

APPLICATION RISK MANAGEMENT (ARM) SYSTEM

Whatcom Conservation District
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Questions or Comments:

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This system and following information is to be used in conjunction with your up-to-date Nutrient Management Plan. Failure to follow guidelines and apply the ARM system correctly may result in resource pollution and is not the responsibility of the Whatcom Conservation District.

APPLICATION RISK MANAGEMENT (ARM) SYSTEM

Whatcom Conservation District has developed a new addition to our Dairy Nutrient Management Plans entitled the Application Risk Management (ARM) System. This system was designed to help you identify field characteristics that have a lower risk for application, while also guiding you through the process of properly assessing and managing the application risks for all of your fields. The system is meant to be used year round, but is particularly important during periods of high risk such as wet season and winter applications (Oct-March).

This system was created, in part, to address the water quality issues we see during times of heavy manure application coupled with an increase in rain fall (spring and fall) and unsuitable field conditions (i.e., high water table, high soil moisture, standing water, etc). These events typically happen, in part, due to inappropriate application timing and practices, but are also heavily influenced by the rigid and often untimely constraints on application dates (i.e., end October 31, start T-Sum200) that end up encouraging farmers to apply at inopportune times.

In order to remediate this issue, we have created a system that allows you to assess the risk of applying manure at any given time of the year by helping you identify field characteristics that have a lower risk associated with application, while also guiding you through the process of properly assessing, managing and reducing application risks for all of your fields. As long as your Nutrient Management Plan is updated, and field and weather conditions permit, we would like to encourage more application events during periods in January, February, and March when rainfall is minimal and nutrients from these applications can become available to forage at times when plants have increased nutrient needs (Mar-Jun). Additionally, since manure application after September has limited benefit for crops, and is at a higher risk for runoff, we would like to discourage application after September 30th. This will greatly reduce your risk of nutrient runoff during the fall rains.

Use the information in your Nutrient Management Plan as well as the ARM Worksheet to assess if manure application is appropriate for your selected fields. If you would like to apply manure during the winter months (December, January, February), you **MUST** have an ARM Plan written into your Nutrient Management Plan which identifies your low risk fields.

By assessing the parameters in the ARM Worksheet, and taking the necessary steps to determine your application risk, you will be able to reduce your chances of ill timed manure application and protect the resources on your farm.

In summary, this system hopes to:

- Give farmers more options for applying manure, while also meeting their storage needs.
- Return responsibility to the farmer for when and how they properly apply their manure.
- Increase yields and reduce nitrate leaching by applying manure at the right times and in the right amounts to meet plant needs.
- Reduce late season (Oct-Nov) applications to risky areas, without increasing storage requirements.

Nutrient Application Timing

The goal of the ARM system is to restructure the current paradigm of manure application so that we have fewer applications in the late fall, and more in mid-winter. In general, we recommend that you begin to decrease the concentration of nutrients (N, P) that are applied to your fields starting in August. Forage requirements begin to decrease after this date, and agronomic rates would dictate a steady *decrease* in nutrient application from August to September 30, when application should be ceased due to minimal nutrient needs. Additionally, application of nutrients to corn fields after harvest serves little benefit to the following years crop and should not be conducted. We would also suggest that manure be applied in the early season to forage crops to maximize nutrient benefit to spring growth.

With the ARM system, nutrient application on forage may begin in January, when the application of nutrients will benefit new growth in March. Application of manure during the winter months may help to increase plant growth and vigor and improve soil quality. If applied properly, early season application of manure can be utilized effectively by certain crops, such as perennial grasses, with great success. During the early part of the growing season (March-May), growth of perennial grasses, silage, and hay crops is rapid and the demand for available nutrients is high (see green box in Figure 1). Nutrients applied prior to this period in January and February (see yellow box) will become available as soil temperature and microbial activity increases, promoting availability of nitrogen and conversion of ammonia and TKN to nitrate. This increase of available nutrients in March-May, when plant needs and growth rate are the greatest (see green box), results in a greater rate of nutrient uptake and higher yields. Manure nutrients applied through August will become available in the late fall via mineralization and will likely supply sufficient nutrients for your crops limited growth through the winter period. Manure applied after September, when growth and nutrient uptake is declining (see red arrow), is not beneficial to plants and the excess nutrients applied will likely be lost during the winter months via leaching, runoff, or volatilization as nitrogen becomes available from mineralization.

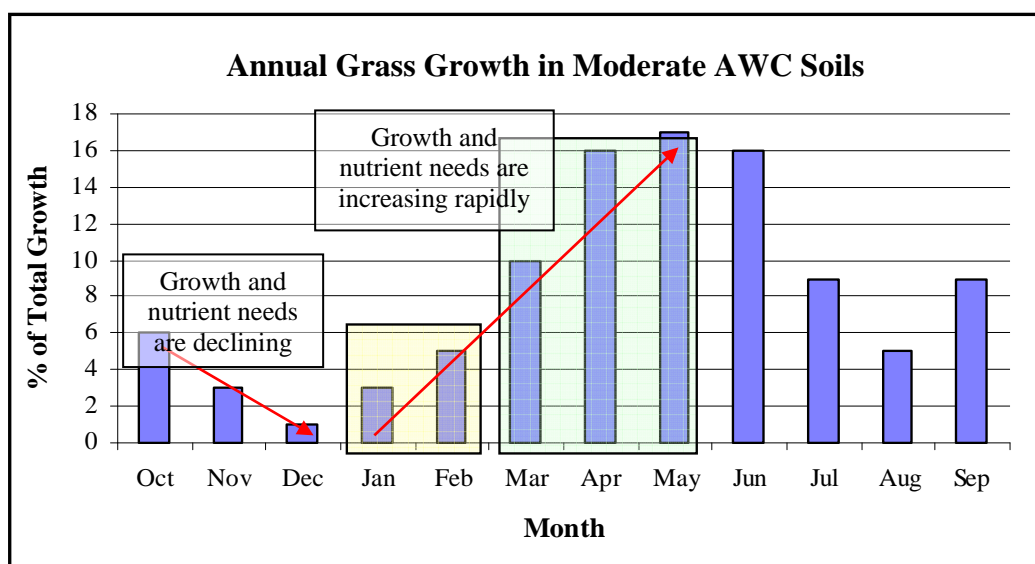


Figure 1. Annual grass growth curve. The yellow box represents the time of optimal early season manure application for maximum growth outlined in the green box. The red arrows show the periods of decreasing and increasing growth.

Careful planning and proper execution of winter manure application needs to be conducted in order to avoid unwanted runoff or groundwater pollution events. Early application (Jan, Feb) is only applicable to low risk forage fields, which are outlined in your Nutrient Management Plan. *Winter application of manure is not recommended for corn, relay crops that are not going to be harvested, or other late season crops that will not utilize the nutrients applied in the early season at the proper time.* For higher risk fields, you should avoid winter applications and conduct an application risk assessment starting in February to determine when the appropriate time for application is. This date may vary for each of your fields based on field condition and weather forecast.

The ARM system method of application timing determination will significantly reduce your chance of runoff, resource pollution, and field damage when done correctly and completely. If *not* done correctly, winter application of manure can increase pathogen losses in runoff from agricultural land compared to applications in other seasons. Cool temperatures and moist conditions in winter favor longer survival of microorganisms on the land. Even sub-freezing temperatures do not reliably kill bacteria. In warm weather, most manure pathogens are killed or immobilized in soil by physical filtration, adsorption or predation by native soil microorganisms, especially if the manure is incorporated. In winter, when manure rests on the soil surface, interaction with soil is minimal and manure organisms are more readily carried away in runoff. Your Plan outlines the steps to determine your application timing and risk assessment.

Please be aware that application windows will vary by field and by year depending on your current field conditions and the seasonal weather patterns. In general, it is imperative that no solid or liquid manure be applied under conditions that would allow runoff from fields into surface waters or other critical areas. The land application of manure must be scheduled appropriately and agronomically throughout the growth period, rather than by defined dates (i.e., T-Sum200, Oct 31), which can encourage improper application practices. Following agronomic application schedules will provide nutrients to your crops when they need it, while also avoiding over application or application at inappropriate times (during rain events or just prior to flooding), which can lead to runoff events. When done correctly, you should still have adequate storage for the winter months if you are currently in balance.

Disclaimer: *There will be times during recommended application periods when manure application will be very risky. It is your responsibility to evaluate your field conditions and the weather to determine if application is appropriate. Failure to do so may result in a discharge to waterways or contamination of other resources, which can lead to fines or a CAFO permit for your facility. The Whatcom Conservation District and the NRCS assume no responsibility for inappropriate manure application.*

Field Risk Ratings

The agronomic application of manure to your fields is largely depended on the characteristics of those fields and your ability to safely apply manure at the correct time. Since there is a high risk of runoff associated with precipitation events after manure application or application on unsuitable soil conditions (i.e., high water table, high soil moisture, standing water, etc), manure application is considered high risk from October through the end of February when weather events and field characteristics are the least favorable. In order to apply manure during high risk times, you need to know the limitations of each of your fields and their probability of causing a

resource pollution event. This is called the risk rating. The risk rating is based on a variety of field characteristics including, but not limited to, soil type, slope, distance to waterway, water table depth, available water holding capacity, permeability rate, runoff potential, presence of tiles, and ponding/flooding potential. High and Medium-High risk fields are not to be considered for winter manure application. Medium, Low-Medium, and Low risk fields may be considered for winter and wet season manure application from October through February.

Your updated Nutrient Management Plan should outline which of your fields are considered lower risk for early season application, and which should be avoided. Your Plan will provide you with a table and map that shows the risk ratings for the fields associated with your farm and the characteristics that determine their risk rating for manure application.

Manure Application Setback Distances

If you have a waterway or critical area adjacent to your application field, you will likely be required to adhere to a proper manure setback distance laid forth in your Nutrient Management Plan as part of your critical areas protection plan. If a filter strip is in place, and its vegetation height is at or above 3 inches, a recommended setback distance equal to the width of the filter strip is recommended from all ditches during the wet season (Oct to April). If grass height is lower than 3 inches, or if you are applying in the winter (Nov to Feb), your setback distance is recommended at two times the distance of your buffer width. Additional setbacks may be recommended for wellheads, wetlands, tiles, swales, and ponded areas. If field conditions are unfavorable or heavy rain is expected, manure application is not recommended for any field.

Application Parameters

Prior to application of manure, the following parameters must to be assessed in order to determine if nutrient application is appropriate. An ARM Field Assessment Sheet should be filled out for each field you are considering applying manure to prior to application. Failure to assess any of the following parameters could result in application under unfavorable conditions, which could lead to resource pollution.

- **Forecast**
- **Water Table**
- **Available Water Holding Capacity (Soil Moisture)**
- **Field Characteristics**
- **Field Cover**
- **Application Method**
- **Current field Conditions**
- **Application Setback Distances**
- **Vegetative Buffers**

Forecast. The forecast is one of the most important parameters to check prior to winter application of manure. This will be one of the primary indicators of application risk. In general, application will *not* be limited by the weather if there has been no significant rain for 2 days and

no forecasted rain within three days after application. If more than 0.5 inches of rain is predicted in the 3 days after application, it is recommended that application be postponed. If the forecast is favorable, then the other risk factors need to be evaluated prior to application.

- **Ideal Forecast:** No rain 2 days prior to application, no significant rain (>0.5 in) forecasted for 3 days post-application.

Water Table. The water table present in your field will depend on soil type, season, and recent weather conditions. If the water table is high, manure has a greater opportunity to leach into groundwater and/or be transferred to surface waters. If the water table is greater than 24 inches from the surface, the water table will not be the limiting risk factor for application; if it is between 12 and 24 inches, application will be limited by this parameter; if less than 12 inches from the surface, no application is permitted. Maintain your water table by making sure your drainage infrastructure (i.e., tiles, ditches, etc) is in good working order.

- **Ideal Water Table:** Water table must be greater than 12 inches from the surface; 24 inches or more is ideal.

| Water Table Depth | Risk Rating |
|-------------------|--|
| > 12 inches | High - Do NOT apply |
| 12-24 inches | Medium – Pay attention to other factors that might encourage leaching into ground water, or ponding on the soil surface. |
| > 24 inches | Low – No water table depth restrictions on application |

Available Water Holding Capacity (AWC)/ Soil Moisture. The available water holding capacity (AWC) is a measure of the saturation of your soil. The lower the AWC (or the higher the soil moisture %), the less likely your soil will be able to hold and infiltrate applied manure into the soil and the greater the runoff possibility will be. If the moisture content of the soil is greater than 90%, application is not recommended. Between 70-90%, application is permitted, but will be limited by recommended application volume and equipment limitations. Below 70% moisture, no AWC restrictions are in place. (See section on *Soil Moisture Determination*).

- **Ideal AWC:** Soil moisture should be less than 90% of saturation.

Field Characteristics. The characteristics of your field are very important to consider prior to application. Some characteristics may limit application on specific areas of a field (i.e., ponding, tiles, low spots, etc). You must take into consideration slope (prefer to apply to <3% slope), swales (don't apply in swales), soil type (if the field is mixed, apply only to the appropriate soil types), low spots (areas where ponding may occur), and tiles. If tiles are present in your field, know where they are, where they empty to, and have a way to shut them down in case a manure discharge occurs. Do not apply over tiles with less than 24 inches of cover and always observe tiles after application. If you don't know these things, do not apply closer than 100' from tiles.

- **Ideal Field Characteristics:** Take individual field characteristics into account prior to application: slope, soil type, low spots, tiles, etc.

Field Cover. Field cover is an important consideration for winter application of manure. This system does not permit manure application to bare or sparsely vegetated fields, nor relay/cover crops that will not be harvested. Only established, dense (>70% cover) grass or cover/relay crops

grown for harvest are permitted for winter application. Sparse vegetation (<50% cover) may have limited application rates or restrictions. Established vegetative buffers adjacent to waterways are recommended for winter application to prevent and/or filter runoff from fields.

- **Ideal Field Cover:** A, established and/or dense (>70% cover) grass stand or cover crop should be in place prior to application.

Application Method. Not all methods of liquid manure application are appropriate for wet season application. In general, methods that inject or incorporate manure into the top layer to the soil are best. If manure is surface applied (i.e., big gun sprinkler, splash plate, wagon), it is recommended that it be applied in a way that minimizes clumping and delivers liquids and/or solids below the grass canopy. Unincorporated, mounded solids are not an acceptable method for winter application. Recommended application rates may determine the type of equipment that can be used for application. Make sure equipment is properly calibrated prior to winter application.

- **Ideal Application Method:** Apply manure below the grass canopy using best methods.

Current Field Conditions. Current field conditions need to be visually evaluated prior to application. If there are any of the following conditions present, application may be limited or not permitted: ponding or standing water, compacted soils, saturated soils, frozen ground, snow cover, vegetation cover less than 3 inches in length, unmonitored tiles, and/or sparse or dead vegetation. All of these field conditions are evaluated prior to application on the ARM Worksheet.

- **Ideal Current Field Conditions:** Limited or no application if ponding, standing water, compacted soils, saturated soils, sparse vegetation, or unmonitored tiles are present.

Application Setback Distances. If your field is adjacent to a waterway, surface tiles, or wet area, you must adhere to all setbacks laid out in this Plan. Setbacks will vary by field, and may increase based on current field conditions. For instance, if ponding is noted on the field, investigate why and find out if it is running off into a waterway. If it is just a low spot and not flowing into a ditch or other waterway, you may apply manure near the ponded area. If it is running off into a waterway, you must exercise a 100 foot manure setback from the area.

- **Ideal Application Setback Distances:** Adhere to setback distances outlined in your Plan.

Vegetative Buffers. Any areas that have the possibility of runoff to a neighbor, waterway, swale, or water body need to be contained with a vegetative filter strip or field boarder to reduce the risk of runoff contamination. Vegetative buffers need to be maintained to function properly. If buffers are well established, have a dense vegetation cover (>70%), and grass height is greater than 3 inches in length, runoff pollution from application is reduced. If buffers are not maintained properly, manure setback distance may increase.

- **Ideal Vegetative Buffer:** Grass, cover crops, filter strips, and field boarders should be dense and maintained for proper runoff containment.

Each of these parameters will dictate the ability to apply or not to apply to your individual fields. The Application Risk Management Worksheet will guide you through the process of evaluating if ambient and field conditions are appropriate for winter manure application and at what rate.

Field Assessment and Application Steps

Prior to winter application of manure the following steps need to be taken:

1. **Check the weather forecast** (www.probcast.com, www.wunderground.com). If no significant (>0.25 in) rain has occurred for 2 days, and none (>0.5 in) is forecasted for the 5 days following application, you may continue with the assessment. If rain has occurred, check soil conditions thoroughly prior to application. If rain is expected in the 3 days following application, consider postponing if rain is projected at >0.25 inches.
2. **Go out and physically examine each of the fields that you intend applying manure to.** *Only consider those fields that have been included in your Nutrient Management Plan. Do not apply to fields not in your plan prior to consulting with your WCD Planner.* If conducting winter application, only apply to fields approved by WCD planners. Visually examine fields for: frozen soils, standing water/ponding, level of ditches, vegetation cover (grass or cover crop), tiles, and any other note worthy characteristics. Note these areas for non-application if appropriate. Record all this information on your ARM Worksheet.
3. **Dig a hole and look for the water table depth.** If it is <12 inches from the surface, do not apply. (See Water Table Depth Determination).
4. **Determine the field soil moisture content.** This can be done with determination equipment or by hand. If greater than 80%, application may be limited (See Soil Moisture Determination).
5. **Record all of the above information on the ARM Field Assessment Sheet** then transfer data to the **ARM Worksheet** to determine if application is appropriate and how much liquid manure can be applied. You may need to email or fax this worksheet to WCD prior to application during the high risk seasons (October-April) for application verification and approval.
6. After assessment and submittal of the application form, **apply manure at recommended rates** following guidelines on the ARM Worksheet and in your Nutrient Management Plan.
7. **Monitor your fields after application** for any signs of runoff, discharge of tiles (if applicable), or ponding of manure. Take appropriate and immediate action to resolve any of these issues.

Water Table Depth Determination

The water table depth can be easily determined by digging a representative hole with a shovel or an auger. Make sure that the area and elevation of the hole is representative of the entire field. Dig until water starts entering the hole, or to a maximum depth of 4 feet. Allow the hole to settle, and observe if water fills the hole within 1 hour. The level that water began to enter the hole, or the level to which it fills it, is the water table level. Make note of this depth. Multiple holes may be dug for greater accuracy. You may leave this hole open for future determination of the water table during the wet season (cover the hole when not in use for safety).

Soil Moisture Determination

Use the following table when determining soil moisture levels by hand. Know your soil type (see *Heading II, Section 2* for soils information) and pick an area that is representative of the entire field. Measure the soil moisture from the top 6 inches of the soil profile. Take a representative handful and gently squeeze it into a ball in your hand. Follow the descriptive guidelines on the following table to determine the soil moisture %. This might take some practice, so having a method of verification (soil moisture determination equipment) the first few times is recommended. Replication of this process is recommended at multiple locations in each field.

| Available Moisture in the Soil | Sands and Loamy Sands | Sandy Loam and Fine Sandy Loam | Very Fine Sandy Loam, Loam, Silt Loam, Silty Clay Loam, Clay Loam, Sandy Clay Loam | Sandy Clay, Silty Clay, Clay |
|--------------------------------|---|---|--|---|
| < 25% Soil Moisture | Dry, loose and single-grained; flows through fingers. | Dry and loose; flows through fingers. | Powdery dry; in some places slightly crusted but breaks down easily into powder. | Hard, baked and cracked; has loose crumbs on surface in some places. |
| 25-50% Soil Moisture | Appears to be dry; does not form a ball under pressure. | Appears to be dry; does not form a ball under pressure. | Somewhat crumbly but holds together under pressure. | Somewhat pliable; balls under pressure. |
| 50 - 75 % Soil Moisture | Appears to be dry; does not form a ball under pressure. | Balls under pressure but seldom holds together. | Forms a ball under pressure; somewhat plastic; slicks slightly under pressure. | Forms a ball; ribbons out between thumb and forefinger. |
| >75% Soil Moisture | Sticks together slightly; may form a weak ball under pressure. | Forms a weak ball that breaks easily, does not stick. | Forms ball; very pliable; slicks readily if relatively high in clay. | Ribbons out between fingers easily; has a slick feeling. |
| 100% Field Capacity | On squeezing, no free water appears on soil, but wet outline of ball on hand. | On squeezing, no free water appears on soil, but wet outline of ball on hand. | On squeezing, no free water appears on soil, but wet outline of ball on hand. | On squeezing, no free water appears on soil, but wet outline of ball on hand. |
| Above Field Capacity | Free water appears when soil is bounced in hand. | Free water is released with kneading. | Free water can be squeezed out. | Puddles: free water forms on surface. |

Area Weather Summary

In order to apply manure at appropriate times throughout the year, it is vital to have an understanding of the climate in your area, as well as seasonal weather patterns and current conditions. The following weather summary gives you some guidelines and tips on understanding the weather in your area.

The average annual precipitation in your area is approximately 48 inches (your specific rainfall amount may vary). The graphs below represent typical annual trends in precipitation and temperature, respectively. The understanding of these graphs will help you make more educated and better decisions about when to apply manure to avoid unwanted resource pollution.

In order to avoid negative soil and water quality impacts (i.e., runoff, soil saturation, compaction, etc.) and properly manage crop irrigation needs, one of the most important climatic characteristics that should be observed on a daily basis is precipitation. The precipitation graph below shows the annual rainfall pattern, which gives an idea of timing and quantity of typical rain events during the year for your area. This data is important when timing manure application, irrigation patterns, and even grazing events. The 5-day forecast should always be reviewed prior to all manure applications to make sure there are no significant rain events (>0.25 in) 2 days prior to or forecasted within the five days (>0.5 in) following application. This will significantly decrease the possibility of runoff events from your fields, thus reducing the loss of nutrients, pathogens, and soil sediment. It will also reduce the incidence of soil compaction, destruction of grass, and rutting in your fields caused by running equipment on wet fields.

According to the precipitation graph shown, manure application should be conducted during periods of low rainfall, which occur in early January and February, and May through September (highlighted in green boxes), as long as your field conditions allow. When applied early (Jan, Feb), nutrients become available during the time of greatest growth and uptake (Mar-May). Manure should not be applied in October, November, or April when rainfall is at its highest frequency (major rain events highlighted in red circles), runoff events are likely, or plant need and uptake is very low (Sept-Jan). Lastly, observation of past and predicted rain events and predicted quantity of precipitation can help you better utilize irrigation water and timing throughout the year by knowing when you do and do not need to irrigate.

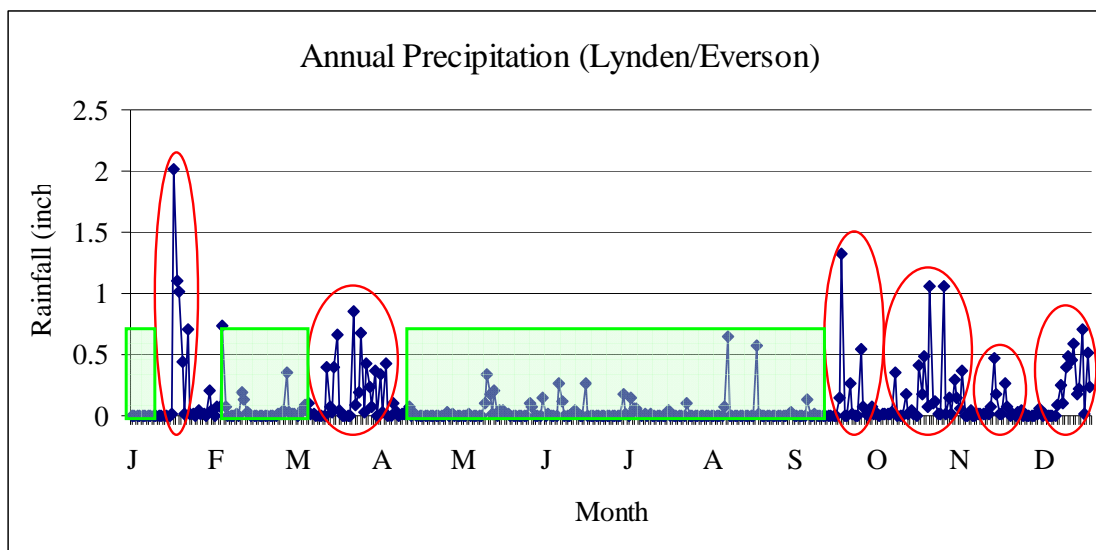


Figure 1. Typical annual precipitation events (frequency and rainfall amount) for Whatcom County. The red circles highlight the times of when we experience significant rainfall events. These are times when manure application is not appropriate. The green boxes highlight times when manure application would be favorable.

Temperature is also an important climatic variable to watch. Temperature is an indicator of estimated plant growth and animal feed intake, as well as nutrient losses from applied manure via ammonia volatilization (occurs when temperatures are high) and irrigation needs. The precipitation graph shown outlines the typical temperature pattern for a given year. Tracking temperature trends will help you better target manure applications to minimize ammonia losses

from fields (apply during cooler periods), and more accurately predict when you will need to apply irrigation water throughout the year.

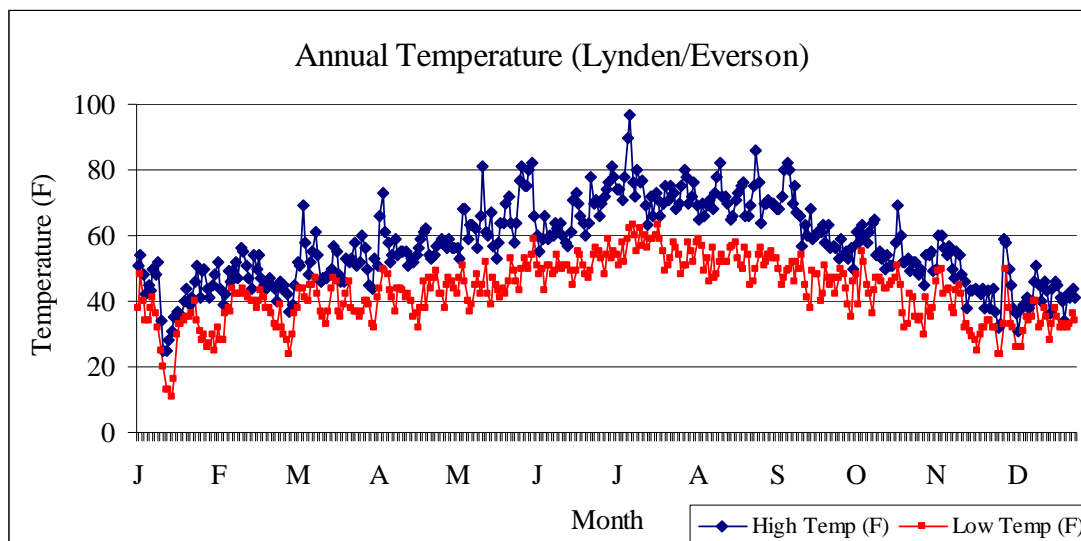


Figure 2. Typical annual temperature highs and lows for the Lynden/Everson area of Whatcom County.

Additional climatic data that is helpful to observe includes: wind direction, which is important to consider during manure application events to avoid blowing odorants to surrounding neighbors and manure droplets into surrounding ditches and water bodies; and wind speed, which if too high, will waste manure nutrients with wind dispersion and volatilization from the soil surface.

Refer to the following links for historical, predicted, and accurate up-to-date climatic data for your area: www.wunderground.com and www.probcast.com.

APPLICATION RISK MANAGEMENT WORKSHEET

In order to assess if manure application is appropriate at any given time, particularly during the wet season (October-April), you will need to fill out the Application Risk Management (ARM) Worksheet. This Worksheet is an Excel based application that can be accessed via WCDs website (www.whatcomcd.org), which will give you an idea of the level of risk associated with manure application based on current weather and field conditions, as well as the maximum volume of manure that should be applied to your field (see example worksheet attached).

The ARM Worksheet requires you to enter in current information about the weather, your field conditions, and your application practices. As you enter in your data, the worksheet will provide you with a risk analysis for each parameter, suggestions for proper management of that criteria if needed, and give you an overall risk rating for application on the particular field.

You will collect most of your information in the field then enter it into the spreadsheet to assess your level of risk and obtain guidelines for application. Information needed for each field includes; forecast, water table depth, soil moisture, field conditions, vegetative cover, application equipment, vegetative treatment strip condition, and setback distances. Also on our website, you will find the Field Assessment Worksheet that can be used in the field to collect data about each of your application fields.

APPLICATION RISK MANAGEMENT (ARM) SYSTEM

To evaluate the weather consult the following sites for accurate and reliable weather and forecast information for your specific area:

- *University of Washington Probability Forecast:* Predicted rain: www.probcast.com
- *Weather Underground:* Previous and current days rain - www.wunderground.com
- *Other accurate and valid site:* General weather - NOAA, AccuWeather, Weather.com

Once completed, you will be asked to fax (354-4678) or email (nembertson@whatcomcd.org) the Worksheet to WCD *prior* to application. This will ensure that you have gone through the analysis process correctly and also allows us to offer feedback when necessary. Alerting us of your intent to apply also enables us to properly address inquires and inform individuals that your application of manure is being done properly according to your Plan specifications.

*Please note, even if this worksheet says it is okay to apply, it cannot account for every variable or condition present on your field. It is your responsibility to use your best judgment and adhere to all application guidelines outlined in your plan. Always err on the side of caution to prevent unwanted discharges. Manure application practices that cause a discharge can lead to fines and/or necessitate a CAFO permit for your facility. **The Whatcom Conservation District and the NRCS assume no responsibility for inappropriate manure application. Proper application is ultimately your responsibility.***

WARNING: If you choose not to adhere to this agreement and apply manure without doing the necessary analysis, you may lose the privilege of using the ARM system and not be able to apply manure at all during the high risk or winter months (October-March).

Attached is an example of an ARM Worksheet. The worksheet shows the type of information that is entered into the spreadsheet and the types of recommendations and risk levels you may see.

If at anytime you have questions related to this Worksheet or the ARM system, please call the Whatcom Conservation District at (360) 354-2035. See our website for more details: www.whatcomcd.org.

Application Risk Management Worksheet Example

| Criteria | Answers | Risk Level |
|--|--------------------|--|
| Forecast | | |
| Rain in last two days? (<i>Yes or No</i>) | Yes | Caution: Be sure to check soil moisture and water holding capacity |
| Quantity (<i>total cumulative inches</i>) | 0.12 | Caution: Be sure to only apply at recommended rates based on soil water holding capacity. |
| Rain predicted in next 3 days? (<i>Yes or No</i>) | No | Criteria Acceptable: Continue Analysis |
| Quantity (<i>total cumulative inches</i>) | 0 | Criteria Acceptable: Continue Analysis |
| Rain predicted in next 5 days? (<i>Yes or No</i>) | Yes | Caution: Be sure to only apply at recommended rates based on soil water holding capacity. |
| Quantity (<i>total cumulative inches</i>) | 0.08 | Criteria Acceptable: Continue Analysis |
| Water Table | | |
| Depth to water (<i>inches</i>) | 18 | Caution: There is an elevated water table at this location. Watch for ponding in low spots, high soil moisture, and groundwater contamination. |
| Soil Moisture/ Available Water Holding Capacity | | |
| Soil Moisture (%) | 75 | Caution: You may be at risk for runoff. Check field conditions and the forecast, and apply only at or below recommended rates. |
| Field Conditions | | |
| Ponding (<i>Yes or No</i>) | Yes | Caution: Avoid ponded areas as appropriate or with 100' setbacks if they drain to waterways. |
| Flooding (<i>Yes or No</i>) | No | Criteria Acceptable: Continue Analysis |
| Frozen or snow covered ground (<i>Yes or No</i>) | No | Criteria Acceptable: Continue Analysis |
| Tiles discharging (<i>Yes or No</i>) | No | Criteria Acceptable: Continue Analysis |
| Field Vegetation Cover | | |
| Quality of cover (%) | 75 | Cover is dense. Ok to Apply: Continue Analysis |
| Height of Cover (<i>inches</i>) | 5 | Caution: Make sure vegetation is dense and able to properly filter runoff. |
| Application Equipment | | |
| Injector type (<i>Yes or No</i>) | No | - |
| Splash plate type (<i>Yes or No</i>) | Yes | Caution: Recommend that you apply so that manure is below the grass canopy and no mounding of manure occurs. Watch for compaction on your field. |
| Irrigation Sprinkler (<i>Yes or No</i>) | No | - |
| Vegetative Treatment and Setbacks | | |
| Field boarder or filter strip width (<i>feet</i>) | 40 | Criteria Acceptable: Continue Analysis |
| Field boarder or filter strip grass height (<i>in</i>) | 6 | Criteria Acceptable: Continue Analysis |
| Density of vegetation (%) | 75 | Criteria Acceptable: Continue Analysis |
| Manure setback used (<i>none or distance in ft</i>) | 40 | Caution: Setbacks must be at least 30 feet, or as specified in your plan and properly maintained prior to application. |
| Application Risk Analysis: | MEDIUM RISK | You may apply manure, but do so with caution. Follow all guidelines and recommendations in your Plan for proper winter application. |

CONTACT

If you have questions about the ARM system, or would like to participate in this progressive program, please contact Nichole Embertson at the Whatcom Conservation District for more details (360) 354-2035, nembertson@whatcomcd.org.