COVER CROP

BENEFITS OF COVER CROPS
COVER CROP ECONOMICS
VALMAR 55 SERIES
MOUNTING SYSTEMS

PATHFINDER
VALMAR 245 + 246
SEEDING TIMES
Improve yield by enhancing soil health
Cover crops have the power to improve crop yields by enhancing overall soil health. The roots from cover crops improve soil tilth and the decomposing plant material increases soil organic matter. Specific cover crops like brassica produce a large, deep root that can generate pressure up to 240 pounds per square inch to break up compacted soil. Living cover crops interact with soil biology to create aggregates that build soil structure. This improves soil permeability, aeration, water infiltration, holding capacity, ease of crop emergence and root growth.

Cut fertilizer costs
Cover crops can fix unused nutrients that might otherwise run off, such as nitrogen and phosphorus and contribute to overall soil fertility by returning fixed nutrients to the soil as they decompose. By fixing these nutrients in the cover crop and soil organic matter, they are less likely to run off and are more available for the next commercial crop. Nitrogen fixing cover crops can be a great benefit to commercial crops such as corn. These cover crops can even be inter-seeded between established corn rows to add atmospheric nitrogen to the soil in season.

Better weed control
Cover crops can improve the effect of herbicides by out competing weeds for light, moisture, nutrients and space. Cover crop mulch that is covering the ground, and decomposing while the commercial crop is getting established, can effectively smother weeds trying to grow between the seed rows. Some cover crop varieties also release compounds that can chemically inhibit weed growth, leading to increased yields.

Prevent soil erosion and protect water quality
By providing ground cover in the off times of the growing season, cover crops provide a natural barrier to wind and water erosion. The standing cover crop shields the soil from the impact of rain drops while the crop’s root systems anchor the soil to prevent wind and water erosion. This not only keeps soil in place in highly erodible ground, but also fixes the nutrients and organic matter contained in the soil.

Conserve soil moisture
An inter-seeded cover crop can potentially compete with an established commercial crop for soil moisture. However, rotated cover crops and even an inter-seeded cover crop help the soil hold more moisture by preventing water runoff, increasing the soil’s moisture storage capacity by improving soil structure and adding organic matter, and reducing moisture evaporation by shading the soil surface from the sun’s rays.
**Cover Crop Economics**

A 1% increase in organic matter at 2015 commercial nutrient prices can increase land nutrient value by more than $650 per acre. This 1% organic matter increase can be composed of as much as 1000 lbs nitrogen and 100 lbs each phosphorous, potash and sulfur, as well as a host of other trace nutrients and secondary elements.

Soil nitrogen and phosphorus efficiency improves when you increase soil organic matter.
- Organic nitrogen has 73% efficiency for uptake availability
- Commercially purchased nitrogen has roughly 26% efficiency

A well-managed and maintained cover crop program can save a producer as much as $1,000 per year in mechanical drainage costs.

*Economic figures from independent sources. Salford does not guarantee specific economic advantages from cover crop seeding.

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**Organic Nitrogen**

<table>
<thead>
<tr>
<th>AVAILABILITY</th>
<th>EFFICIENCY</th>
<th>LOSS</th>
</tr>
</thead>
</table>

Nitrogen fixing cover crops can provide economic benefits to a variety of commercial crops. Nitrogen depleting crops such as corn greatly benefit from the added atmospheric nitrogen to the soil.

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**Cover Crops in Action**

The images to the right are from a fall cover crop seeded with a Salford AC2000 commodity cart in central Illinois.

**Image 1A** (on the left) shows the cover crop absorbing rain water and actively reducing erosion.

**Image 1B** (on the right) shows actual water runoff from the cover crop field, and a field that was fall tilled and left bare. Water from the cover crop field is coming into the basin on the left hand side with noticeably less volume than the water flowing from the bare field to the right.

**Image 2** (on the left) shows water collected from each field. Water from cover crop field is much cleaner than the water from the bare field, which is laden with sediment.

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**Above:** Improved soil tilth and organic matter with cover crop.

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**Field #1**

Cover crop air seeded. Lightly worked in.

**Field #2**

Fall worked and left bare.
Cover crops establish like any other commercial crop. Factors that affect the establishment of cover crops are seeding date, temperature and moisture, seed bed conditions, available nutrients, previous crop residues, planting depth, seed soil contact, seeding rate, seed quality, time of freeze after seeding, insects and diseases.

A cover crop should have at least 4 weeks to get established before frost. Crop rotation and seeding date will determine what cover crop seeding method will work best for you. According to the University of Maryland cover crop seeding methods that incorporate the cover crop will consistently establish stands the quickest, have greater germination, produce more biomass and absorb the most nitrogen.

Seed drills are a great way to get a cover crop in the ground. Drills are considered to be one of the most cost effective cover crop seeding methods because many producers already have a seed drill. Seed drills have good seed to soil contact compared to some broadcast methods, so cover crop germination and establishment will be the good. The previous crop has to be off in order for seed drills to work so this method is often best after wheat or crops that are harvested earlier in the year. As crop residue can be a challenge for a drill, no-till drills are the best option. Depending on your equipment drills are often one of the slower methods for cover crop seeding.

Air seeders like Salford’s Valmar granular applicators are an accurate method of cover crop application. Air seeders can be combined with many implements to seed cover crops. Most commonly air seeders are being combined with tillage equipment, which provides a degree of residue management and seed incorporation to improve cover crop germination. Air seeders combined with tillage tools are often faster than no-till drills. Air seeders can also be added to combines, sprayers and many other implements that that will be crossing the field. Air seeders have a variety of different capacities, working width and drive options.
Inter-seeding

Inter-seeding is a method of cover cropping that is gaining popularity. One inter-seeding option is to use a narrow row planter to seed alternating rows of commercial crop and cover crop. There are also high clearance, dedicated inter-seeder tools being developed for post emergence cover crop seeding. This equipment allows the commercial crop to get established before the cover crop comes in. It’s best to check with an agronomist before starting this practice as well as understanding if this seeding method can impact your crop insurance. There are crops that will thrive together but also crops that can compete and cause a yield drag on your primary commercial crop.

Inter-seeding: High Clearance Booms

There are several options coming available for adding cover crop seeding to high clearance sprayers and air boom applicators. High clearance equipment can go into the crop post-emergence and broadcast cover crop between rows. High clearance equipment can be used early in the season to achieve results similar to inter-seeder equipment. High clearance tools can also be used later in the season as the commercial crop is reaching maturity. As the commercial crop matures and its leaves begin to drop there will be sufficient light to germinate the cover crop. As high clearance equipment usually will not have a method of incorporating the seed selecting the right cover crop and increasing your seeding rates 10 to 15% is important.

Inter-seeding: Air Plane

Aerial application of cover crops is an option when other equipment isn’t available or the season is deemed too short to establish the cover crop after the commercial crop has been harvested. Aerial application will require higher seeding rates than other cover crop seeding methods to achieve the desired stand. Although broadcasting with no incorporation is the least effective method of establishing a cover crop it can be the difference between having some cover crop and having no cover crop at all.
Valmar 55 and 56 series have left / right metering segments for section control that are ISOBUS compatible*
*1655 not included

55 and 56 series applicators can be set up for ground driven metering or hydraulically driven metering

55 and 56 series applicators range from 16 to 32 individual metering runs and blockers can be installed to match your desired application width

55 and 56 series applicators are extremely accurate and handle a wide range of material sizes. They are recommended for granular herbicide application

55 and 56 series applicators are gentle and accurate enough to be used for seeding cover crops or low rate crops like canola

Supplement application with micro nutrients with standard stainless metering with high density polyurethane tank for fertilizer
55 & 56 Series Granular Applicators

Salford’s Valmar granular applicators can be paired with virtually any implement between 16 feet and 80 feet. New mounting options for the Valmar 55 & 56 Series applicators include a Pull-Type Cart and 3 Point Hitch mount. These new options make the applicators even easier to fill and calibrate while keeping the applicator lower to the ground for safer operation. The highly accurate Valmar metering system is proven as a gentle delivery method for seed, fertilizer or herbicide. 55 and 56 Series models can be equipped with hydraulic drive or ground drive systems. Valmar implement mount applicators are ideally suited for granular herbicide application to battle herbicide resistant weeds.

Ideal for: Distribution of granular product such as herbicide, cover crop or low rate fertilizer and micro nutrients with 3 Point and Pull-Type mounts available for ease of use.

Unique Features

- New 56 series have poly tanks and stainless steel metering to boost fertilizer application capacity for planters and other implements
- Pair 55 & 56 series with virtually any implement - unit mount*, Pull-Type or 3 Point Mount options
- Hopper - Polyethylene, translucent, plastic
- Hopper - Mild steel painted
- Product level sight gauge
- Air manifold and venturi system drop for easy cleaning
- Manual half shut off on either side (except 1655)
- 28 groove plastic fluted metering rollers OR 12 groove available for more coarse material or higher rates
- 4056 and 6056 come standard with stainless steel metering
- HYDRAULIC DRIVE OPTION
  - Hydraulic metering, motor only
  - Hydraulic metering, Rate Control Ready. Includes motor, flow control valve, meter encoder, fan speed and bin level sensors. Does not include ECU, harness or cab display.
  - Hydraulic metering, with granular rate control. Includes motor, ISOBUS compatible ECU* and harness, flow control valve, meter encoder, fan speed and bin level sensors. Does not include display.
- GROUND DRIVE OPTION
  - 60 speed gearbox with 5% between settings
  - In-cab electric clutch control and air manifold monitor
  - Optional hydraulic engage/disengage
- Options
  - 12 groove meter roller assemblies for coarse material
  - Outlet blocker kits and line splitters to match a specific number of required runs in special mounting situations
  - Agitator kits
  - Delivery hose quick coupler kits
  - 1.25 inch ID flexible PVC hose
  - Broadcast deflectors mount individually to the implement frame
  - Air diffusers for in-row application

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55 Series Granular Fertilizer Applicator

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Outlets</th>
<th>Application Width</th>
<th>Hydraulic Fan Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1655</td>
<td>33 cu. ft. (900 lb)</td>
<td>16</td>
<td>16-40 ft.</td>
<td>8 gal./min.</td>
</tr>
</tbody>
</table>

60 Series Granular Fertilizer Applicator

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Outlets</th>
<th>Application Width</th>
<th>Hydraulic Fan Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>4056</td>
<td>40 cu. ft. (1800 lb)</td>
<td>16</td>
<td>24-60 ft.</td>
<td>11.5 gal./min</td>
</tr>
<tr>
<td>6056</td>
<td>60 cu. ft. (2700 lb)</td>
<td>24 or 32</td>
<td>32-80 ft.</td>
<td>11.5 gal./min</td>
</tr>
</tbody>
</table>

www.salfordgroup.com
**Integration Simplicity** - The 3 Point Hitch mount and the Valmar Tow Behind Cart eliminate the need for implement specific mounting brackets and hardware making the 55 & 56 Series instantly compatible with virtually any implement. This “turn-key” solution greatly simplifies setup requirements.

**More Ergonomic** - The new platforms are designed to be more operator friendly and improve access to the hopper. With the new options available, operators are able to easily fill and calibrate the Valmar applicator without having to climb over the implement’s frame.

**Ground Driven or Hydraulic Drive** - The new 55 & 56 Series mounting options come complete with hydraulic and electrical hookups and are compatible with hydraulic drive or ground driven metering making these units very compatible options.

**Choose Your Implement** - The 3-point hitch mount uses an integrated drawbar rated for 350 hp. A heavier duty, 600 hp rated version is also available on request. The ease of hitching and unhitching different implements makes it possible to use the Valmar granular applicators with multiple implements on the same farm. All hydraulic and electrical hook-ups are transferred to the rear of the unit as well. Switch between applying starter fertilizer with your planter to seeding cover crops with your tillage tool in no time.

**Ease of Operation** - The applicator itself has a platform for easy access to the hopper and a ladder that folds away while in operation. The 3 point applicator box also has integrated stands for storage or easy hook up and dismount from the tractor linkage.

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### 55 & 56 Series Mounting System Specifications

**Hydraulic Remotes to Implement**
- Two sets of hoses standard (additional hydraulic lines available to purchase)

**Metering Drive**
- Ground Driven or Hydraulic Metering Drive
- Hydraulic engage/disengage kit for ground drive

### 3-Point Hitch Mounting System Specifications

**350 HP Rating**
- Front 3-Point Hitch: CAT .3 hitch
- Rear Implement Hitch: Single or double CAT .3 hitch

**600 HP Rating**
- Front 3-Point Hitch: CAT 3 or CAT 4 N (specify when ordering)
- Rear Implement Hitch: CAT 4 hitch

### Pull Type Mounting System Specifications

**Pull Type Tires**
- 14L – 16.1 tires w/6-bolt rims
Valmar ST-Series applicators bring high capacity, highly accurate, commodity metering to your strip-till bar, planter, tillage equipment or virtually any other implement you choose. ST-Series models can also be mounted directly on an implement or used with Salford’s PathFinder self-steering under carriage to tow the ST-Series applicator behind your implement.

**Accuracy and Simplicity**
Salford’s Valmar ST-Series models are equipped with the same accurate, simple, venturi metering system found on other Valmar models. The ST-Series metering system reliably handles a wide range of application rates up to 650 lbs at 5 mph. The peg metering rolls handle a wide range of material sizes and are gentle enough to handle seed. The peg roller also gently meters fertilizer to prevent crushing the product. This reduces the amount of dust in the air stream and helps to prevent plugging in the air lines. A meter brush system cleans the meter roll during use to prevent fertilizer build up to ensure accurate metering.

**Superior Blending and Section Control**
ST-8 and ST-10 models are capable of multi-product metering*. Their tanks are split 60/40 to blend two products on the fly. Rather than blending the two products down the air stream like some other commodity carts these machines blend right at the meter for maximum accuracy.

ST-Series models are also capable of ISOBUS compatible section control to help direct fertilizer exactly where it’s needed and prevent over application.

*Optional second meter on the ST-8

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**Strip Till Granular Fertilizer Applicator Specifications**

<table>
<thead>
<tr>
<th>ST-6</th>
<th>ST-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hopper Capacity</strong></td>
<td></td>
</tr>
<tr>
<td>185 cu ft</td>
<td>300 cu ft (120/180 cu ft)</td>
</tr>
<tr>
<td>6 Tons</td>
<td>10 Tons (4/6 ton)</td>
</tr>
<tr>
<td><strong>Tank Configuration</strong></td>
<td></td>
</tr>
<tr>
<td>Single compartment</td>
<td>Two compartments</td>
</tr>
<tr>
<td><strong>Tank Material</strong></td>
<td></td>
</tr>
<tr>
<td>High Density Polyethylene</td>
<td></td>
</tr>
<tr>
<td><strong>Metering Sections</strong></td>
<td></td>
</tr>
<tr>
<td>Up to four sections</td>
<td></td>
</tr>
<tr>
<td>(Electric clutches per section)</td>
<td></td>
</tr>
<tr>
<td><strong>Tank Features</strong></td>
<td></td>
</tr>
<tr>
<td>Air Manifold gauge</td>
<td></td>
</tr>
<tr>
<td>Hopper Screen</td>
<td></td>
</tr>
<tr>
<td>Ladder and platform assembly</td>
<td></td>
</tr>
<tr>
<td><strong>Air Manifold</strong></td>
<td></td>
</tr>
<tr>
<td>8, 12, 16, 18, 20 and 24 Outlet manifolds (choose at the time of ordering)</td>
<td></td>
</tr>
<tr>
<td><strong>Meter</strong></td>
<td></td>
</tr>
<tr>
<td>Plastic peg meters rollers with brush for self cleaning</td>
<td></td>
</tr>
<tr>
<td>Manual hopper bottom shut-off slide gates</td>
<td></td>
</tr>
<tr>
<td>PWM Valve</td>
<td></td>
</tr>
<tr>
<td>Meter encoder, Fan speed sensor, Bin level sensor</td>
<td></td>
</tr>
<tr>
<td>Low rate rollers available</td>
<td></td>
</tr>
<tr>
<td><strong>Implement Mounting</strong></td>
<td></td>
</tr>
<tr>
<td>Skid mounting available - contact dealer</td>
<td>ST-10 does not come standard with mounting hardware.</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td></td>
</tr>
<tr>
<td>Hydraulic fan drive</td>
<td></td>
</tr>
<tr>
<td>Second fan option for high rates, swaths, or ground speeds</td>
<td></td>
</tr>
<tr>
<td>Second fan standard on 24 row models</td>
<td></td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td>Air line splitters</td>
<td></td>
</tr>
<tr>
<td>Low rate peg meter rollers</td>
<td></td>
</tr>
<tr>
<td>Deflector kit for broadcast application</td>
<td></td>
</tr>
<tr>
<td>Air diffusers for in-row application</td>
<td></td>
</tr>
<tr>
<td>PVC flexible air hose</td>
<td></td>
</tr>
<tr>
<td>2 inch or 2 1/2 inch from Venturi to splitter/diffuser or deflector</td>
<td></td>
</tr>
<tr>
<td>1 inch, 1 1/8 inch or 1 1/4 inch after splitters</td>
<td></td>
</tr>
<tr>
<td>1 inch, 1 1/8 inch or 1 1/4 inch after diffuser</td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Requires 30–42 gpm @ 2800 psi (single fan or dual fan)</td>
<td></td>
</tr>
<tr>
<td>Case drain required</td>
<td></td>
</tr>
<tr>
<td>Hoses to tractor not included</td>
<td></td>
</tr>
<tr>
<td><strong>Optional Control Packages and Scales</strong></td>
<td></td>
</tr>
<tr>
<td>ISOBUS Controls* (includes ECU and harness)</td>
<td></td>
</tr>
<tr>
<td>Digi-Star Scale Kit (includes one cab display) or available as ISOBUS</td>
<td></td>
</tr>
</tbody>
</table>

*For use with 3rd party ISOBUS cab consoles utilizing prescription mapping (i.e. John Deere 2630™, Case IH Pro 700™, etc.)* ISOBUS compliance does not guarantee compatibility with all functionality on 3rd party ISOBUS displays. Non-ISOBUS displays are not compatible with this controller. Always consult with the display manufacturer before purchase – Prescription mapping and/or auto section control may require software unlock. Ensure latest display firmware version is installed.
**Air Boom Applicators**

Salford’s Valmar air boom applicators gently and accurately handle seed, fertilizer and other granulars like herbicides. Their rugged construction is sturdy enough to withstand the rigors of commercial use, making it the right choice for a rental fleet, custom applicator, or a farm operation. Moreover, the 245 & 246 models incorporate a number of innovative features designed to make material application easier, safer and more precise than ever before.

These model’s simple calibration ensures proper flow rates, especially when determining the setting for new products, seeds or seed mixtures.

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Boom Width</th>
<th>Trans. Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>245</td>
<td>40 cu. ft.</td>
<td>50 ft.</td>
<td>7 ft. 8 in.</td>
</tr>
<tr>
<td>246</td>
<td>60 cu. ft.</td>
<td>60 ft.</td>
<td>7 ft. 8 in.</td>
</tr>
</tbody>
</table>

**Valmar Pull-Type Air Boom Applicators**

**Accuracy**

Valmar’s 245 and 246 are designed to achieve unparalleled accuracy under a variety of ground conditions.

**Commodity Types**

With the ability to apply a wide variety of seeds, Valmar’s pull types can take on any type of cover crop mixture as well as fertilizer or herbicide.

**Section Control**

Manual Section control features on both of Valmar’s 245 and 246 reduce waste.
Spring Mixtures

Spring plantings are commonly utilized to jump start soil biology after a long cold winter. These cover mixes are used to ‘prime’ the soil biology ahead of a later spring planted crop. Spring mixes are also used in the western Great Plains as a ‘fallow replacement’ where a living cover provides extra residue and biological diversity for the soil. Moisture used by the cover crop is usually gained back later in the summer through increase infiltration and decreased evaporation.

Seeding will typically occur once soil temperatures can sustain 40°F and field conditions are dry enough to allow traffic. Greater diversity can be added to these mixtures if planting date is delayed until close to frost-free date.

Summer Mixtures

Early Summer - Early summer plantings are commonly utilized as a forage source for livestock when summer heat begins to reduce cool season grass and forage production. These mixes can also be used on prevented planting acres to add biological diversity, suppress weeds, and produce nitrogen and cycle nutrients during the prevented plant year. These mixtures consist primarily of warm season species so the soil temperature needs to sustain 55-60°F and the last frost risk must have passed.

Late Summer - Planting covers after a summer harvested cereal crop is one of the best opportunities to implement a very diverse cover mix into a cropping system. Converting the ample hours of summer sunlight into forages and soil nutrients is one of the best ways to improve the biological health of your soil. With so many cover crop options to choose from, these mixes will be driven by your specific goals.

With ample heat units remaining, warm season species will dominate these mixtures. Cool season species can thrive under a partial canopy during this time as well but are generally a smaller percentage of the mix.

If you begin planting in August/September, the warm and cool season species can be effectively used together. Warm season species will decline after the first killing frost leaving the cool season species to continue to thrive and be productive.

Fall Mixtures

Cover crops seeded into or after fall harvested crops can be beneficial for the soil but can present challenges for seeding the covers. Fall mixtures can vary greatly depending on your goals, planting method and timing. Here are some basic guidelines to follow:

Planting 4-5 weeks prior to first frost - You can plant any cool season or fast growing warm species during this time frame and obtain significant amounts of biomass production prior to freezing weather.

Planting 2-3 weeks prior to first frost - Cool season species that winter-kill at temperatures below 25 degrees or overwintering are good choices for this window.

Planting at or after first frost - With limited heat units remaining in the season, only invest in species with overwintering potential. Fall growth will be limited and winter hardy cereal grasses will most commonly be utilized.

Salford’s “Benefits of Cover Crops” was developed in conjunction with Green Cover Seed of Bladen, NE and La Crosse Seed of La Crosse, WI - suppliers of “Soil First Premium Cover Crop Seed”.

Greencover Seed
cover crops forages

greencoverseed.com
402-469-6784

Soil First®

SEEDING TIMES
INDEPENDENT SERIES
- I-1100
- I-1200
- I-2100
- I-2200
- I-4100
- I-4200

AERWAY
- HAY & PASTURE
- TILLAGE
- ORCHARD/VINEYARD
- TURF

TILLAGE
- 5200 ENFORCER
- 9200 IN-LINE RIPPER
- MOLDBOARD PLOWS
- CULTIVATORS
- UNIVERSAL HARROWS

BBI SPINNER APPLICATORS
- MAGNASPREAD MOUNTED
- MAGNASPREAD PULL-TYPE
- ENDURANCE MOUNTED
- ENDURANCE PULL-TYPE
- LIBERTY
- GRASSHOPPER
- CRICKET
- TROOPER

VALMAR APPLICATORS
- 6700 MOUNTED
- 9620 PULL-TYPE
- 8600/8700 PULL-TYPE
- 5500 PULL-TYPE
- 1255 PULL-TYPE
- 245 PULL-TYPE
- 55/56 SERIES
- FERTI-GO 4S
- 455 FORAGE PRESERVATIVE APPLICATOR
- ST-6/ST-10 ROW CROP

SEEDING
- 520 AIR DRILLS
- 525 AIR DRILLS
- PATHFINDER CART

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PLANT COVER CROPS
PRACTICAL FARMERS OF IOWA

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