

Grounds Maintenance

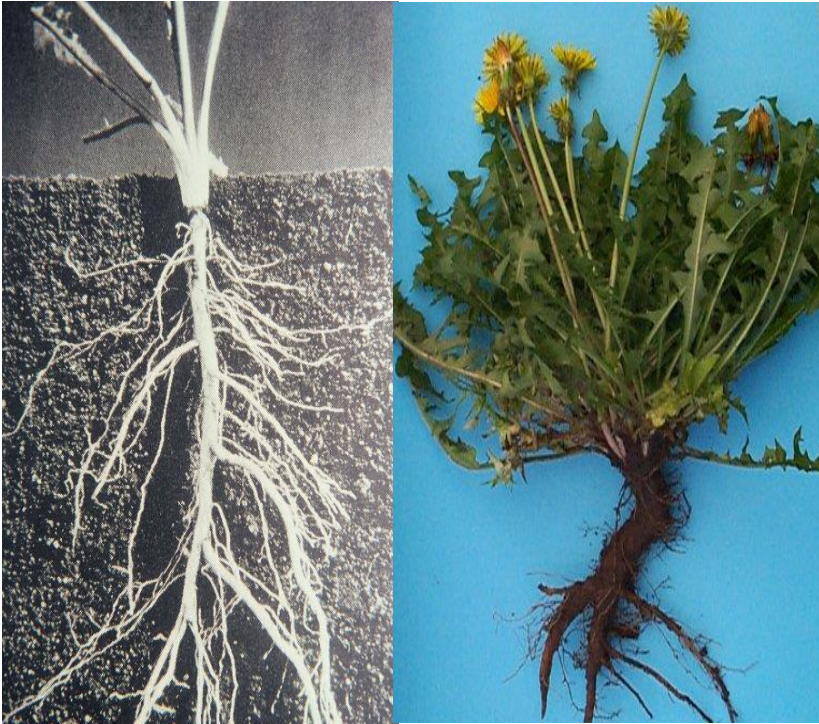
Where to Sell Herbicides

- Places with large parking lots and/or fence lines
- Municipalities
- Electrical substations
- Highway departments
- Wastewater treatment plants
- School districts
- Park districts
- Railroad right of ways
- Ask your customers!



Herbicide Types

- **Selective:** Effective against only certain types of plants
- **Non-Selective:** Kills most plants
 - **Contact Herbicide:** Kills only the portions of the plant in which it comes in contact. Sometimes called a defoliant.
Example: Diquat
 - **Systemic Herbicide:** Absorbed by the plant and are translocated from the leaves, to the stem, to the root.
Example: Glyphosate



Dandelion-Dicot Species:
Taproot does not “branch” out
and form new plants

Quackgrass-Monocot Species:
Roots “branch” out and shoot up
new plants



Herbicide Types

- Non-Residual: Does not stick around. Usually deactivates when it hits the soil
 - Examples: Glyphosate, Diquat
- Residual: Remains in the soil for a period of time (days to a year) to prevent plant (re)-growth
 - Examples: Bromacil, Prometon

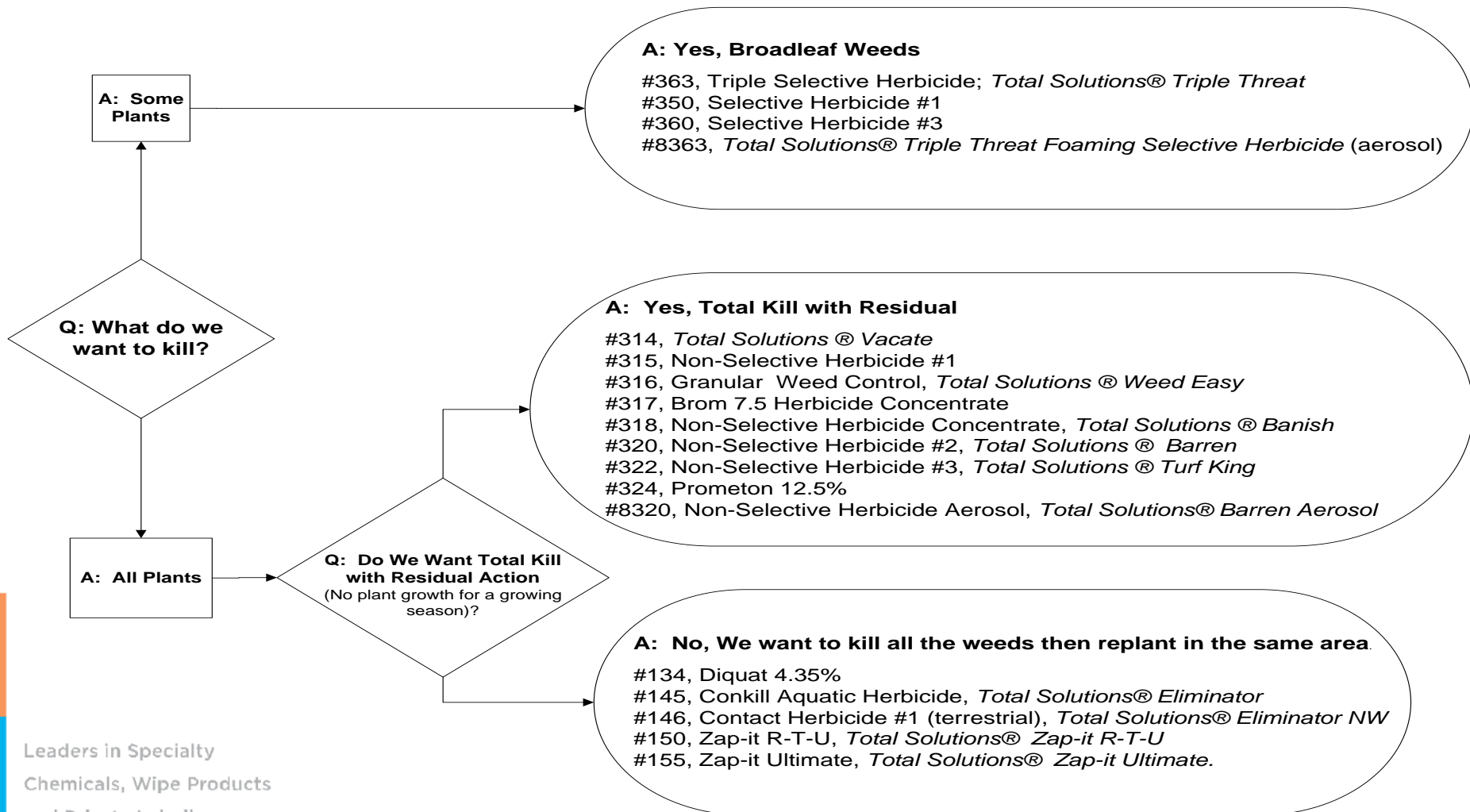
Herbicide Types

- Foliar: Absorbed through the leaves or foliage of the plant
 - Examples: 2,4-D, Glyphosate, Diquat
- Basil: Absorbed through the roots of the plant, and typically work slower
 - Examples: Prometon, Bromacil

VOC Restrictions

- Because of V.O.C. (Volatile Organic Compounds) restrictions, certain herbicides may not be sold into certain states
- V.O.C.'s react with heat and sunlight to form ground level ozone, which is a primary component of smog
- Main V.O.C. states: CA, CT, DE, IL, ME, MD, MA, MI, NH, NJ, NY, OH, PA, VA, DC, and IN

Herbicide Selection Guide



Non-Selective Herbicides #320: Barren

- Ready-to-use, oil-based soil sterilant
- 1.09% 2,4-D for quick knockdown
- .98% Bromacil sterilizes the soil
- Systemic action, foliar and basal absorbed
- Residual activity prevents re-growth for up to one year
- Non-VOC compliant
- Registered in: Colorado, Iowa, Kansas, Missouri, Nebraska, South Dakota, and Wyoming

#320 Barren In Action

2 Hours



21 Hours



4 Days



Non-Selective Herbicides #8320: Barren Aerosol

- Aerosol version of #320 Barren
- VOC complaint
- Ready-to-Use
- Pinpoint spray to hit target weeds
- Inverted cap for ease-of-use; applies black
- Registered in Illinois

Non-Selective Herbicides #314: Vacate

- VOC-compliant alternative to #320 Barren
- Ready-to-Use, oil-based soil sterilant
- 1.1% 2,4-D for quick knockdown
- .61% Bromacil sterilizes the soil
- Systemic action, foliar and basal absorbed
- Residual activity prevents re-growth for up to one year
- Registered in Missouri

Selective Herbicides #363: Triple Threat

- 2,4-D, MCPP, 2,4-DP (~12% active) provide synergistic effect of three herbicides
- Extremely effective against broadleaf weeds
- Foliar and basal absorbed
- Water-dilutable concentrate (~1:50)
- Slight residual activity for 2,4-D (1 – 4 weeks) for hard-to-kill weeds
- Increased effectiveness with #395 Surfactant

#8363: Triple Threat Foaming Aerosol

- Aerosol version of #363 Triple Threat
- Ready-to-Use broadleaf killer
- Pinpoint spray to hit target weeds
- Foams to show application points
- Inverted cap for ease-of-use
- Not registered in Iowa

#8363: Triple Threat Application

Before



Before



Day 2



Day 7



Non-Selective Herbicides

#150 / #155: Zap-It

- #150: Zap It ready-to-use, 1% Glyphosate
- #155: Zap It Ultimate, 18% Glyphosate (3 – 6 oz: gallon water)
- Water-based systemic herbicide kills entire plant
- No residual activity, deactivates upon contact with soil
- Foliar absorbed
- Increased effectiveness with #395 Surfactant

#150 Zap It In Action

24 Hours



2 Days



7 Days



Non-Selective Herbicides #145: Eliminator

- Water-based herbicide kills almost everything it contacts
- Excellent aquatic weed control
- Contains 1.85% Diquat
- 1:8 concentrate, dilutable with water
- Results seen in a few days
- Foliar absorbed, no residual, does not prevent re-growth
- Increased effectiveness with #395 Surfactant

#145 Eliminator In Action

2 Hours



23 Hours



3 Days



Non-Selective Herbicides #316: Weed Easy

- Granular soil sterilant. Water activated, requires water or rain to carry to the soil
- 4% Bromacil sterilizes the soil
- Slow kill: 10 – 14 days
- Residual activity prevents re-growth for up to one year
- Has leaching characteristics

#316 Weed Easy In Action

24 Hours



7 Days



10 Days



Non-Selective Herbicide #318: Banish

- VOC-compliant alternative to #322 Turf King
- Liquid, cost-effective water-based soil sterilant
- 1:10 concentrate, dilutable with water
- 1.2% Lithium Salt of Bromacil
- Residual activity prevents re-growth up to one year
- Low odor, non-staining formula
- Absorbed by the root for a slower kill (up to 14 days)
- Lower dosage rate for bare areas, higher rate heavy weed population

Non-Selective Herbicides #322: Turf King

- Liquid, oil-based soil sterilant
- 1:10 concentrate, dilutable with water or oil. Liquid required to move into the root zone
- 3.73% Prometon
- Primarily basal absorbed
- Residual activity prevents re-growth up to one year
- Increased effectiveness with #395 Surfactant
- Non-VOC compliant. Recommend #318 Banish

Hints for Applying Herbicides

- Always follow label directions, more is never better
- When applying soil sterilants, ensure enough is applied to allow ground penetration
- When applying soil sterilants, ensure ground is clear enough to allow ground penetration
- Use a dedicated sprayer for each herbicide type
- Optimal application time is when weeds are young and / or actively growing; active weeds will draw the herbicide into the root. Weeds can go into a dormant “hibernation” state when stressed

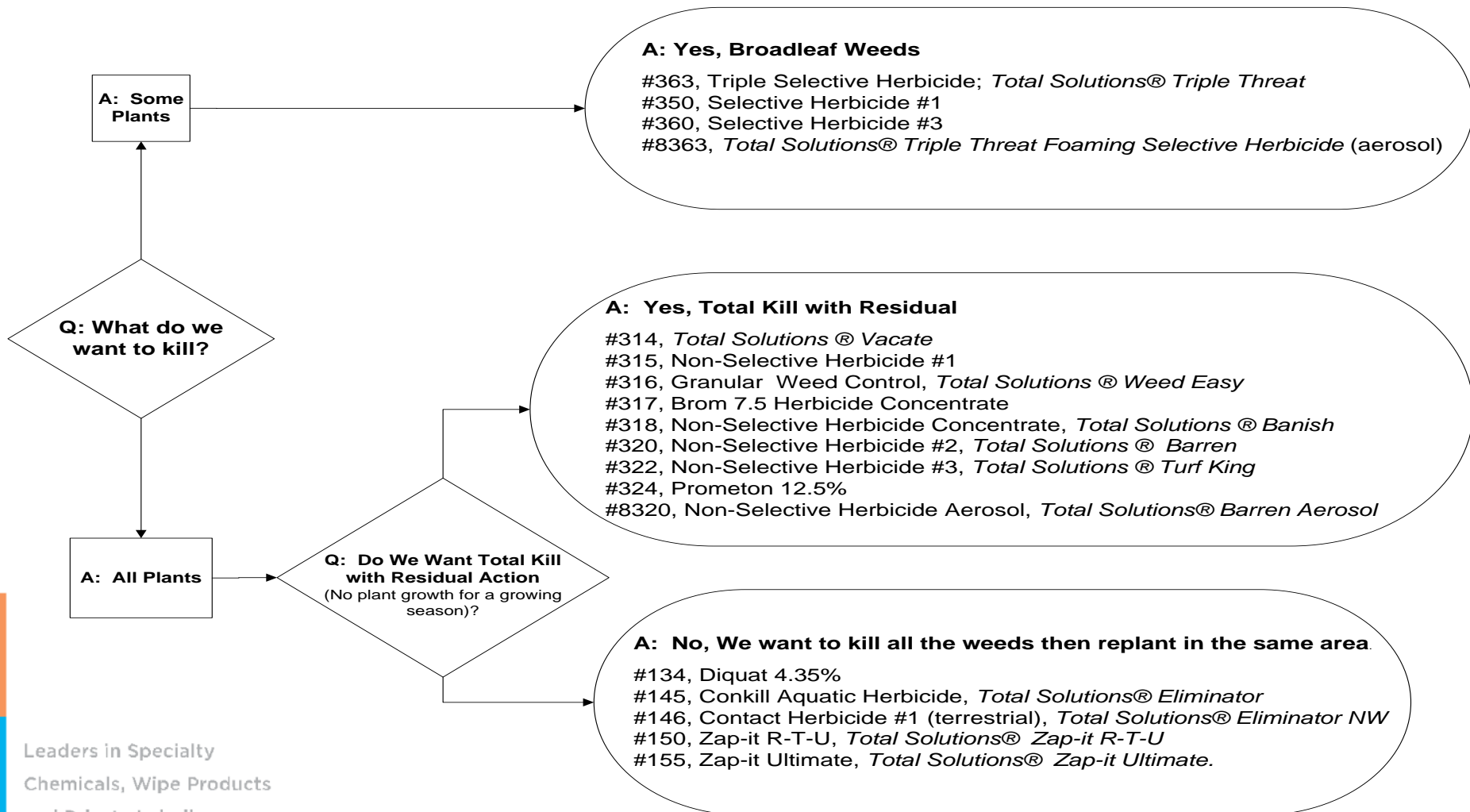
Examples of not following label instructions



Factors in Successful Application

- Results Desired
- Time of Year
- Climatic Conditions
- Soil Types
- Type of Herbicide Used
- Use of Surfactants

Herbicide Selection Guide



Total Solutions Herbicides - Registration & Restriction Summary



This information is subject to change at any time. Please contact your Athea sales rep for the most current information.

	AL	AK	AZ	AR	CA	CO	CT	DE	FL	GA	HI	ID	IL	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO
145 Eliminator	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y
146 Eliminator NW	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
150 Zap-It	N	N	Y	Y	N	Y	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y
155 Zap-It Ultimate	Y	N	Y	N	N	Y	Y	N	Y	N	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N	Y
314 Vacate	N	N	N	N	N	N	Y	Y	N	N	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	N	N	Y
316 Weed Easy	Y	N	Y	Y	N	N	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y
318 Banish	Y	N	Y	Y	N	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y
320 Barren	Y	N	Y	Y	R*	R*	N	N	Y	Y	N	Y	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y
322 Turf King	Y	N	Y	Y	N	N	N	Y	Y	N	Y	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y
363 Triple Threat	Y	N	Y	Y	N	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y
8320 Barren Aerosol	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	Y
8363 Triple Threat Foaming Selective Herb.	N	N	N	N	Y	Y	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	Y

	MT	NE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VT	VA	WA	WV	WI	WY	DC
145 Eliminator	Y	Y	Y	N	R*	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	R*	Y	Y	Y	N
146 Eliminator NW	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
150 Zap-It	N	N	Y	Y	Y	N	Y	N	N	Y	Y	N	Y	Y	N	N	N	Y	N	N	Y	R*	Y	Y	Y	N
155 Zap-It Ultimate	N	Y	N	Y	Y	Y	Y	Y	N	Y	N	N	Y	N	Y	N	Y	Y	N	N	Y	N	Y	Y	N	N
314 Vacate	N	N	N	Y	Y	N	Y	N	N	Y	N	N	Y	Y	N	N	N	Y	R*	Y	N	N	N	N	Y	
316 Weed Easy	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	R*	Y	N	Y	N	Y	Y	N	N
318 Banish	N	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	N	Y	R*	Y	N	Y	N	Y	Y	N	N
320 Barren	Y	Y	Y	N	N	R*	N	Y	Y	N	Y	Y	N	N	Y	Y	Y	R*	N	N	R*	R*	Y	Y	Y	N
322 Turf King	Y	Y	Y	N	N	Y	N	Y	Y	N	Y	Y	N	N	Y	Y	Y	R*	N	N	N	R*	Y	Y	Y	N
363 Triple Threat	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	R*	Y	N	Y	R*	Y	Y	Y	N
8320 Barren Aerosol	N	N	N	N	Y	N	Y	N	N	N	N	N	Y	N	Y	N	Y	Y	N	N	N	N	Y	Y	N	N
8363 Triple Threat Foaming Selective Herb.	N	N	N	N	N	N	Y	N	N	Y	N	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	N	N

KEY:

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