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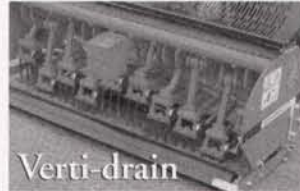
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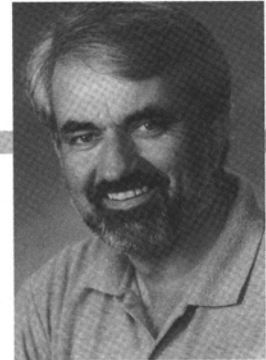
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Municipal Integrated Pest Management Accreditation

JOHN HOWARD, EXECUTIVE DIRECTOR, ONTARIO PARKS ASSOCIATION



According to Health Canada, "Integrated Pest Management (IPM) is a decision-making process that uses all necessary techniques to suppress pests effectively, economically, and in an environmentally sound manner to sustain healthy landscapes." Integrated Pest Management was originally developed for agriculture, but has been successfully applied to almost every field where pest management is an issue.

An integrated approach will employ prevention techniques wherever possible to minimize the impact of pest problems, by altering, whenever possible, conditions that promote pest populations. Plant Health Care (PHC) is an integrated approach that incorporates all the best horticultural practices to ensure that the best plants are chosen and through proper planting and maintenance techniques, pests and their related effects are minimized.

Benefits

Interestingly, Ontario municipalities have reduced pesticide use by significant amounts over the last 10 to 15 years. Much of this reduction was accomplished through the implementation of IPM or PHC programs. The multiple, long-term solutions provided through IPM/PHC promotes the use of the latest techniques and materials. Pesticide reduction is also achieved and environmentally, the application of any compound, natural or synthetic, when it is not necessary can

upset the balance of nature. Pests have developed resistance to certain chemical compounds. IPM/PHC options reduce the chances of pesticide resistance and enable pest managers to control pests that have developed resistance through alternative products and measures. The decision making process that is an essential component of these programs is guided through the establishment of pest population thresholds. Using alternative strategies for pest control reduces pesticide applications.

Background

The horticulture industry, represented by numerous associations, agencies and organizations, recognized the need to formalize IPM/PHC principles and practices and are instituting the IPM Accreditation Program which will recognize IPM practitioners through a qualification program and adherence to a code of practice. The elements of the IPM Accreditation include adherence to the Code of Practice, which essentially is a list of guidelines established to describe what is expected of accredited companies or organizations and

creates a common ground approach.

Initially, this approach was seen as only a benefit to the commercial lawn care industry; however applications are recognized in other areas including structural pest control and on public lands. A municipal working group, facilitated by the Ontario Parks Association, has been meeting since last May to develop IPM accreditation for parks, forestry and other applications. Subtle differences in the approach to IPM between various sectors of the industry provide the working group with challenges as it investigates the opportunities IPM Accreditation will provide to the public sector. IPM Accreditation is seen as the most viable alternative for municipalities considering the creation of pesticide by-laws.

Participants

The Municipal IPM/PHC Working Group has endorsed a "parks and open space" specific "Code of Practice" to standardize the municipal approach to IPM and PHC. The working group, centered in the Golden Horseshoe area, has



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invited representatives from various cities, towns and organizations to participate. To date the following agencies are represented:

City of Burlington, City of Cambridge, City of Hamilton, City of Windsor, Town of Oakville, Town of Halton Hills, City of Mississauga, City of Toronto, City of Brampton, The Ontario Parks Commission, Parks and Recreation Ontario, International Society of Arboriculture, Guelph Turfgrass Institute, OMAF, Landscape Ontario and the Ontario Parks Association.

Working Group Objectives

The main objective of the Working Group is to promote a standard approach to IPM/PHC through the accreditation process. Representatives of the various agencies have been exploring and developing municipal IPM/PHC principles and practices and sharing their experiences and approaches in this area. Information on municipal IPM/PHC Accreditation has been distributed to provincial politicians,

seeking support for a provincial IPM/PHC Accreditation process. A province-wide approach to pest control issues is preferred, as opposed to a patchwork of inconsistent, and some say unenforceable, municipal by-laws.

Initiatives to Date

The Working Group has reviewed the industry's version of the Code of Practice and modified it to make it more applicable to parks, grounds and public space operations. Information on the existence and activities of the group has been communicated to various ministries within the provincial government, along with information on the benefits of IPM/PHC and the Accreditation Program. The group has also attempted to liaise with other organizations dealing with pest control related issues.

The Municipal Working Group is investigating the development and production of an IPM/PHC information brochure as a vehicle to disseminate information on the latest pest management

techniques and practices. A "Municipal IPM/PHC Tool Kit" is also being considered to provide answers to commonly asked questions. Members are researching available case studies on IPM/PHC applications from municipalities across the province to determine past successes and challenges.

Future Direction

The Working Group is gradually expanding and eventually would like to include participation from across the province. The continued promotion of IPM/PHC through education, communication and accreditation is important in assisting municipalities with IPM/PHC programs.

The Working Group will continue to supply input into the IPM/PHC Accreditation process via various organizations represented on the IPM Council. A very important activity will be the continued sharing of information on the latest science-based methods, products and alternatives for pest management. ♦

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Intelligent irrigation is about applying the right amount of water at the right time based on plant water requirements. Over-irrigation can be just as detrimental to the health of plant material as is under-irrigation. The key is to schedule irrigation to match the water required by the turf, otherwise called the evapotranspiration rate of the turf.

What is evapotranspiration (ET)? Simply defined, it is the sum of both the evaporation of moisture from the surface of the soil and the transpiration of moisture from the foliage or leaf of a plant. The main weather factors contributing to a high ET are temperature, humidity, wind speed and solar radiation. ET varies throughout the day and irrigation should be applied during the early morning when the weather factors contribute to a lower ET.

Water budgeting takes into account changing ET rates throughout the week and month (Figure 1). Every irrigation controller should be specified to include a "water budget" feature which allows the irrigation manager to quickly adjust all run times with one macro setting. Adjusting the run times to correspond to the changing ET is a must for water savings and healthy turf. Leaving the same run time throughout the season simply means that water is applied unnecessarily.

On a very hot summer day, the ET for sports field turf can rise as high as 35 mm (1.4 inches) per week. On a standard soccer field this equates to about 238 mega litres (63,000 gallons) per week. Saving

even a conservative 20% of this amount is worth the gain in water costs.

Checklist

In the sidebar to the right is a quick checklist to see how well your irrigation system measures up to the typical standards endorsed by the irrigation industry.

Results

If you scored a ten, congratulations! Your sports field should become an industry standard and given honourable mention in the next irrigation article in *Sports Turf Manager*. A score of seven or more means you are well on your way to setting irrigation standards. A score below six means it is time to hire an irrigation specialist.

An irrigation specialist is trained to identify maximum irrigation efficiencies, thus assisting in the development of a healthy sports turf while preserving a valuable water resource. At the end of the day, every drop counts. ♦

About the author. Gregory Snaith, P.Eng., C.I.D. is an Irrigation Consultant with Creative Irrigation Solutions Inc. Greg can be reached at 519-465-0278 (cell), 888-654-3637 (toll free) or via email at gsnaith@creativeirrigation.on.ca.

IRRIGATION CHECKLIST

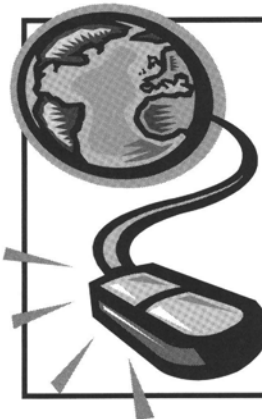
1. Rain or moisture sensor (turns system off during a rain)
2. Controller has "Water Budget" feature (0-200 per cent adjustment)
3. Irrigate during the night or early morning (when ET is lowest)
4. Head to head coverage (rotors throw water to next rotor)
5. Rotors operate at designed water pressure
6. Nozzle sizes are conducive to match precipitation rates
7. Improved efficiency sprinkler nozzles (provides uniform coverage)
8. Rotor zones run parallel with playing field (better management control)
9. Hired an irrigation certified water auditor to make recommendations
10. Controller is compatible for upgrade to Central Control

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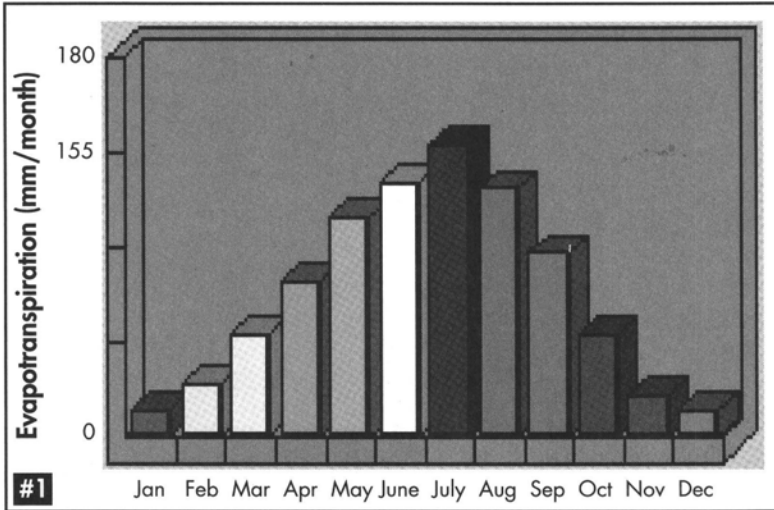


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VISUALIZING IRRIGATION PRINCIPLES...

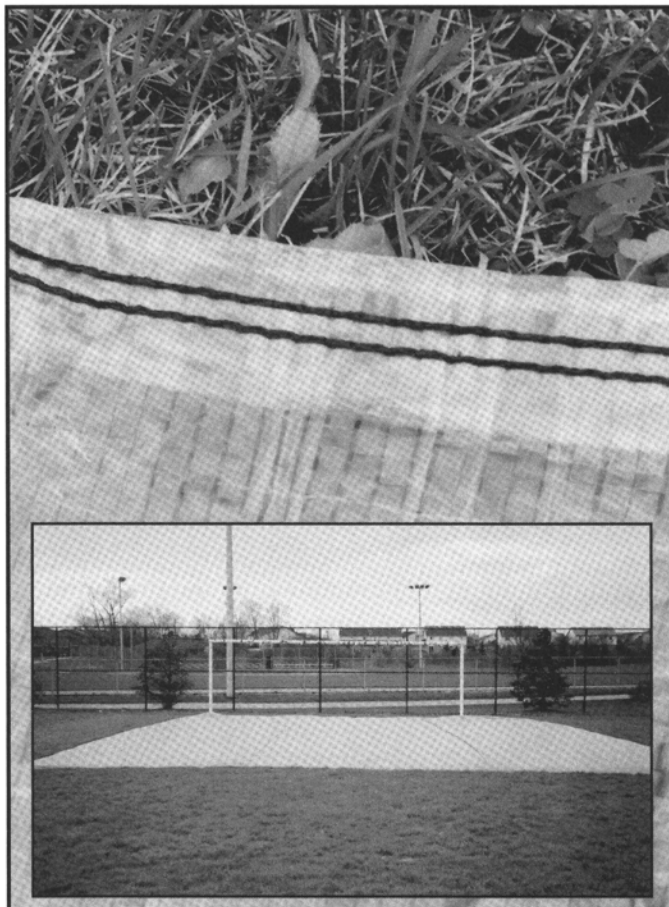
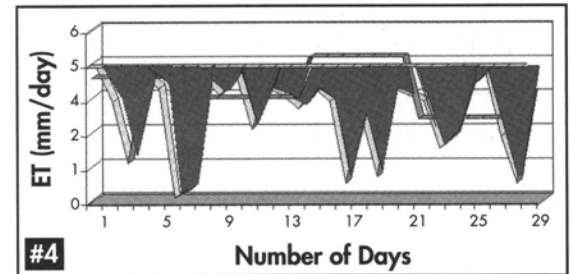
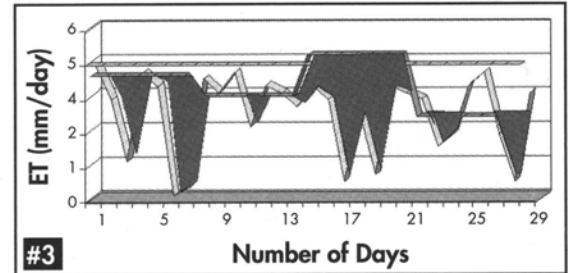
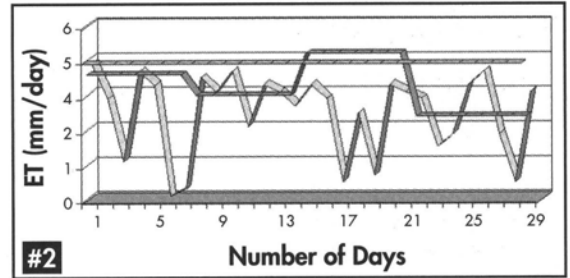


Graph #1 indicates that seasonal ET rates peak during July or August.

Graph #2. The top line indicates amount of irrigation water added with monthly adjustment. The middle line indicates a weekly adjustment corresponding to weather. The bottom line indicates actual daily ET rates.

Graph #3 indicates the amount of overwatering with weekly adjustments.

Graph #4 indicates the amount of overwatering with monthly adjustments.



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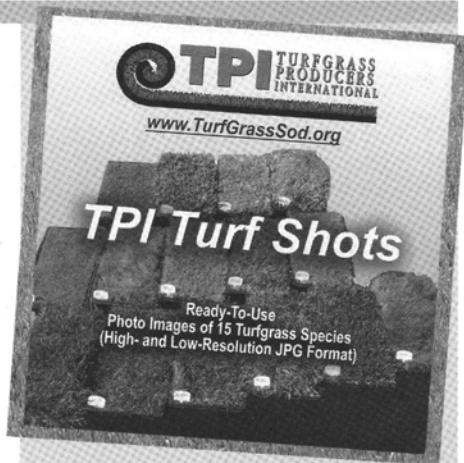
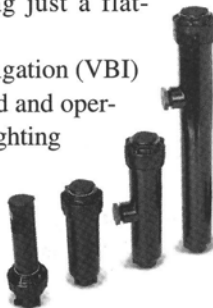
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Vanden Bussche Irrigation (VBI) is a Canadian owned and operated irrigation and lighting distribution company. VBI has branches in Milton, King City, Scarborough and Delhi. In 2004, VBI will celebrate their 50th anniversary. For more information, contact Ian Fyfe, Marketing and Sales at 905-875-4545 or 1-800-263-4112, email: ifyfe@vandenbussche.com.



Turf Shots for Web and Print

These copyright-free, quality turfgrass photos were made available by six TPI members who agreed to harvest and overnight-ship the different varieties of turfgrass sod to arrive quickly at the TPI office where they underwent several days of preparation to be labeled and photographed. Those producers deserve a special recognition for their efforts. They are Mark Tribbett (JB Instant Lawn, OR), Earl Slack (Pacific Sod, CA), Tom Keeven (Emerald View Turf, IL), Dave Dymond (H&H Sod Co., FL), David Doguet (Bladerunner Farms, TX) and Ben Copeland (Patten Seed/Super Sod, GA). Please call 847-705-9898 or visit www.TurfGrassSod.org for ordering information.

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Ryegrass	Academy Accent Archer Elf		Pinnacle Premier II Racer 2	ASAP Extreme Spectacular Top Gun	Annual Cutter Fiesta II Fiesta III	Futura 3000 Perennial #1 Transist	Ascend Brightstar Divine Elfkin	Esquire Majesty	Academy Accent Archer Blackhawk	Elf Top Hat	
Fescue: Blue							Big Horn				
Fescue: Creeping Red	Aruba		Boreal Jasper	Aruba Fenway Franklin	Boreal Creeper #1	Jasper Jasper II	Badger Boreal Florentine	Rose Seabreeze Shademaker II	Franklin Florentine		
Fescue: Chewings	Sandpiper		Bridgeport Silhouette	Jamestown II Southport	Common Victory Victory II		Banner III Cascade Sandpiper	Shadow II Tiffany	Sandpiper Wilma		
Fescue: Hard	Heron Rescue 911		Serra	Ecostar Rescue 911	Spartan		Aurora Gold Discovery Osprey	Ridu Serra	Brigade Heron		
Fescue: Sheeps	MX86		Barok	MX86AE	Azay		MX86		Azure MX86		
Fescue: Tall	Arid III Millennium Pedestal		Barlexas Vegas	Arid III Jaguar II	Common Crossfire Mini Mustang	Mustang II Shortstop II Team Jr.	Marksman Olympic Gold Shenandoah II	Wildfire Wolfpack	Arid III Millennium Pedestal	Monarch Pedestal	
Bentgrass: Colonial	Highland		Highland	Highland	Exeter Highland		Highland		Highland		
Bentgrass: Creeping	18th Green Bengal L-93 Penn A-4 Penn G-6	Penncross Penneagle Pennlinks Pennway Providence	L-93 Penn A-4 Penncross Penneagle Pennlinks Trueline	Dominant Plus L-93 Penn A-4 Penn G-6 Penn Trio Coated Penncross T-1	Aggressor Cato Mariner National Penn G-1	Penncross Penneagle Pennlinks Pennway Providence	Penn A-1 Penn A-2 Penn A-4 Penn G-2	Penncross Penneagle Pennlinks Seaside II	A-4 Brighton 18th Green G-6 L-93 SR1020	Penncross Penneagle Pennlinks Pennway Providence	
Poa trivialis	Winterstar		Cyprus	Laser Sabre	Colt		Sabre II Winterplay		Sunup Winterstar		
Poa supina			Supranova				Supranova				
Poa compressa	Canada Blue		Canada Blue	Canada Blue Reubens	Canada Blue		Canada Blue Reubens		Canada Blue		
Weeping alkali	Fults Salty		Fults Salty				Fults Salty		Fults Salty		

Turf Seeding Rates

The following are seeding rates per 100 m² for specific species of grass seeds: 1) Creeping Bentgrass, 0.5-1.0 kg; 2) Kentucky Bluegrass, 1.0-2.0 kg; 3) Perennial Ryegrass, 2.0-4.0 kg; 4) Fine Fescue, 1.0-3.0 kg; and 5) Tall Fescue, 2.0-3.0 kg.
(Source: OMAFRA Turfgrass Management Recommendations, 2000)

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Turf Grasses	Bentgrasses (<i>Agrostis</i>)		Bluegrasses (<i>Poa</i>)			Fescues (<i>Festuca</i>)		Ryegrasses (<i>Lolium</i>)		
	Colonial <i>A. tenuis</i>	Creeping <i>A. palustris/A. stolonifera</i>	Annual <i>P. annua</i>	Kentucky <i>P. pratensis</i>	Rough <i>P. trivialis</i>	Fine or Red <i>F. rubra spp.</i>	Fine or Sheep <i>F. ovina</i>	Tall <i>F. arundinacea</i>	Annual <i>L. multiflorum</i>	Perennial <i>L. perenne</i>
Cultivated varieties (cultivars) as of 2007	<6	28	1	161	<6	10	25	169	200,000 to 300,000	198
Seeds / pound	5.5 to 9 million	7.5 million	med. (2-3 mm) bunch or stolons low	1.3 to 1.8 million med. (2-4 mm) strong rhizomes good	2.5 million fine (1-4 mm) stolons low	409,000 to 430,000 fine (0.5-1.5 mm) creeping rhizomes good	530,000 fine (0.5 to 1.5 mm) bunch medium	230,000 to 250,000 coarse (5-10 mm) bunch (some w/weak rhizomes) medium	coarse (3-7 mm) bunch poor	medium (2-5 mm) bunch medium
Description	med. (1-3 mm) bunch medium	medium (2-3 mm) creeping stolons medium	low	medium good	low good	fair medium	poor good	good medium	poor poor	fair poor
Environmental Adaptation	medium good	medium excellent	poor	medium poor-medium	poor excellent	good excellent	good excellent	good good	medium poor	fair medium
Heat hardness	medium	medium	low	medium	low	good	good	good	poor	poor
Cold hardness	good	excellent	poor	good	good	medium	good	medium	poor	poor
Killing Temperature (F°)	fair	poor	poor	medium	poor	good	good	good	medium	fair
Drought resistance	medium	good	poor	poor-medium	poor	excellent	excellent	good	poor	medium
Shade adaptation	poor	poor-medium	poor	poor-medium	poor	medium	medium	medium	poor	good
Salt tolerance	poor	poor	poor	medium	poor	medium	medium	good	poor	good
Wear tolerance	medium	good	poor	good	medium	medium	poor	poor	poor	poor
Recuperative potential	medium	good	fair	medium	good	fair	poor	poor	poor	poor
Submersion tolerance										fair
Establishment										
Pounds of Seed/1,000 sq. ft.	0.75 to 2	0.75 to 2	68-89	2 to 3	1 to 2	4 to 6	3 to 4.5	6 to 10	7 to 10	4 to 7
Optimum temp. for germination (F°)	59-86	59-86	seeded excellent	59-86 seeded/vegetative	59-86 seeded	59-77 seeded	59-77 seeded	68-86 seeded	68-86 seeded	68-86 seeded
Establishment method	seeded	seeded/vegetative	excellent	seeded/vegetative	seeded	seeded	seeded	seeded	seeded	seeded
Establishment rate	poor	poor	poor	medium	medium	good	good	excellent	excellent	excellent
Days to germinate	7 to 14	7 to 14	fast	8 to 21	10 to 21	10 to 21	10 to 21	10 to 14	7 to 14	5 to 12
Growth rate	fast	fast	fast	fast	fast	slow-medium	slow-medium	fast	fast	fast
Days to first mowing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	14-21	n/a	n/a
Sod formation	medium	good	poor	excellent	poor	good	medium	poor	poor	poor
Cultural Requirements										
pH	5.5 to 6.7	5.5 to 6.5	5.5 to 6.5	6.0 to 7.0	6.0 to 7.0	5.5 to 6.5	5.0 to 6.0	4.7 to 8.5	6.0 to 7.0	6.0 to 7.0
Cultural (maintenance) intensity	medium	high	high	medium	medium	low	low	medium	medium	medium
Cutting height (inches)	0.4 to 0.8	0.3 to 0.7	0.2 to 1.0	0.5 to 3.0	0.5 to 1.0	1.0 to 2.5	2.0 to 2.5	1.7 to 3.0	1.5 to 2.5	0.5 to 1.5
Mowing frequency (days)	1 to 3	1 to 3	1 to 3	5 to 7	5 to 7	7	7	7 to 14	5 to 7	5 to 7
Nitrogen (lbs/1000/month)	0.5 to 1.0	0.5 to 1.4	0.5 to 1.0	0.4 to 1.0	0.5 to 1.0	0.2 to 0.5	0 to 0.5	0.3 to 0.75	0.4 to 1.0	0.4 to 1.0
Moisture / irrigation	medium	high	high	medium	high	low	low	medium	medium	medium
Evapotranspiration rate (ET) (mm d ⁻¹)	high	> 10	> 10	> 10	> 10	7 - 8.5	7 - 8.5	> 10	> 10	8.5 - 10
Need for Dethatching	high	high	medium	medium	medium	medium	medium	low	low	low

Note: It is important to understand that the "ratings" are based on the average of averages within a species and that a particular characteristic of one variety within a species may be higher or lower than the same characteristic for a variety of a different species. This chart should only be used as a basic guideline and beginning point when selecting turfgrass for a specific purpose or site.



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SPORTS TURF SPECIALISTS



Quick Slit Seeder

- Quick germination in higher yields.
- Easy to calibrate.
- Minimum surface disturbance.
- Sowing varieties include (but not limited to) All types of seed, Grain, Pesticide & Fertilizer Prills, Pelletized Lime, Diazinon 5.
- Coverage Rates: 4lbs - 500lbs/acre.
- Ensure seed/soil contact while maintaining constant seed depth.
- Save 25% of seed with accurate calibration.

Seeding is Believing

The Quick Slit Seeder follows the ground contours accurately and plants seeds at a constant depth in its own prepared mini seedbed. This unit is also a cultural tool in that it acts as a grass root pruner by cutting or breaking the grass plant roots. For the survival of the grass plant, it must immediately put all of its resources into growing new roots, resulting in stronger plants with better root structures.



BanNerman

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