & atrazine)	**0.33 to 0.67 oz DF+** **4 fl oz +** **0.42 lb DF/0.75pt L** ((0.338 to 0.5 oz & 0.025 to 0.038 oz) + 0.188 oz + 0.375 lb) **0.33 to 0.67 oz DF+** **3 pt** ((0.338 to 0.5 oz & 0.025 to 0.038 oz) + (0.1 lb + 1 lb + 0.375 lb))	Grass and most broadleaf weeds. Stout rates less than 0.75 oz/A will not control yellow foxtail, wild proso millet, volunteer cereals, and quackgrass Lumax and atrazine improves yellow foxtail control.	POST. Corn: Up to 12 inches tall. Weeds: Small	**User assumes all risk of inadequate weed control when herbicides are used at less than labeled rate.** Accent at 0.33 to 0.67 oz DF/A or Steadfast at 0.38 to 0.75 oz/A can be substituted for Stout. Add basic pH blend at 1% v/v or MSO adjuvant at 1.25 pt/A. Steadfast and Stout at 0.38 to 0.75 oz DF/A or Accent at 0.33 to 0.67 oz DF/A will control green foxtail and wild oat. Atrazine at 0.42 lb/A or 0.75 pt/A will allow most crops to be planted the following year, including sugarbeet, sunflower, and canola. Refer to Accent and Steadfast above for other precautions. Refer to label for tank-mix options. A3 A5-8 D1-3 D7-8 X1 Y3 Y4 Y7 Y9 Y10. Pages: 78-80, 120-121.
Preharvest Herbicides				
glyphosate	Up to 3.7 lb ae **See Remarks.**	Annual and perennial grass and broadleaf weeds.	Preharvest.	lb ae/gal / lb ai/gal / 0.75 ae / 1.5 ae / 3 ae 3 / 4 / = 32 fl oz / 64 fl oz / 128 fl oz 4/4.17 / 5.4/5.1 / = 24 fl oz / 48 fl oz / 96 fl oz 4.5 / 5.5 / = 22 fl oz / 44 fl oz / 88 fl oz 5 / 6.1 / = 20 fl oz / 40 fl oz / 80 fl oz Apply when grain moisture is 35% or less and corn seed is physiologically mature (black layer formed). Allow a 7 day PHI. Add AMS fertilizer at 4 lb/100 gal, or more for hard water. Refer to label for adjuvant use. A4-6 B2 X1. Pages: 82-83, 120-121.
paraquat **RUP**	**1 to 2 pt 2SL** **0.8 to 1.3 pt 3SL** (0.25 to 0.5 lb)	Annual broadleaf and grass weeds.		Add NIS at 0.25% v/v. Apply when grain moisture is 35% or less and corn seed is physiologically mature (black layer formed). Most active in hot and sunny conditions. Allow a 7 day PHI. B8 D11. Pages: 82-83.

Pages 78-80 = Crop rotation restrictions, Pages 82-83 = Generic and commercial names, Pages 120-121 = Herbicides resistant weeds.

Refer to page 29 for additional herbicides to use in conventional or herbicide resistant corn.

Clearfield Corn

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Lightning (imazethapyr & imazapyr)	**1.28 oz WDG** (0.672 & 0.224 oz)	Annual grass and broadleaf weeds.	POST.	**Apply only to Clearfield corn varieties.** Add oil adjuvant and liquid fertilizer. Refer to label for weeds controlled and application information. Apply with dicamba based products to increase broadleaf weed control including ALS-resistant kochia. A5-6 D1 D12 X1. Pages: 78-80, 120-121.

LibertyLink Corn

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Ignite 280 (glufosinate)	**22 fl oz** (0.4 lb)	Annual grass and broadleaf weeds including ALS and glyphosate weeds.	POST. Corn: Up to 5 collars (V5). Weeds: 1 to 3 inches tall.	**Apply only to LibertyLink corn varieties**. Non-selective, contact, non-residual herbicide requiring thorough coverage. Most active in hot and sunny conditions. Add AMS at 3 lb/A. Controls weeds resistant to other herbicides. A3 A5-7 D1 D13 S2 S7 X1. Pages: 120-121.

Roundup Ready Corn

Herbicide	Product/A (ae/A)	Weeds	When to Apply	Remarks and Paragraphs
glyphosate	**Maximum single application =** 0.75 lb ae **Maximum in-crop =** 1.5 lb ae **See Remarks.**	Annual and perennial grass and broadleaf weeds.	POST. Corn: Up to 30 inches tall or 8 collars.	**Apply only to Roundup Ready corn varieties**. lb ae/gal | lb ai/gal | Maximum - single appl. 0.75 ae | Maximum - in-crop 1.5 ae: 3 | 4 | = 32 fl oz | 64 fl oz; 4/4.17 | 5.4/5.1 | = 24 fl oz | 48 fl oz; 4.5 | 5.5 | = 22 fl oz | 44 fl oz; 5 | 6.1 | = 20 fl oz | 40 fl oz. Apply with AMS fertilizer. Refer to label for tank-mix options, application information, and restrictions. A4-7 B2 D1 D14 X1
RU PowerMax **RU WeatherMax** (glyphosate)	**Maximum single application = 1 qt** (1.125 lb ae) **Maximum in-crop = 2 qt** (2.25 lb ae)		POST. RR Corn 2: Up to 30 inches tall or 8 collars. Drop nozzles: 30 to 48 inches tall (free standing).	**Apply only to Roundup Ready Corn II varieties**. Refer to glyphosate above for remarks. Add AMS fertilizer at 4 lb/100 gal, or more for hard water. Refer to label for registered uses and for additional information and restrictions. A4-7 D1 D14-15 X1. Pages: 82-83, 120-121.

Refer to page 74 for control of volunteer Roundup Ready canola and soybean in Roundup Ready corn.
Pages 78-80 = Crop rotation restrictions, Pages 82-83 = Generic and commercial names, Pages 120-121 = Herbicides resistant weeds.

WEED MANAGEMENT IN ROUNDUP READY CORN

NDSU recommends using herbicides with different modes of action and different weed control management practices in Roundup Ready corn production to delay development of glyphosate resistant weeds. See pages 120-121 for more information on weed resistance.

COMMANDMENT #1 **- Control weeds when 2 to 4 inches tall to avoid yield loss.**
Remove weeds early especially when grass weed populations are high.

Glyphosate at 1.5 oz ae/A controls foxtail, at 2.25 oz ae/A controls volunteer small grain, and at 3 oz ae/A controls wild oat and downy brome. Use higher rates on broadleaf weeds, larger weeds, tolerant weeds, or if weeds are under environmental stress. See glyphosate section on page 88-89 for more information about increasing weed control from glyphosate.

Three Systems of Weed Control in RR Corn

1. PRE followed by glyphosate POST: All PRE herbicides require rain for activation.
Page 24 lists many registered PRE herbicides that can be used in herbicide resistant corn. PRE herbicides (acetochlor) at 2/3 the labeled rate will give 60 to 90% grass and broadleaf weed control, will reduce weed infestations emerging with corn, will allow more flexibility in application of POST herbicides, and will help protect yield from early season weed competition. NDSU studies often show greater grass and broadleaf weed control from acetochlor compared to other similar herbicides. Soil-applied atrazine is less effective than POST-applied due to soil adsorption and tie-up.

2. Glyphosate + POST broadleaf herbicide (different mode of action):
Several herbicides listed in the following table will help improve control of weeds not controlled by glyphosate. Glyphosate has no soil residual and will not control weeds emerging after application. Glyphosate may not control some weed species or biotypes. Many POST herbicides listed will give residual weed control. Follow label directions for tank-mix and application information. Corn is most tolerant to dicamba from spike to 4-inch corn stage.

3. Glyphosate (EPOST = 2 to 4 inch tall weeds) followed by glyphosate (POST = less than 24 inch tall corn):
This program will increase the risk of weed resistance unless other strategies are used in rotational crops - see Herbicide Resistant Weed Section, pages 120-121.

The following table shows herbicides to apply in tank-mix or sequentially with glyphosate in RR corn for control of weeds not controlled by glyphosate. Weed ratings reflect control without glyphosate. Refer to label for tank-mix and specific application information. Residual weed control listed in the table refers to control of subsequent flushes of weeds after herbicide application.

Herbicides to apply in tank-mix or sequentially with glyphosate in RR corn for control of weeds not controlled by glyphosate. Refer to pages 24 through 27 for additional herbicides.

	Rate/A	Cost/A	Buckwheat, Wild	Canola, Vol. RR[1]	Horseweed (Marestail)	Kochia	Lambsquarters	Mallow, Common	Nightshade species	Prickly lettuce	Ragweed, Common	Smartweed, Annual	Waterhemp
Preplant or PRE herbicides - no residual weed control			Weed Control Ratings[3]										
2,4-D	0.5 - 1 pt	$1.00 - 2.00	P	P-G	E	P	E	P	N	E	E	F	G
Aim	0.5 - 1 fl oz	$2.80 - 5.60	P	N-P	N	F-E	F-G	-	N	F	N	N	E
dicamba	2 - 4 fl oz	$1.25 - 2.50	E	N-P	E	G-E	F-G	P	G	G-E	E	E	F-G
thifensulfuron	See label	$4.50 - 9.00	E	G-E	N	E[4]	E	G-E	N	E[4]	G	E[4]	E[4]
Preplant or PRE herbicides - with residual weed control - See Combination herbicides for corn.													
acetochlor	1.25 - 2.25 pt	$12.50 - 25.00	P	N	N	F	E	N	G-E	-	F	P	E
Balance Flexx[2]	1 - 2 fl oz	$8.00 - 16.00	N	E	G-E	E	E	N	G-E	-	G-E	G	E
dimethenamid-P	10 - 14 fl oz	$12.00 - 16.50	N	N	N	N	E	N	G-E	-	N	N	G-E
POST herbicides - See Combination herbicides for corn.													
atrazine	<12 inches	0.38 lb ai	$1.00	E	P-F	E	E	E	-	G-E	G	F-G	G	G
Callisto[2]+ atra[5]	<30 inches	2 - 3 fl oz	$10.00 - 14.50	E	E	E	E	E	-	E	E	E	E	E
dicamba	<6 inches	4 - 8 fl oz	$2.50 - 5.00	E	P-F	E	E	G-E	G	G-E	G-E	E	E	G-E
Impact[2] + atra[5]	45 day PHI	0.5 - 0.75 fl oz	$10.50 - 15.50	E	E	E	E	E	-	E	E	E	E	E
Laudis[2] + atra[5]	<V8	2 - 3 fl oz	$8.00 - 12.00	E	E	E	E	E	-	E	E	E	E	E
Resolve[2]	<12 inches	1 oz DF/SG	$7.00	N	E	N	E[4]	F	-	P	-	P	-	F-E[4]
Status	4-36 inches	2.5 - 5 oz WDG	$6.25 - 12.50	E	G-E	E	E	E	G	E	E	E	E	E

[1]See page 74 for size of volunteer canola and herbicide rates.
[2]May carry over more than one cropping season. Follow labeled crop rotation restrictions. See pages 78-80.
[3]E = Excellent (90-99%), G = Good (80-90%), F = Fair (65-80%), P = Poor (40-65%), N = None.
[4]Except where resistant populations have developed.
[5]Atrazine at 0.38 lb ai/A. Atrazine and mixtures containing atrazine are RUP.

Combination Herbicides for Conventional and Herbicide Resistant Corn:

Trade Name	Manu-facturer	Applied at (Prod/A)...	Cost/A	Gives the equivalent product/A rates of:
Camix[2]	Syngenta	0.8 qt	$12.00	0.7 pt Dual II Magnum + 2.15 fl oz Callisto
Field Master[2] - RUP	Monsanto	1.33 qt	$10.00	0.75 pt Harness + 0.5 lb ai atrazine + 5.3 fl oz RU PowerMax
G-max Lite[2] - RUP	BASF	1.5 pt	$11.25	8.5 fl oz Outlook + 0.5 lb ai atrazine
Halex GT[2]	Syngenta	2.6 pt 3.6 pt	$16.25 $22.50	0.7 pt Dual Magnum + 2.15 fl oz Callisto + 1.8 pt glyphosate-ipa (3 lb ae/gal) 1 pt Dual Magnum + 3 fl oz Callisto + 1.8 pt glyphosate-ipa (3 lb ae/gal)
Hornet[2]	Dow	2 oz	$ 8.00	2.67 fl oz Stinger + 0.47 oz Python
Keystone LA[2]* - RUP	Dow	1.33 qt	$16.00	1.66 pt Surpass + 0.5 lb ai atrazine
Lumax[2] - RUP	Syngenta	1 pt 2 pt	$ 7.25 $14.50	0.35 pt Dual II Magnum + 1.08 fl oz Callisto + 0.125 lb atrazine 90DF 0.7 pt Dual II Magnum + 2.15 fl oz Callisto + 0.25 lb atrazine 90DF
Priority[2]	Tenkoz	1 oz	$ 6.00	0.5 fl oz Aim + 0.67 oz Permit
Require Q[2]	Dupont	4 oz DF	$12.00	1 oz Resolve + 4.25 fl oz Banvel + isoxadifen safener
Resolve Q[2]	Dupont	1.25 oz DF	$ 8.75	1 oz Resolve + 0.067 oz Harmony GT + isoxadifen safener
Sequence	Syngenta	1.5 pt	$10.35	18 fl oz glyphosate-ipa + 0.6 pt Dual II Magnum
SureStart[2]	Dow	1.5 pt 1.75 pt 2 pt	$14.10 $16.40 $18.75	14 fl oz Surpass + 1.7 oz Stinger (Hornet) + 2 oz Python (Hornet 16 fl oz Surpass + 2 oz Stinger (Hornet + 2.3 oz Python (Hornet) 19 fl oz Surpass + 2.3 oz Stinger (Hornet) + 2.6 oz Python (Hornet)
WideMatch[2]	Dow	0.75 pt 1 pt	$ 6.55 $ 8.75	3 fl oz Stinger + 3 fl oz Starane 4 fl oz Stinger + 4 fl oz Starane
Yukon[2]	Gowan	4 oz	$10.00	0.5 oz Permit + 3 fl oz Banvel/Clarity

* Or similar formulations like Breakfee ATZ Lite.