

Manual of Best Management Practices



For Maine Agriculture

**Maine Department of Agriculture, Food & Rural Resources
Division of Animal Health & Industry
January 2007**

Best Management Practices for Maine Agriculture

Acknowledgements

This *Manual of Best Management Practices for Maine Agriculture*, published in January 2007, is the first comprehensive compilation of agriculture-related best management practices ever published in the State of Maine. It is a work that has been in progress for many years, and has reached completion through the efforts of many individuals. These individuals either have written text for the *Manual* and/or contributed lists of potential best management practices for the *Manual*, or have reviewed its contents for clarity and technical accuracy. We acknowledge their contributions below:

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Best Management Practices for Maine Agriculture

I. *Introduction*

1. Purpose of the Manual

The ***Manual of Best Management Practices for Maine Agriculture*** has been developed as a resource for the Agriculture Compliance Program of the Maine Department of Agriculture, Food & Rural Resources (hereinafter "Department of Agriculture"). Maine statutes, 17 MRSA §2805, commonly known as Maine's "Right-To-Farm" Law, 17 MRSA §2701-B, known as the "Manure Handling Law", and Title 7 Chapter 747, the Nutrient Management Law, establish and give authority to the Agriculture Compliance Program, and require a farm or farm operation to conform to and adopt "best management practices". These statutes give the commissioner of the Department of Agriculture the authority to determine whether a farm or farm operation is in conformance with best management practices, and require the Department of Agriculture to promulgate rules to interpret and implement these laws. Although investigations under these laws are initiated by complaints from the public, another statute, 7 MRSA §17, gives the Commissioner of Agriculture authority to investigate water quality concerns related to manure involving any farm operation, without having received a complaint. Such investigations, and any subsequent development of best management practices, are conducted under the Agriculture Compliance Program Rules referred to above using the same procedures.

This manual provides a guide for making a determination whether a farm or farm operation is conforming to or has adopted best management practices. It may be used by the department, in conjunction with other sources of information, for making such a determination. It also is available to farms or farm operations, or anyone consulting or advising a farm or farm operation, as a guide for getting a farm to conform to and/or adopt best management practices. Likewise it may serve as a guide to anyone else involved in addressing complaints that arise under the statutes listed above.

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Section III of the manual is a collection of practices that have been determined to meet environmental goals and commodity production goals that apply to a wide variety of agricultural issues in the State of Maine; these are termed “best management practices” (BMPs). The BMPs listed in the manual provide guidance and a basis for the development of “site-specific best management practices” for farms in Maine. Since each farm has a unique combination of site conditions and farming practices, and since several BMPs often could be effective for addressing a specific agricultural issue, the BMPs listed in the manual should be used as a menu from which appropriate site-specific BMPs are selected. The user of this Manual must clearly understand, however, that, although the BMPs listed in this Manual are a partial collection of “standard” or “conventional” BMPs, there are other valid procedures, also BMPs that may be utilized in some situations, but are not listed here. These omissions do not necessarily negate the potential effectiveness of such practices (BMPs) that may be employed in a specific situation. A person developing BMPs must have the appropriate training and experience to investigate agriculture-related problems, evaluate site conditions, and consider alternatives for addressing the agricultural issue(s) present. Development of actual site-specific BMPs often requires that people with the appropriate training and experience exercise their best professional judgment when selecting BMPs, or combinations of BMPs, after the investigation and evaluation of an agriculture-related problem. The BMPs contained in this manual may augment and guide that professional judgment but are not substitutes for it.

This manual has been compiled as a resource for people with professional training and expertise in agriculture, such as staff of the Maine Department of Agriculture, Food & Rural Resources, the University of Maine Cooperative Extension, the USDA Natural Resources Conservation Service (NRCS) and consultants working with or advising farms on farm management issues. This manual is not intended to be an educational document or a “how-to” manual for farming in Maine; it is a reference manual that may help in locating educational material such as “how to” descriptions and similar information. It contains general descriptions of BMPs sufficient to identify its utility in addressing

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particular agriculture-related problems, and essentially is an annotated list of known BMPs that may pertain to agriculture-related problems that occur on Maine farms.

The descriptions of BMPs contained in this manual are a starting point. Details of how to implement a given BMP, the scientific basis for the BMP, or any limitations or cautions in the use of the BMP, may be found in the material referenced with each BMP.

2. History of Development of BMPs for Agriculture in Maine

Following the 1981 passage of the Right-To-Farm Law, the Department promulgated Rule 01-001, Chapter 10: *Definition of Generally Accepted Agricultural Practices*. This rule stated that an agricultural practice is deemed a "generally accepted agricultural practice" if it meets two general tests. The first is that it must be consistent with current published rules, regulations and guidelines of state agencies, federal agencies, recognized agricultural organizations, or agricultural extension services. The second is that it must be "essential" to one or more aspects of the operation of the farm such as its "economic viability," "the successful production ...of commodities," "disposition of ...waste," etc.

This rule has proven over time to be too broad and general to serve as an effective guide for administering the agriculture compliance program. In practice, department personnel and others involved in the investigation and resolution of complaints have come to rely on a wide range of published and unpublished BMPs derived from many sources, and often pulled together on an as-needed basis. Furthermore, the term "generally accepted agricultural practices" has become obsolete. The focus, when selecting an agricultural practice to address agriculture-related problems, must not be whether that practice has been generally accepted, but rather whether that practice is the best practice for the circumstances of the particular situation. The more specific and more relevant term "best management practices" is used instead because "BMP" more accurately reflects the criteria for selecting a practice or set of practices. A BMP, or a set of BMPs, will be selected not only because it is the best available technology, but also because it makes both economic and environmental sense by providing the most benefit for the least cost.

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While Rule 01-001, Chapter 10 seems to permit and even require that the Department of Agriculture reference a multitude of published sources when making a determination about a farm operation's conformance to BMPs, the law implies that BMPs should be adopted by rule. The department has adopted several specific rules that may be considered BMPs for certain agriculture issues such as Disposal of Animal Carcasses (Rule 01-001, Chapter 211), Disposal of Cull Potato Piles (Rule 01-001, Chapter 600), and Nutrient Management (Rule 01-001, Chapter 565). However, there are no rules in place that are comprehensive enough to serve as an effective guide to best management practices for the myriad of agriculture-related problems that arise under these pertinent statutes.

Probably the most complete agricultural best management practices document produced in the State of Maine to date is the October 1991 report of the Non-Point Source Agricultural Task Force entitled *Strategy for Managing Nonpoint Source Pollution from Agricultural Sources and Best Management System Guidelines* (hereinafter "NPS Report"). That report is one of several documents containing BMPs that the department may refer to when administering the agriculture compliance program. The NPS Report has not been adopted as a rule and therefore does not have the force of law. It does, however, serve as a guide when the department makes a determination as to whether a farm or farm operation has conformed to or adopted BMPs. It also is used as a resource or a guide when developing site specific BMPs. Some of the information in this manual is derived from this NPS Report.

In June 1999, the department compiled a list of about 130 BMPs organized by category of agricultural issue. The goal in developing this list was to formally adopt, by rulemaking process, the BMPs contained in the list. Although that list was not developed into a rule, it does serve as a source of much of the information contained in this manual. That list has been supplemented and revised for this manual and the descriptions of the BMPs have been expanded.

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3. Continued Development of BMPs

The *Manual of Best Management Practices for Maine Agriculture* is not a static document. The process of developing best management practices has evolved over time as new research proceeds and agricultural knowledge is expanded. This on-going process will continue as new technologies and new management techniques are constantly being developed, tested and disseminated. Numerous BMPs in this manual were not included in the 1991 NPS Report because they were not known techniques or were not recognized as effective techniques. Likewise the BMPs included in this manual may be replaced, updated or refined over time. Therefore, even if a BMP may not appear in this manual it does not necessarily mean that it does not have some application in certain circumstances. Therefore, consultation with a qualified expert is required when developing BMPs.

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II. *Explanation of General BMPs and Site Specific BMPs*

A. Definition of BMPs

The following definition of "BMP" was adopted for the 1991 NPS Report and still is applicable for Maine agriculture. It is based on practicality, economics, efficiency, and a cost/benefit comparison:

A Best Management Practice is a method or practice which, when installed or used, is consistent with efficient, practical, technically and environmentally sound animal or crop production practices. BMPs are those practices best suited to preventing, reducing, or correcting agriculture-related problems.

(NPS report, October 1991)

It also is important to understand the meaning of the word "best" in "best management practices" as used in the above definition. "Best" in this case does not infer the absolute maximum water quality protection method, measure, or practice that has been developed. In this context, the term "best" refers to any method, measure, or practice that, when installed, will provide reasonably improved prevention, reduction, or correction of water pollution.

In actuality, some BMPs offer greater protection than others. Not surprisingly, the BMPs offering the greatest degree of protection may also cost the most in terms of dollars, effort, and/or time to implement and maintain. If the cost of implementing a management practice or technique is substantially greater than the benefit that may accrue from that practice then it is not the best choice for the situation.

Finally, BMPs for water quality are not necessarily BMPs for other purposes. In fact the BMPs for water quality might directly conflict with an equally, if not more important,

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BMP to the farmer that could impact animal health, soil productivity or overall financial viability of the farm operation.

B. Use of General BMPs

The BMPs listed in section III of this manual are best described as “general” BMPs. Together they form a menu from which one or more techniques or practices may be selected to address an agriculture-related problem in the most appropriate manner for the site and the issue. Rarely will the use of a single BMP for any land use activity be sufficient to adequately address agricultural-related problems. More often, several BMPs, individually selected to fit the unique characteristics of each site and farming operation, will be required.

The BMPs developed to address the specific situation and the unique characteristics of the land are referred to as site-specific BMPs. When used in combination to address an agriculture-related problem within the context of the entire farm operation these groups of BMPs are often referred to as best management systems. The EPA defines management systems as:

Economically- achievable measures for the control of the addition of pollutants from existing and new categories and classes of non-point sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available non-point source control practices, technologies, processes, siting criteria, operating methods, or other alternatives.

While farming operations have been considered potential “non-point sources” of pollution, recent changes in federal legislation define certain livestock operations, “concentrated animal feeding operations” (CAFOs), as potential “point sources” of pollution attributable to agriculture. This necessitates recognition of these entities as candidates for BMP adoption utilizing the approaches outlined in this manual, and may include adoption of nutrient management plans and/or specifically defined effluent

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limitations guidelines, as appropriate. Such changes further illustrate the on-going need for constructive thought during planning processes and for flexibility when evaluating specific agricultural situations.

Farming activities are quite diverse, as are the site conditions upon which farming activities are practiced. It would be impractical to develop the list of specifications that fit each unique set of site conditions and farming practices. Additionally, there occasionally are several equally suitable approaches to the same problem and, therefore, management systems are designed so there is considerable flexibility to determine *how* to best achieve the performance expectations.

C. Development of Site Specific BMPs

Implementation of agricultural BMPs, for the most part, affects existing activities, whereas most BMPs for other land use activities impact proposed uses. Most farmers are farming on a limited land base and may not be able to expand into new areas. BMPs that would unnecessarily reduce this land base or hinder farmers' existing operation may force those farmers out of business. Therefore the BMPs must be carefully developed and implemented on a site-specific basis to address each unique situation.

Best management practices that have the greatest cost/ benefit ratio should be adopted and implemented. In some instances it may be necessary to require best management practices that are relatively expensive. In situations where the required best management practice is very costly and the primary benefit may be for society, rather than for the farmer, which usually is the case, it is appropriate that some financial assistance be provided. In other instances, creative application of best management practices may actually resolve a problem and save a farm operation some money.

It is because of the myriad of potential agricultural-related problems, the uniqueness of site conditions, and the interconnectivity and complexity of farming operations that development of site-specific best management practices is approached systematically –

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that is, through the use of best management systems – and is both an art involving considerable professional judgment and a science based on sound research and site analysis.

The great diversity of site conditions, farming operations, crop selections, and farming practices must be considered when developing BMPs. To adequately address each unique set of conditions, not only for each farm, but also for each field or portion of the field, site-specific BMPs are required. Therefore the agricultural BMPs in section III refer to a partial listing of technical publications and organizations that can be consulted for further guidance. Some of these references are continually being updated thus updating the BMPs.

Lists of the general best management practices associated with various best management systems follow. These are to be used as a menu from which the appropriate best management practice can be chosen for application on a site-specific basis.

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III. *General BMPs for Maine Agriculture*

Following, is a list of BMPs arranged by categories based on the subject matter of the BMP. Each BMP is listed by title and contains a description of the BMP or a summary of the practice(s) it calls for, and references additional materials that can provide more detail about the use of the BMP and the science that supports the BMP. The list of references appears in section IV and each reference is numbered. The numbers listed in the “references” line for each BMP corresponds to the references that can be found in section IV. References are coded A, B or C, or in combinations thereof, and have the following meanings:

“A” references explain how a particular BMP is to be applied site specifically, or suggest ways of implementing the practice from an engineering or practical standpoint.

“B” references describe the basic science, research results or other activities, which support the practice.

“C” references offer a general description of a practice or situation which relates to a BMP for problem solving, but do not necessarily offer specifics about how to achieve a desired result.

Print versions of most reference materials are on file at the Maine Department of Agriculture and are available for copying and inspection. Most references are available on the Internet and have the web page link as part of the reference if the reference was available on line at the time this listing was assembled in 2005 - 2006.

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A. Erosion and Sedimentation Control

1. Contour Plowing

Plant crops across the predominant slope of the land, along the contour, to reduce the erosive force of runoff water. This BMP becomes more appropriate as the slope increases or the distance to a water-body decreases.

References: 25 AC; 99 AC; 255 ABC; 306 AC; 329 AC; 335 AC.

2. Interseed Row Crops

Plant a ground cover crop between the rows of the primary crop to protect the bare soil between rows.

References: 25 C; 45 AC; 49 C; 50 BC; 217 C; 223 B; 246 ABC; 277 AC; 317 AC.

3. Rotated Crops

Rotate crops that provide limited soil cover (row crops) with crops that provide high amounts of cover (hay or clover).

References: 45 AC; 99C; 213 AC; 218 BC; 219 C; 220 AC; 221 ABC; 238 ABC.

4. Buffer Strips

Install buffer strips next to surface waters that are in a position to receive runoff from crop fields.

References: 25 AC; 239 ABC; 240 ABC; 241 ABC; 258 C; 358 ABC; 361 AC; 375 ABC; 376 ABC.

5. Strip Crop

Plant row crops in strips along the contour on sloping fields, alternating with strips of plants that provide a high amount of cover and the potential to filter sediment out of runoff from the row crops.

References: 25 BC; 99AC; 242 ABC; 243 ABC; 376 BC.

6. Crop Residue

Leave as much residue from previous crop on the ground as possible to act as mulch.

References: 25 ABC; 58 ABC; 136 ABC; 207 ABC; 208 ABC; 243 ABC; 281 ABC; 336 ABC; 361 ABC.

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7. Vegetate Highly Erodible Areas

Areas that are particularly prone to excessive erosion should be vegetated to permanently protect the soil.

References: 25 ABC; 34 ABC; 240 ABC; 244 ABC; 245 ABC; 248 ABC; 304 AC; 361 ABC; 358 ABC.

8. Cover Crops

Plant cover crops to reduce erosion, protect water quality, improve soil, impede weed growth, and enhance nutrient moisture availability to subsequent crops.

References: 45 AC; 58 ABC; 215 BC; 216 ABC; 240 ABC; 244 ABC; 245 ABC; 260 ABC; 292 ABC; 304 AC; 337 B; 373 ABC.

9. Divert Surface Waters

Construct diversions for controlling surface runoff water. Divert flows away from farmsteads, eroding areas, or other sites, as necessary.

References: 247 ABC; 248 ABC; 250 ABC; 356 ABC; 358 ABC.

10. Stabilize Surface Water Diversion

Stabilize surface water diversion channels so that they will not erode and become a source of sediment.

Reference: 247 AC; 248 AC; 250 AC; 358 ABC

11. Sediment Basins

Construct sediment basins to trap and store waterborne sediment and debris that could enter and fill waterways, reservoirs or ditches, etc.

References: 99 AC; 250 ABC; 251 ABC; 351 C; 358 ABC.

12. Limit Livestock Access To Sediment Producing Areas

Limiting livestock access and allowing those areas to become re-vegetated can stabilize areas that have bare soil due to extensive livestock traffic and are therefore prone to erosion.

References: 241 ABC; 249 ABC; 252 ABC; 253 ABC; 294 AC; 295 AC; 315 AC; 362 AC.

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13. Limit And Stabilize Livestock Crossings of Streams

Direct livestock to one or more stable stream crossing areas to reduce soil disturbance in and adjacent to streams.

References: 2 ABC; 23 AC; 40 C; 99 C; 252 ABC; 253 ABC; 254 ABC; 315 AC; 362 AC.

14. Locate or Develop a Stable Stream Crossing For Farm Equipment

Farm equipment can cause erosion and sedimentation if stream crossings have not been stabilized with appropriate materials and methods.

References: 2 ABC; 209 ABC; 254 ABC.

Best Management Practices for Maine Agriculture

B. Manure Management

1. Determine Manure Application Rates

Base manure application rates on realistic yield goals to avoid over fertilizing. Keep accurate fertilizer and manure applications rates and yield records on a worksheet.

References: 1 ABC; 5 ABC; 6 A; 25 ABC; 55 ABC; 309 AC; 312 ABC; 317 AC; 323 ABC; 375 ABC; 376 BC; 382 BC; 383 AC; 384 ABC; 387 ABC.

2. Buffers or Setbacks

Establish site-specific manure spreading setbacks or buffers where and when appropriate.

References: 5 AC; 18 AC; 22 AC; 25 ABC; 40 AC; 55 ABC; 62 AC; 63 AC; 64 C; 258 C; 326 AC; 362 AC; 363 B; 375 ABC; 380 C; 387 ABC.

3. Manure Nutrient Value

Have manure analyzed to determine nutrient content.

References: 1 ABC; 5 ABC; 25 ABC; 29 AC; 30 C; 147 ABC; 330 C; 323 ABC; 376 C.; 383 AC; 384 ABC; 386 ABC; 387 ABC.

4. Apply Manure at Appropriate Rates

Calibrate manure application equipment to assure proper application rates.

References: 5 AC; 6 AC; 22 AC; 25 AC; 29 AC; 64 AC; 111 AC; 115 AC; 312 ABC; 324 C; 327 AC; 375 ABC; 376 ABC; 383AC; 386 ABC; 387 ABC.

5. Uniform Application

Apply manure uniformly over the entire area to be spread to avoid under and/or over fertilization.

References: 5 AC; 22 ABC; 25 ABC; 29 C; 157 ABC; 309 AC; 327 AC; 387 ABC.

6. Reduced or Non-Application Areas

In areas where organic matter additions are not desired or where bacteria may be a significant concern, other nutrient sources may be preferable to the spreading of manure or reduced manure application rates should be used.

References: 25 ABC; 60 AC; 156 AC; 258 C; 309 AC; 324 BC; 330 C; 362 AC; 363 C; 387 ABC.

Best Management Practices for Maine Agriculture

7. Timing Manure Applications

Manure spreading activities should be timed to coincide with crop uptake needs, particularly in areas where soils are highly permeable or where there is a highly sensitive resource concern located nearby.

References: 5 AC; 25 ABC; 55 AC; 60 AC; 64 AC; 324 C; 375 ABC; 376 C; 382 ABC; 384 ABC.

8. Incorporate Manure Applications

Where and when appropriate, manure applications should be incorporated (odor concerns, loss of N through volatilization).

References: 5 AC; 22 ABC; 55 AC; 64 AC; 68 C; 111 AC; 309 AC; 325 ABC.

9. Do Not Incorporate Manure

Manure should not be incorporated in inappropriate areas such as a stabilized hay field that is strongly sloping and is a highly erodible soil.

References: 64 AC; 118 BC.

10. Do not Apply Manure on Saturated Soils, Frozen or Snow-covered Fields or Drainage Swales

Base manure application rates on realistic yield goals to avoid over fertilizing. Keep accurate fertilizer and manure applications rates and yield records on a worksheet. Unless exempted by the Commissioner of the Maine Department of Agriculture, Food and Rural Resources, manure may not be spread between the dates of December 1 and March 15.

References: 5 AC; 6 AC; 22 ABC; 40 AC; 55 AC; 117 C; 156 AC; 157 ABC; 298 C; 320 C.

11. Store Manure Properly

Manure should be stored properly (on suitable field stacking sites or in properly designed storage facilities) when land application is not possible.

References: 3 BC; 5 ABC; 22 ABC; 29 AC; 40 C; 41 AC; 61 C; 67 C; 105 AC; 269 AC; 298 C; 309 AC; 312 ABC; 320 C; 362 AC; 376 ABC.

12. Stackable Manure

Manure should be a minimum of 18% by weight, dry matter for field stacking.

References: 5 AC; 22 AC; 29 AC; 314 C.

Best Management Practices for Maine Agriculture

13. Adequate Storage

Storage capacity should be available to store manure for the time that manure cannot or should not be field applied or otherwise utilized.

References: 3 BC; 22 ABC; 61 C; 69 AC; 226 AC; 309 AC; 312 AC; 314 C; 320 C; 330 C; 387 ABC.

14. Compost Manure

Composting manure is a method of storing manure and is a way to tie up nutrients so that they are not so readily lost through leaching and/or volatilization.

References: 17 AC; 18 AC; 19 C; 231 ABC; 309 AC; 314 AC; 320 C; 365 AC.

15. Crop Rotations

Plan crop rotations so that crops are included that can utilize residual nitrogen, where and when appropriate.

References: 45 ABC; 54 ABC; 212 C; 213 AC; 214 ABC; 216 AC; 220 AC; 222 ABC; 246 ABC; 267 AC; 317 AC.

16. Minimize Soil Erosion

If soil is eroding from a field where manure is applied, manure will be transported off-site.

References: 25 AC; 35 AC; 55 AC; 67 C; 238 ABC; 239 ABC; 242 ABC; 245 ABC; 246 ABC; 255 ABC; 279 AC; 324 C; 362 AC; 375 ABC; 387 ABC.

17. Pest Control

Proper pest control should be employed so that crop yields and nutrient uptake are maximized and neighborhood nuisances are limited.

References: 9 ABC; 14 ABC; 15 ABC; 52 AC; 317 AC.

18. Bedrock Outcrops

Avoid spreading over bedrock outcrops that may have fractures leading to groundwater aquifers.

References: 59 AC; 157 ABC; 158 AC; 338 ABC.

Best Management Practices for Maine Agriculture

19. Shallow To Bedrock Soils

Reduce application rates on shallow to bedrock soils, particularly if the spreading will be after crop harvest (row crops).

References: 41 AC; 59 AC; 63 C; 64 AC; 157 ABC; 324 C.

20. Barnyard and Feedlot Runoff

Divert clean water away from of barnyards and feedlots, including roof runoff from barns and feedlot facilities. Treat runoff from barnyards and feedlots by use of settling basins, manure pits or filter strips with level spreaders. Encourage sheet flow.

References: 64 AC; 67 C; 68 C; 71 C; 74 AC; 233 ABC; 240 ABC; 251 ABC; 258 C; 279 AC; 312 AC; 314 AC; 339 ABC; 362 AC; 375 ABC; 380 C; 387 ABC.

21. Water Body Access

Livestock access to water bodies should be controlled and limited.

References: 38 AC; 67 AC; 99 AC; 297 AC; 362 ABC.

22. Manure Concentrations

Manage barnyards, feedlots and pastures to control concentrations of manure.

References: 67 AC; 71 C; 240 ABC; 257 AC; 298 C; 313 AC; 330 C; 340 ABC; 362 AC; 387 ABC.

23. Cover Crop

Plant crop fields to a cover crop after harvest to tie up nutrients not utilized by the primary crop.

References: 48 ABC; 54 AC; 58 BC; 60 ABC; 260 ABC; 267 AC; 292 ABC; 317 AC; 373 ABC.

24. Soil Infiltrative Capacity

On fine textured soils, maintain good soil structure and do not compact so that manure related nutrients can infiltrate the soil rather than be lost in run off.

References: 66 ABC; 67 C; 68 C; 72 AC; 73 C; 118 C; 126 AC; 217 AC; 306 ABC; 309 AC; 321 C.

Best Management Practices for Maine Agriculture

C. Pest Management

The following BMPs are part of, or should be used in conjunction with, an Integrated Pest Management Plan (IPM).

1. Biological Controls

Utilize and encourage biological controls when and where appropriate.

References: 9 ABC; 20 ABC; 26 AC; 36 C; 43 AC; 249 ABC; 305 ABC; 317 AC; 332 C; 366 ABC.

2. Field location Selection

Where and when possible, select fields which are not conducive to the development of pathogens for a particular crop.

References: 89 C; 90 AC; 91 AC; 92 AC; 93 ABC; 94 C; 95 AC; 369 ABC; 370 ABC; 372 C

3. Disease Free Seed and Propagation Material

Select disease free seed and propagation material.

References: 17 ABC; 45 AC; 53 AC; 57 ABC; 317 ABC.

4. Crop Disease Resistance

When possible, plant disease resistant crops or select varieties that are more resistant to specific diseases than are other varieties.

References: 45 AC; 50 BC; 57 ABC; 82 ABC; 306 C; 317 AC; 343 AC.

5. Natural Pest Controls

Protect and encourage the growth of natural pest predators.

References: 17 ABC; 36 C; 43 AC; 51 AC; 56 AC; 58 AC; 249 ABC; 305 ABC; 317 AC; 332 C; 366 ABC.

6. Cultural Controls

Utilize management practices that discourage crop pests, such as crop rotation, cover crops, varying planting and harvest dates, mechanical controls, etc.

References: 18 C; 19 C; 34 ABC; 49 ABC; 50 ABC; 54 ABC; 55 C; 57 ABC; 99 C; 267 AC; 306 AC; 317 AC; 318 AC; 366 ABC.

Best Management Practices for Maine Agriculture

7. Pest Scouting

Determine when and where pest levels are high enough to warrant management actions by conducting field evaluations instead of applying treatments according to a calendar date.

References: 21 AC; 34 ABC; 49 ABC; 50 C; 51 AC; 82 ABC; 99 AC; 305 AC; 307 C; 366 ABC.

8. Manage Crops To Compete With Weeds

Proper crop management can be an effective tool in controlling competition by weeds. Healthy, vigorous crops can more effectively compete with weeds.

References: 33 AC; 34 AC; 37 AC; 49 AC; 56 AC; 99 C; 276 ABC; 307 AC; 317 AC; 318 AC; 341 ABC; 342 ABC.

9. Develop Pesticide Application Plan

Pesticide applications should be based upon a number of site-specific factors, including: crop needs; pest levels; well locations; soil type; soil depth; land slope; organic matter content of soils; water table depth; and soil texture.

References: 10 AC; 22 ABC; 25 BC; 27 ABC; 311 C; 359 AC.

10. Calibrate Pesticide Application Equipment

Under application can result in a lack of control of a pest while over application can be a threat to ground and/or surface water resources. State and federal regulations require proper application rates for specific crops and circumstances.

References: 8 AC; 10 A; 75 AC; 80 C; 82 AC; 86 AC; 99 C; 367 AC.

11. Read and Follow all Pesticide Label Directions & Material Safety Data Sheets

Federal and State laws require applicators to know how and when to apply a pesticide. All Material Safety Data Sheets (MSDS) should be read, understood and readily available. Pesticide labels are legal documents that must be followed.

References: 8 AC; 10 A; 27 ABC; 82 AC; 306 AC; 311 ABC.

12. Comply With All Federal and State Laws Regarding Pesticide Use

Federal and State laws have been established to protect human health and the environment.

References: 7 AC; 8 AC; 10 AC; 27 ABC; 44 AC; 49 AC; 80 AC; 82 AC; 151 C; 290 AC; 308 AC; 351 ABC.

Best Management Practices for Maine Agriculture

13. Become a Certified and Licensed Pesticide Applicator

Becoming a certified and licensed applicator or attending educational sessions for certification is a good way to become educated about pesticide use, and is a legal requirement for applications of restricted use pesticides.

References: 8 AC; 10 A; 13 AC; 79 AC; 282 AC; 291 AC.

14. Mix, Load and Apply Pesticides Properly

Using proper techniques and procedures will help protect surface and ground water resources, and is a legal requirement.

References: 8 C; 10 AC; 75 AC; 78 AC; 81 C; 99 C; 308 ABC; 311 AC.

15. Pesticide Storage

Pesticides should be stored in a safe location to minimize environmental risk and to protect the pesticides from degradation.

References: 7 AC; 10 AC; 12 AC; 76 C; 82 AC; 155 ABC; 283 AC; 308 AC.

16. Pesticide Container Disposal

Observe pesticide container label and MSDS instructions for safe pesticide container disposal. Follow Maine's returnable pesticide container law. Rinse liquid pesticide containers a minimum of three times.

References: 10 AC; 76 AC; 77 AC; 99 ABC; 155 ABC; 285 C; 311 AC.

17. Spray Drift

Follow label guidelines and Maine's drift law regarding wind speeds and equipment requirements to avoid over-spraying or drift problems.

References: 10 ABC; 11 C; 21 AC; 32 AC; 80 AC; 82 AC; 150 AC; 359 AC.

18. Use Crop Rotation To Reduce Pesticide Application

Crop rotation can be used as a means of controlling pest numbers and types, and may reduce the need to apply the same pesticide on a field year after year.

References: 11 BC; 45 C; 85 AC; 155 AC; 216 AC; 359 BC.

19. Select Crops That Can Compete With Weeds

By selecting crops that can effectively compete with weeds, less pesticide will be needed to control weeds, reducing possible environmental impacts of the pesticides.

References: 99 C; 317 ABC; 292 C.

Best Management Practices for Maine Agriculture

20. Use Cover Crops To Control Weeds

Planting cover crops on fields where crops have been harvested can minimize the need for pesticide applications and reduce weed infestations.

References: 11 C; 45 C; 49 ABC; 54 ABC; 99 C; 267 ABC; 292 ABC; 304 ABC; 317 AC 318 ABC; 373 ABC.

21. Utilize Mechanical Weed Control

Use mechanical weed control such as row cultivation and rotary hoeing whenever possible to minimize the need for chemical weed control.

References: 45 AC; 83 AC; 84 AC; 87 AC; 99C; 267 AC; 317 ABC; 318 ABC; 359 AC.

22. Consider Field Characteristics To Determine Application Levels

Pesticide application levels should take into consideration individual field characteristics such as slope, soil texture, soil permeability, soil depth to bedrock, soil drainage, buffer type and width and setback features. Always consult the pesticide label for guidance.

References: 11 C; 27 AC; 41 ABC; 119 C; 122 ABC; 141 AC.

23. Chemigate Properly

Follow state and federal regulations when using chemigation to minimize drift, over spray, well contamination and impacts upon surface and ground waters.

References: 11 C; 27 AC; 96 AC; 97 AC; 98 C; 141 AC; 311 C.

24. Pesticide Application Techniques

When determining the pesticide application technique to use on a field, consider the specific characteristics of each field and the characteristics of the pesticide. For example, aerial spraying of a field with areas of exposed bedrock may not be appropriate for a pesticide that is highly leachable and persistent whereas aerial spraying may be appropriate where the site-specific conditions are different.

References: 10 ABC; 11 ABC; 22 ABC; 32 AC; 141 AC.

25. Weather Conditions

Avoid pesticide applications prior to a heavy rainfall during which leaching or runoff of the pesticide may occur. This potentially will result in contamination of surface and/or groundwater, and also may remove the pesticide from the crop field, negating its intended purpose. In contrast, some pesticides require light rainfall for activation.

References: 11 C; 120 AC; 122 AC; 123 AC.

Best Management Practices for Maine Agriculture

D. Nutrient Management

1. Nutrient Application Levels

Nutrients should be applied at a level needed to grow the intended crop, taking into consideration typical losses (leaching, volatilization, competition from microbes and weeds, and sequestration by soil particles).

References: 1 ABC; 69 AC; 70 C; 99 AC; 306 AC; 307 AC; 312 ABC; 314 AC; 317 ABC; 318 AC; 326 AC; 288 ABC; 375 ABC; 377 ABC; 383 BC; 385 ABC; 387 ABC.

2. Uniformity of Nutrient Application

Nutrients should be applied uniformly on a field unless a site-specific evaluation (or varied cropping practice) has determined that sections of a field need higher (or lower) rates of application than others.

References: 5 AC; 99 ABC; 127 ABC; 257 AC; 289 AC; 306 AC; 317 ABC; 318 AC.

3. Background Nutrient Levels

Utilize soil tests to determine background levels of P, K, Ca, Mg, other pertinent nutrients and pH so that appropriate application rates can be determined.

References: 1 ABC; 22 ABC; 45 AC; 115 AC; 116 AC; 129 AC; 157 AC; 266 ABC; 288 C; 306 AC; 307 AC; 317 AC; 324 C; 326 C; 375 ABC; 385 ABC.

4. Background Organic Matter Content Levels

Determine the nitrogen application rate needed for a crop by evaluating soil organic matter levels obtained from current soil tests.

References: 1 ABC; 22 ABC; 45 AC; 111 AC; 157 AC; 267 AC; 306 AC; 317 AC; 377 BC.

5. Soil Amendment Nutrient Levels

Test manure or other soil amendments to determine nutrient content and the level of supplemental nutrient applications needed.

References: 1 ABC; 22 ABC; 69 ABC; 115 AC; 157 AC; 256 C; 307 C; 312 AC; 314 AC; 326 C; 307 C; 327 AC; 375 ABC; 377 C; 382 BCV

Best Management Practices for Maine Agriculture

6. Determine Yield

Decide crop yield goals in order to accurately determine nutrient application levels.

References: 1 ABC; 22 ABC; 128 C; 129 ABC; 130 AC; 131 AC; 314 AC; 317 C; 326 C; 377 C; 382 BC.

7. Split Fertilizer Applications

Depending on the site, fertilizer type and crop, using split fertilizer applications can result in greater uptake by a crop and reduced nutrient loss to the environment.

References: 1 ABC; 25 ABC; 39 AC; 99 C; 256 AC; 257 C; 377 BC.

8. Fertilizer Release Rate

Adverse environmental impacts may be reduced by selecting a fertilizer with a specific release rate (depending upon crop, site characteristics and how often a fertilizer is to be applied).

References: 1 ABC; 5 ABC; 19 B; 153 C; 154 AC; 317 C; 387 ABC.

9. Soil Characteristics

Do not apply nutrients over exposed bedrock. Use several, smaller applications on shallow to bedrock or highly permeable soils and do not apply leachable nutrients when crops are absent or dormant on these soil types. Do not apply nutrients to poorly drained soils or when the water table is close to the soil surface.

References: 16 AC; 41 AC; 64 AC; 157 AC.

10. Calibrate Nutrient Application Equipment

Proper calibration of nutrient application equipment is necessary to guard against over or under application.

References: 16 AC; 150 AC.

11. Accurate Records

Keep accurate crop yield, soil amendment and nutrient application levels to assist in proper nutrient management planning.

References: 5 AC; 146 AC; 147 C; 150 AC; 152 AC; 309 AC; 326 AC; 327AC; 387 ABC.

Best Management Practices for Maine Agriculture

12. Irrigation

Balance irrigation applications with crop needs to reduce potential leaching or surface runoff losses of nutrients.

References: 16 C; 45 AC; 132 AC; 133 AC; 268 AC; 310 AC; 312 ABC; 314 AC; 318 AC 343 AC.

13. Crop Rotations

Residual and/or excess nutrients can be effectively utilized by diversifying crop rotations.

References: 16 AC; 99 C; 213 AC; 214 AC; 267 ABC; 317 AC.

14. Cover Crops

Cover crops can effectively tie up available nutrients and provide organic matter to the soil for the next cropping season.

References: 54 AC; 99 C; 159 C; 214 AC; 215 ABC; 216 AC; 260 ABC; 292 AC; 317 AC; 343 ABC.

15. Fertigation

Incorporate fertilizers into irrigation systems only when there is need for the nutrients by the crop and then supply only the necessary amounts of nutrients to the crop.

References: 5 AC; 45 C; 96 AC; 97 C; 170 C; 318 AC; 343 AC; 382 C.

16. Plant Tissue Testing

Plant tissue testing is an effective method of determining soil macronutrient levels and availability. Stunted crops do not use nutrients at the same rate as healthy crops and therefore may leave excessive levels of nutrients in the soil that may be transported to surface or groundwater.

References: 34 AC; 129 C; 130 ABC; 284 AC; 343 AC; 345 ABC; 377 C; 385 ABC.

17. Leachable Nutrients

Applying nutrients, such as nitrogen, in a form that is readily leachable should be based upon site conditions and crop needs. Where leaching potential is high and off site impact is a major concern, leachable nutrients should be applied when crop uptake is expected to be high. Fall applications should be avoided or a less leachable form of the nutrient should be used.

References: 16 AC; 17 AC; 39 AC; 258 AC; 310 AC; 377 BC; 382 BC; 387 ABC.

Best Management Practices for Maine Agriculture

18. Avoid Applications On Frozen, Saturated or Snow Covered Soil

If the soil is frozen, saturated or snow-covered, the likelihood that nutrients will be transported off-site in surface runoff is high, unless the site is nearly level and/or has been modified to contain and treat runoff. Unless specifically exempted, manure applications are illegal during the period of December 1 to March 15.

References: 6 AC; 60 C; 117 C; 156 AC; 157 ABC; 298 C; 320 C; 346 AC.

19. Soil Erosion

Minimize soil erosion to reduce the loss of nutrients with runoff water. This is particularly true for nutrients such as phosphorous, which are readily attached to soil particles.

References: 99 AC; 156 AC; 318 AC; 320 C; 361 AC; 362 AC; 387 ABC.

20. Buffer Strips

Buffer strips act as filters to collect and treat runoff waters, removing both sediments and nutrients.

References: 25 ABC; 99 AC; 239 AC; 240 ABC; 391 AC.

21. Organic Matter Content of Soils

By increasing or maintaining the organic matter content of soils to 5%-10%, the cation exchange capacity (CEC) of soils will improve. Increasing the CEC allows the soil to retain, and enables plants to utilize, more nutrients. Organic matter promotes good soil structure, which improves soil permeability thereby decreasing runoff of nutrients. High organic matter content also helps the soil to retain moisture, decreasing the need for irrigation, and promoting a more vigorous crop in dry years, even without irrigation.

References: 1 ABC; 41 BC; 64 C; 124 AC; 159 C.

22. Compost Excess or Spoiled Crops

Compost, re-cycle or utilize organic materials in an environmentally sound manner to minimize odors, vermin attraction, disease transmission or run-off.

References: 17 ABC; 18 ABC; 45 C; 365 AC

Best Management Practices for Maine Agriculture

E. Irrigation Management

1. Irrigating from Streams and Rivers

When irrigating from a small stream or river, water should not be drawn down below a level that could harm aquatic organisms.

References: 45 C; 132 AC; 268 AC.

Best Management Practices for Maine Agriculture

F. Livestock Management

1. Housing Facilities

Utilize appropriate housing for optimal productivity and health of various species.

References: 108 AC; 235 ABC; 237 ABC; 279 ABC; 301 ABC; 302 ABC; 316 ABC; 319 ABC; 320 ABC; 380 C.

2. Waste Management Structures

Utilize appropriate containment structures in terms of capacity, siting and construction method for personnel safety and environmental protection.

References: 22 ABC; 226 AC; 279 ABC; 298 C; 309 ABC; 312 ABC; 320 ABC; 363 C; 374 C.

3. Environmental Factors

Provide appropriate facilities and environment for optimal livestock productivity and health.

References: 235 ABC; 236 ABC; 274 ABC; 275 ABC; 297 AC; 299 ABC; 301 ABC; 319 ABC; 320 ABC; 333 ABC; 334 ABC; 374 C; 379 C; 380 C; 381 AC.

4. Livestock Fencing

Construct species-specific fencing for livestock and predator control, and for environmental protection.

References: 294 ABC; 295 ABC; 296 ABC; 315 ABC.

5. Pasture/Forage Crop Management

Manage crops for optimal productivity, nutritional value and environmental protection.

References: 37 ABC; 183 ABC; 184 ABC; 185 ABC; 187 ABC; 188 ABC; 189 ABC; 190 AC; 191 AC; 192 AC; 193 AC; 194 AC; 195 ABC; 196 ABC; 197 ABC; 198 AC; 205 AC 306 ABC; 307 ABC; 360 AC.

Best Management Practices for Maine Agriculture

G. Odor Control

1. Manure Storage Structures

Locate new manure storage structures as far as practical from neighboring residences.

References: 5 AC; 22 ABC; 63 AC; 100 C; 279 AC; 287 ABC; 298 AC; 387 ABC; 389ABC.

2. Coordinate Manure Applications With Neighbors

When and where appropriate, notify neighbors of intent to spread manure and adjust schedule to avoid conflict with neighbors' outdoor activities.

References: 5 AC; 100 AC; 110 AC; 113 C; 287 ABC; 309 C; 313 AC; 387 ABC.

3. Cover Field Stacked Manure

When manure is to be stacked in close proximity to houses or other occupied buildings, when and where odor may be offensive, cover manure pile with lime, sawdust, plastic or some other odor barrier.

References: 5 AC; 67 C; 105 C; 112 AC; 287 ABC; 314 AC; 322 C.

4. Incorporate Manure

Incorporate manure applications on row crop ground as soon as possible after application.

References: 5 C; 68 C; 70 C; 110 C; 117 C; 136 AC; 287 ABC; 298 C; 322 ABC; 330 ABC.

5. Sod Crop Applications

When possible, apply manure to sod crops just before a light or moderate rain is predicted.

References: 5 C; 117 ABC; 287 ABC.

6. Weather Conditions

When possible, spread manure on cool moist days.

References: 110 AC; 111 AC; 113 C; 287 ABC; 298 AC; 322 ABC; 389 ABC.

Best Management Practices for Maine Agriculture

7. Injection

When and where possible, and when appropriate, apply liquid manure by sub-surface injection.

References: 99 BC; 110 AC; 111 AC; 113 BC; 117 ABC; 136 AC; 287 ABC; 313 C; 322 ABC.

8. Spreading Activity

Concentrate manure spreading activities so that it will be completed shortly after being started rather than spreading small amounts each day over a long period of time.

References: 5 AC; 110 AC; 134 C; 136 AC; 137 AC; 298 C.

9. Spreading Rates

Do not exceed spreading above the recommended rate.

References: 1 ABC; 5 AC; 6 AC; 25 ABC; 64 AC; 136 ABC; 389 ABC.

10. Minimize Spillage

Do not overload trucks or spreaders. Secure equipment so that spillage is minimized, particularly in areas that are not to be spread upon.

References: 29 AC; 100 C; 116 AC; 157 ABC; 287 ABC; 309C.

11. Even Application

Apply manure as evenly as possible.

References: 61 C; 111 AC; 166 AC; 287 ABC; 309 C; 320 C.

12. Solid Manure

Keep solid manure as dry as possible.

References: 67 C; 104 C; 105 C; 108 C; 287 ABC.

13. Composting

Compost manure when and where appropriate.

References: 17 ABC; 18 ABC; 53 AC; 115 C; 298 ABC; 309 C; 313 C; 314 AC; 320 C; 322 C; 365 AC.

Best Management Practices for Maine Agriculture

H. Insect Management

1. Proper Sanitation

Keep all animal and barnyard areas as clean and dry as possible to minimize insect breeding sites.

References: 20 ABC; 28 AC; 42 ABC; 43 AC; 50 C; 108 C; 298 C; 362 AC.

2. Spilled Feed and Spoil Piles

Clean up spilled feed and spoil piles as soon as possible.

References: 20 ABC; 28 AC; 100 C; 101 C; 136 C.

3. Dead Animals

Properly dispose of animal carcasses immediately upon discovery.

References: 18 ABC; 100 C; 107 C; 114 AC; 178 AC; 179 AC; 287 ABC; 314 AC; 330 C; 388 ABC.

4. Feed Bunks

Maintain clean feed bunks.

References: 20 ABC; 28 AC; 71 C; 136 C.

5. Waterers

Inspect for and repair leaks frequently. In poultry houses, spread compost, dry shavings or lime to absorb spilled water.

References: 20 ABC; 28 AC; 101 C; 103 C; 105 C; 108 C.

6. Animal Diet

Use proper animal feed to keep manure as dry as possible.

References: 137 ABC; 330 ABC.

7. Ventilation

Use proper ventilation in poultry houses to keep manure as dry as possible.

References: 101 C; 106 ABC; 108 AC; 143 C.

Best Management Practices for Maine Agriculture

8. Poultry House Manure Removal

Clean deep pit poultry houses as often as practical to minimize build up of flies, preferably during cold weather to minimize dispersal of flies.

References: 43 C; 103 C; 108 AC; 314 C.

9. Empty Poultry Houses

Remove manure from poultry houses within six (6) months after poultry have been taken away.

References: 43 AC; 101 C; 103 C; 170 C.

10. Droppings Boards

Clean droppings boards in poultry houses at least twice a day.

References: 109 C.

11. Natural Insect Enemies

Encourage natural insect predators by using partial cleanout of manure, or by releasing natural enemies into the manure.

References: 26 AC; 43 AC; 101 AC; 138 AC.

12. Utilize Physical Fly Removal Methods

Use traps or other devices to reduce fly populations in and around animal buildings.

References: 20 ABC; 28 C; 43 AC; 101 AC.

13. Use Pesticides Sparingly

Use pesticides to reduce insect populations as a last resort.

References: 20 ABC; 42 ABC; 49 ABC; 99 AC.

14. Use Pesticides Properly

Follow label and Cooperative Extension recommendations when applying pesticides to control insect populations.

References: 8 AC; 42 AC; 49 ABC; 141 ABC; 144 AC.

15. Use Proper Pesticide Application Techniques

Use proper protective equipment and calibrate all application equipment.

References: 10 AC; 99 AC; 121 C; 135 AC; 150 C; 351 ABC; 359 AC.

Best Management Practices for Maine Agriculture

16. Pesticide Feed Additives

Use insecticidal feed additives only when necessary and in accordance with label and Cooperative Extension recommendations.

References: 138 AC; 139 AC; 140 AC; 141 ABC.

17. Cover Manure Piles

Use plastic or other appropriate materials to cover manure piles and prevent insect ingress or egress.

References: 105 C; 112 C; 157 ABC; 313 C; 320 C.

18. Compost

Composting can be used as a means of controlling insect populations in manure.

References: 18 C; 61 AC; 145 C; 159 C; 365 AC.

19. Transporting Manure

Control insect infestations in manure before transporting it to a stacking or spreading site.

References: 28 C; 29 AC; 42 ABC; 43 ABC; 139 AC.

20. Controlling Barnyard Exercise Lots

Keep clean by periodically sweeping and cleaning to control insects.

References: 20 ABC; 28 C; 42 AC; 340 ABC; 362 AC.

Best Management Practices for Maine Agriculture

I. Noise Control

1. Irrigation Pumps

Operate pumps when they will not create offensive noise levels to neighbors. Install noise buffers where and when necessary.

References: 161 AC; 211 C; 213 C; 310 AC.

2. Farm Equipment

As much as practical, operate farm machinery when it will least likely result in noise levels that may be offensive to neighbors. Use appropriate mufflers and other noise-reducing features when operating equipment within hearing distance from neighbors.

References: 107 C; 167 AC; 212 C; 213 C; 214 C.

Best Management Practices for Maine Agriculture

J. Farm Management

1. Animal Carcass Disposal

Follow Chapter 211: Rules for the Disposal of Domestic Animals and Poultry.

References: 18 AC; 107 C; 114 AC; 178 AC; 179 AC; 328 AC; 330 AC; 388 ABC.

2. Cull Potato Disposal

Follow Chapter 600: Rules Regarding Disposal of Cull Potato Piles.

References: 17 ABC; 18 ABC; 19 BC; 31 ABC; 293 AC.

3. Equipment Exiting Farm Fields

When leaving farm fields with machinery, make the exit as clean as practical by preparing a gravel way or driving equipment over clean areas of the field to clean the tires of mud/manure before exiting.

References: 163 C; 165 AC; 209 AC; 309 C.

4. Watering Livestock

Limit livestock access to natural waterbodies or waterways for watering purposes so as to minimize sedimentation and/or deposition of animal wastes into the waterbody or waterway.

References: 4 AC; 23 AC; 38 AC; 99 AC; 171 AC; 294 AC; 295 AC; 315 AC; 381 AC.

5. Livestock Waterway Crossings

Funnel livestock to a single, stable crossing and complete the crossings as quickly as possible.

References: 2 C; 23 AC; 99 C; 252 ABC.

6. Insect and Disease Infestations

Properly dispose of any crop residue that may result in an insect or disease infestation. This includes infestations that may impact neighbors, but not affect the farmer who has the residue.

References: 18 AC; 19 BC; 45 AC; 53 AC; 258 C.

Best Management Practices for Maine Agriculture

7. Aesthetics

Maintain as neat and orderly an operation as possible when visible from a public way, particularly a heavily used public way, or when adjacent to a public place.

References: 61 AC; 162 C; 163 AC; 164 AC; 165 AC; 167 C; 169 AC; 272 ABC.

8. Vermin Control

Control vermin by maintaining as neat and clean an operation as possible. If additional vermin control is needed, consult Cooperative Extension or a licensed pest management professional for the control of particular vermin.

References: 18 AC; 20 ABC; 61 AC; 200 ABC.

9. Wild Animal Damage

Consult the local Animal Control Officer, Maine Department of Inland fisheries and Wildlife, or the U.S.D.A. – APHIS Wildlife Services.

References: 18 C; 45 AC; 172 BC; 173 C; 174 AC; 175 AC; 176 AC; 177 AC; 201 ABC; 269 AC; 294 AC; 295 AC; 315 AC.

10. Residual Usage

If a residual is to be used as a nutrient source or soil amendment, follow Maine Department of Environmental Protection, Agronomic Utilization of Residual Rules and Maine Department of Agriculture, Nutrient Management Rules.

References: 5 AC; 157 ABC; 207 ABC; 208 ABC; 210 AC.

11. Feed Storage

Produce and store forage crops in a manner that preserves optimal nutritional value for livestock and which minimizes run-off and vermin attraction.

References: 180 ABC; 181 AC; 182 AC; 183 AC; 184 AC; 185 ABC; 186 ABC; 187 ABC; 188 ABC; 189 ABC; 190 AC; 191 ABC; 192 ABC; 195 ABC; 196 ABC; 197 ABC; 198 AC; 199 C.

12. Milkroom Waste

Construct and maintain appropriate systems to minimize milkhouse effluent off-site deposition of nutrients and other potential contaminants.

References: 22 AC; 65 AC; 203 AC; 204 AC; 211 AC; 312 C; 313 AC.

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13. Silage Management

Produce and store forage crops in a manner that preserves optimal nutritional value for livestock, and which minimizes odors, leachate, and potential ground and surface water contamination.

References: 185 AC; 192 AC; 195 ABC; 196 ABD; 205 ABC; 278 ABC; 313 C.

14. Management of Spoiled or Excess Crops

Compost, re-cycle or utilize organic materials in an environmentally sound manner to minimize odors, vermin attraction, disease transmission or run-off.

References: 17 ABC; 18 ABC; 19 C; 31 AC; 157 ABC; 206 C.

15. Dust Control

Reduce dust and mold emissions from farmyard and livestock operations to enhance human health and reduce odor transmission to neighbors. Utilize respiratory protection with appropriate masks and filters when conditions warrant.

References: 17 AC; 46 AC; 49 C; 107 C; 202 ABC; 208 ABC; 245 ABC; 271 AC; 272 ABC; 287 C; 320 AC; 322 ABC; 330 C; 348 ABC; 349 ABC; 350 BC; 351 ABC; 352 C; 387 AC.

16. Financial Record Keeping

Keep appropriate business records to help insure viability of the farm business.

References: 148 AC; 149 AC.

17. Soil Health Management

Employ appropriate measures conducive to long-term soil productivity.

References: 1 ABC; 45 ABC; 47 ABC; 48 ABC; 66 ABC; 124 ABC; 157 ABC; 220 ABC; 221 ABC; 267 ABC; 304 ABC; 307 ABC; 373 ABC; 374 C; 378 BC.

18. Crop Production Guides

A compilation of excellent vegetable, fruit and greenhouse crop production guides outlining culture and management of various crops.

References: 14 ABC; 15 ABC; 34 ABC; 45 ABC; 57 ABC; 82 ABC; 317 ABC; 318 ABC; 343 ABC; 347 ABC; 353 ABC; 354 ABC; 355 ABC.

Best Management Practices for Maine Agriculture

IV. *List of References*

Print versions of most of the following reference materials are on file at the Maine Department of Agriculture and are available for copying and inspection. Most references are also available on the internet and have the web page link as part of the reference if the reference was available on line at the time this listing was assembled in 2005 - 2006.

The complete references are listed by reference number in ascending order in part A. The reference document titles are listed in alphabetical order followed by the reference number in part B. Part C lists the reference document titles alphabetically by BMP category along with the reference numbers.

A. References by Reference Number

1. **Soil Testing Handbook for Professionals in Agriculture, Nutrient and Residuals Management.** 3rd. Ed.
2. **Stream Bank Fencing.** Penn. State Extension Circular 397.
3. **Barn and Manure Storage Safety.** University of Maine Cooperative Extension Bulletin 2304.
4. **Watering Pumps for Livestock – Pasture Pump and Hydro Ram.** NRCS Field Office Technical Guide <http://efotg.nrcs.usda.gov>.
5. **Maine Nutrient Management Certification Training Manual, 1999.**
6. **Dairy Farm Nutrient Balancer Spreadsheet.** NRCS Field Office Technical Guide
<http://efotg.nrcs.usda.gov/treemenuFS.aspx?Fips=23013&MenuName=menuME.zip>.
7. **Maine Pesticide Control Act. Title 7,**
<http://janus.state.me.us/legis/statutes/7/title7sec601.html>.

Best Management Practices for Maine Agriculture

8. **Maine Board of Pesticides Control Website – Certification and Training.** www.maine.gov/agriculture/pesticides.
9. **Biological Control: A Guide to Natural Enemies in North America.** NRAES, Cornell University, www.nraes.cornell.edu/emt/biocontrol/.
10. **Pesticide Education Manual, “Core Manual”.** University of Maine Cooperative Extension, www.umext.maine.edu.
11. **National Management Measures for the Control of Non-Point Pollution from Agriculture.** EPA Manual 841-B-03-004.
12. **Recommended Storage Practices for Pesticide Applications.** Maine Board of Pesticides Control, [ftp://ftp.state.me.us/pub/sos/cec/rcn/apa/01/026/026c020.doc](http://ftp.state.me.us/pub/sos/cec/rcn/apa/01/026/026c020.doc).
13. **Licensing Requirements for Pesticide Applicators in the State of Maine.** Maine Board of Pesticides Control, www.maine.gov/agriculture/pesticides
14. **New England Small Fruit Pest Management Guide.** University of Maine Cooperative Extension, www.umext.maine.edu.
15. **New England Greenhouse Floricultural Recommendations Management Guide for Insects, Diseases, Weeds and Growth Regulators.** University of Maine Cooperative Extension, www.umext.maine.edu.
16. **Nutrient Management: Crop Production and Water Quality.** NRAES 101, Cornell University, http://www.umassextension.org/Merchant2/merchant.mv?Screen=PROD&Product_Code=NS-101P&Category_Code=AEM&Product_Count=16.
17. **On Farm Composting Handbook.** NRAES 54, Cornell University, <http://www.nraes.org/>.
18. **Field Guide to On-Farm Composting.** NRAES 114, Cornell University, www.nraes.org.
19. **Science and Engineering of Composting: Design, Environmental, Microbiological and Utilization Aspects.** Hoitink & Keener, Editors, Ohio State University, ISBN 0-936645-15-6.
20. **Integrated Fly Management Around Confined Livestock.** (video) NRAES, Cornell University, <http://www.nysipm.cornell.edu/videos/flyvideo.html>.

Best Management Practices for Maine Agriculture

21. **Gempler's IPM Almanac, 1999-2000.** 1-800-382-8473, www.ipmalmanac.com.
22. **Agricultural Waste Management Field Handbook, Part 651.** NRCS, www.wcc.nrcs.usda.gov/awm/awmfh.html.
23. **Corridor Management for Pastureland Streams.** Pennsylvania Fish and Boat Commission, 814-359-5158, www.fish.state.pa.us.
24. **Fish Habitat Improvement for Trout Streams.** Pennsylvania Fish and Boat Commission, 814-359-5158, www.fish.state.pa.us.
25. **CORE4 Conservation Practices Reference Manual.** USDA, NRCS, (printed manual plus CD ROM available), <http://www.wsi.nrcs.usda.gov/products/buffers.html>.
26. **Biological Pest Controls from IPM Laboratories, Inc.** 315-497-2063, www.ipmlabs.com.
27. **WIN-PST (Windows Pesticide Screening Tool).** National Water and Climate Center, USDA, NRCS, www.wcc.nrcs.usda.gov/pestmgt/winpst.html.
28. **IPM for Fly Control in Maine Dairy Barns.** University of Maine Cooperative Extension Bulletin 5002, www.umext.Maine.edu.
29. **Manure Utilization Guidelines, February 1, 2001.** Maine Dept. of Agriculture, Food & Rural Resources, (Craig Leonard's BMP Manual).
30. **Manure: What is it Worth on your Farm?** University of Maine Cooperative Extension, Bulletin 2432, www.umext.maine.edu.
31. **Cull Potato Composting.** University of Maine Cooperative Extension Bulletin 2415, www.umext.maine.edu.
32. **Minimizing Off-Target Deposition of Pesticide Applications.** University of Maine Cooperative Extension Bulletin 2182, Fact Sheet 303, www.umext.maine.edu.
33. **Filling Bare Spots in Blueberry Fields.** University of Maine Cooperative Extension Bulletin 2057, Fact Sheet 221, www.umext.maine.edu.
34. **Wild Blueberry Grower's Guide.** University of Maine Cooperative Extension, www.umext.maine.edu.
35. **Mulching for Improved Plant Cover.** University of Maine Cooperative Extension, Bulletin 2239, Fact Sheet 228, www.umext.maine.edu.

Best Management Practices for Maine Agriculture

36. **Approaches to the Biological Control of Insects.** University of Maine Cooperative Extension, Bulletin 7144, www.umext.maine.edu.
37. **Selecting Forage Crops for your Farm.** University of Maine Cooperative Extension, Bulletin 2272, www.umext.maine.edu.
38. **Watering Systems for Livestock** University of Maine Cooperative Extension, Bulletin 7129, www.umext.maine.edu.
39. **Nitrogen Fertilizer Choices.** University of Maine Cooperative Extension, Bulletin 7097, www.umext.maine.edu.
40. **Guidelines for Horsekeeping in Maine.** University of Maine Cooperative Extension, Bulletin 1011, www.umext.maine.edu.
41. **Soil Survey of “X” County, Maine.** USDA, NRCS, (See local soil & water conservation district).
42. **Integrated Management of Flies in and Around Dairy and Livestock Barns.** Cornell Cooperative Extension Fact sheet, www.nysipm.cornell.edu/factsheets/dairy/barnflies/banflies.html.
43. **Control of Flies in and Around Poultry Houses.** Ohio State University, Poultry Pest Management Bulletin 853, http://ohioline.osu.edu/b853_1.html.
44. **USDA Pesticide Recordkeeping Requirements for Certified Private Applicators of Federal Restricted Use Pesticides.** USDA Agricultural Marketing Service, Pesticide Records Branch 8700 Centerville Road, Suite 200, Manassas, VA. 22110.
45. **Sustainable Vegetable Production from Start-Up to Market.** NRAES 104, Grubinger, University of Vermont, www.nraes.cornell.edu.
46. **Agricultural Respiratory Protective Equipment: Air-Purifying Respirators.** Colorado State University Extension, National Ag Safety Database (NASD), www.cdc.gov/nasd/docs/d000801-d000900/d000894/d000894.html.
47. **Soil Biology Primer.** Soil and Water Conservation Society, USDA, NRCS, www.swcs.org.
48. **Managing Cover Crops Profitably.** 2nd Ed., Handbook Series Book 3, Sustainable Agriculture Network, National Agricultural Library, Beltsville, MD. 20705-2315, www.sare.org.

Best Management Practices for Maine Agriculture

49. **IPM in Practice- Principles and Methods of Integrated Pest Management.** University of California, Agriculture and Natural Resources, Publication 3418, 800-994-8849. <http://anrcatalog.ucdavis.edu>.
50. **Integrated Pest Management – Current and Future Strategies.** Council for Agricultural Science and Technology (CAST), Task Force Report No. 140, June 2003, Ames, Iowa, www.cast-science.org.
51. **Green Methods Manual.** The Green Spot, Ltd., 93 Priest Road, Nottingham, NH 03290-6204, 603-942-8925, http://greenmethods.ghxonline.com/greenmethodsALT/gm_intropage.htm.
52. **Use of Cover Crops and Green Manures to Attract Beneficial Insects.** University of Connecticut Cooperative Extension Integrated Pest Management, www.hort.uconn.edu/IPM/general/htms/cvercrop.htm.
53. **Composts for Disease Suppression.** University of Connecticut Cooperative Extension Integrated Pest Management, www.hort.uconn.edu/IPM/general/htms/composts.htm.
54. **Contribution of Cover Crop Mulches to Weed Management.** University of Connecticut Cooperative Extension Integrated Pest Management, www.hort.uconn.edu/IPM/weeds/htms/cvrcrps.htm.
55. **Managing Manure Nutrients at Concentrated Animal Feeding Operations.** December, 2004, EPA-821-B-04-009, U. S. Environmental Protection Agency, Office of Water (4303T), 1200 Pennsylvania Ave., NW, Washington, DC 20460, 800-490-9198, <http://epa.gov/guide/cafo/>.
56. **Michigan Field Crop Pest Ecology and Management.** Michigan State University Extension Bulletin E-2704, January 2000, www.msue.msu.edu.
57. **Diseases and Pests of Vegetable Crops in Canada.** Entomological Society of Canada, 393 Winston Ave., Ottawa, Ontario, Canada K2A 1Y8, 613-725-2619.
58. **Michigan Field Crop Ecology.** Michigan State University Extension Bulletin E-2646, December 2000, www.canr.msu.edu/misanet/.
59. **Clean Water For Washington.** Washington State University Extension, Pub. EB 1717, <http://cru.cahe.wsu.edu/CEPublications/eb1717/eb1717.html>.
60. **You Can Reduce the Risks of Leaching.** Pro-Dairy – Northeast Dairy Business, October 2003.

Best Management Practices for Maine Agriculture

61. **Horse Stable Manure Management.** College of Agricultural Sciences, Agricultural Research and Cooperative Extension, Penn State University, www.pubs.cas.psu.edu/freepubs/pdfs/ubo35pdf.
62. **Adjustments to Fertilizer Recommendations.** Publication 811, Ontario Ministry of Food and Agriculture, <http://www.gov.on.ca/OMAFRA/english/crops/pub811/2manure.html>.
63. **Site Selection for Animal Housing and Waste Storage Facilities.** AEU 6, University of Minnesota, www.bae.umn.edu/extens/aeu/aeu6.html.
64. **Guidelines for Applying Manure to Cropland and Pasture in Wisconsin.** Publication 3392, [Http://cecommerce.uwex.edu/pdfs/A3392.pdf](http://cecommerce.uwex.edu/pdfs/A3392.pdf).
65. **Milking Center Effluent Treatment.** University of Nebraska, Worksheet #13, EC 98-756-S, <http://ianrpubs.un.edu/water/farm-a-syst/ec/56>.
66. **Soil Compaction: Causes, Effects & Control.** University of Minnesota Extension Service, Pub. FO-3115-S, www.extension.umn.edu.
67. **Manure Management in Small Farm Livestock Operations.** Oregon State University Extension Service, Pub. EM 8649, [Http://eesc.orst.edu/agcomwebfile/edmat/html/EM/EM8649/EM8649.html](http://eesc.orst.edu/agcomwebfile/edmat/html/EM/EM8649/EM8649.html).
68. **Manure Management Practices to Reduce Water Pollution.** Oregon State University Extension Service, Pub. FS 281, <http://eesc.orst.edu>.
69. **Reducing the Risk of Groundwater Contamination from Livestock Manure Management.** Oregon State University Extension Service, Pub. EM 8597, <http://eesc.orst.edu>.
70. **Capturing Land-Applied manure in the Root Zone.** Michigan State University Extension Service, Pub. 668, www.michigan.gov/mda.
71. **Reducing Contamination by Improving Livestock Holding Pen Management.** Texas State Soil & Water Conservation Board, <http://waterhome.brc.tamus.edu/texasyst/texasystworkbooks/printedb6031a.html>.
72. **Understanding and Managing Soil Compaction.** Iowa State University Extension, Pub. 190 1b, <http://www.extension.iastate.edu/Publications/PM1901G.pdf>.
73. **Ohio Livestock Manure and Wastewater Management Guide.** Ohio State University, Bulletin 604, http://ohioline.osu.edu/b604_16.html.

Best Management Practices for Maine Agriculture

74. **Best Environmental Management Practices for Open Feedlots.** Iowa State University, Pub. PM 1946, www.iowabeefcenter.org/content/PM1946.
75. **Calibration of Granular Applicators... for Mixed Fertilizer Applications.** University of Maine Cooperative Extension, Wild Blueberry Fact Sheet 234, Bulletin # 2434.
76. **Pesticide Storage and Disposal.** Maine Board of Pesticides Control Website, www.state.me.us/agriculture/pesticides.
77. **Pesticide Container Disposal and Storage.** Chapter 21, Maine Board of Pesticides Control Website, www.state.me.us/agriculture/pesticides.
78. **Standards for Water Quality Protection.** Chapter 29, Maine Board of Pesticides Control Website, www.state.me.us/agriculture/pesticides.
79. **Certification and Licensing Provisions/Private Applicators.** Chapter 32, Maine Board of Pesticides Control Website, www.state.me.us/agriculture/pesticides.
80. **Standards for Outdoor Application of Pesticides.** Chapter 22, Maine Board of Pesticides Control Website, www.state.me.us/agriculture/pesticides.
81. **Handling Pesticides Safely.** University of Maine Cooperative Extension, Bulletin 2354, www.umest.maine.edu.
82. **New England Apple Pest Management Guide.** University of Maine Cooperative Extension, <http://pmo.umest.maine.edu/apple>.
83. **Cultivation Tools for Mechanical Weed Control in Vegetables.** Cornell University, <http://www.hort.cornell.edu/bellinder/publications/CultTools1.pdf>.
84. **New Cultivation Tools for Mechanical Weed Control in Vegetables.** University of Connecticut, www.hort.uconn.edu/ipm/.
85. **Weed Control Guide for Ohio Field Crops.** Ohio State University, Bulletin 789, <http://ohioline.osu.edu/b789/pdf/01.pdf>.
86. **Weed Control Guide for Ohio Field Crops – Sprayer Calibration.** Ohio State University, Bulletin 789 <http://ohioline.osu.edu/b789/pdf/01.pdf>.
87. **Timing and Intensity of Cultivation and Effects on Weed Control in Sweet Corn.** University of Maine Cooperative Extension, http://www.umaine.edu/waterquality/Agriculture/int_cult_99.htm.

Best Management Practices for Maine Agriculture

88. **Vegetable Farmers and their Weed Control Machines.** (video) University of Vermont Center for Sustainable Agriculture, <http://www.uvm.edu/~susagctr>.
89. **Trichoderma for Control of Soil Pathogens.** University of Connecticut Cooperative Extension, www.hort.uconn.edu/ipm/veg/htms/trichoderma.htm.
90. **Two Common, Late-Season, Cole Crop Diseases.** University of Connecticut Cooperative Extension, www.hort.uconn.edu/ipm/veg/htms/coledis.htm.
91. **Managing Diseases of Alfalfa.** University of Kentucky, Dept. of Agronomy, Pub. ID-104, www.ca.uky.edu/agc/pubs/id/id104/id104.htm.
92. **Managing Bacterial Diseases of Tomatoes and Peppers.** Cornell University Cooperative Extension, New York State Integrated Pest Management Program, www.nysipm.cornell.edu.
93. **Seedling Diseases and Damping Off.** (Covers many crops – see website) www.gov.on.ca/OMAFRA/english/crops/insects/diseases.html.
94. **Integrated Pest Management for Vegetable Gardens.** Virginia State University Cooperative Extension, Pub. 426-708, www.ext.vt.edu/pubs/envirohort/426-708/426-708.html.
95. **Disease Management: Cultural Management Practices.** University of Sydney, http://bugs.bio.usyd.edu.au/PlantPathology/disease_mgmt/cultural_mgmt.html
96. **Chemigation Safety Measures.** University of Minnesota Extension Service, www.extension.umn.edu/distribution/dropsystems/DC6122.html.
97. **Chemigation and Fertigation: Anti-Pollution Devices for Irrigation Systems.** North Carolina Department of Agriculture and Consumer Services, www.ncagr.com/fooddrug/pesticide.
98. **Chemigation.** Maine Board of Pesticides Control, www.state.me.us/agriculture/pesticides.
99. **60 Ways Farmers Can Protect Surface Waters.** University of Illinois Extension, North Central Regional Extension Publication #589, www.thisland.uiuc.edu.
100. **Odor Control on Livestock and Poultry Farms.** Ontario Ministry of Agriculture and Food, Fact sheet # 03-111, www.gov.on.ca/OMAFRA/english/engineer/facts/03-111.htm.

Best Management Practices for Maine Agriculture

101. **Sanitation for Fly and Disease Management at Confined Livestock Facilities.** <http://ianrpubs.unl.edu/insects/1175.htm>.
102. **Fly Control On Poultry.** University of Kentucky Extension Service, <Http://www.uky.edu/Agriculture/PAT/recs/livestk/recpou/poufly.htm>.
103. **Management of Small Flocks of Chickens.** Florida Cooperative Extension Service, Fact Sheet PS-3, www.afn.org/~poultry/flkman2.htm.
104. **Fly Control in the Poultry House.** Oklahoma State University Cooperative Extension, Bulletin F-8206, <http://osuextra.okstate.edu>.
105. **Broiler Litter Storage.** Alabama Cooperative Extension System, Publication ANR-0839, www.aces.edu/pubs/docs/A/ANR-0839/.
106. **Ventilation** (Poultry). Poultry Industry Council Fact sheet #88, www.poultryindustrycouncil.ca/Factsheets/Factsheets/fact88.htm.
107. **Pollution Solutions-Poultry Farms.** www.brisbane.gld.gov.aa/bccwr.
108. **Housing, Equipment and Manure Systems.** Guidelines to Beneficial Management Practices: Environmental Manual for poultry Producers in Alberta, [www1.agric.gov.ab.ca/\\$department](http://www1.agric.gov.ab.ca/$department).
109. **Profitable Poultry Production: Poultry Fixtures and Devices.** http://journeytoforever.org/farm_library/PPP/PPP5.html.
110. **Land Application of Manure.** Manitoba Agriculture, Food and Rural Initiatives, www.gov.mb.ca/agriculture/livestock/pork/swine/bah04s02.html.
111. **Manitoba Soil Fertility Guide – Manure.** Manitoba Agriculture, Food and Rural Initiatives, www.gov.mb.ca/agriculture/soilwater/soilfert/fbd02s12.html.
112. **Livestock & Poultry Area Integrated Pest Management.** Virginia Polytechnic Institute and State University, Pub. 444-118w, www.ext.vt.edu/pubs/ipmfs/444-118/444-118.html.
113. **Nuisance Fly Prevention.** Manitoba Agricultural Sustainability Initiative, www.deerwood.mb.ca/peaticide/fly/page03.html.
114. **Draft Guidelines for Emergency Composting of Cattle Mortalities.** Iowa State University, www.abe.iastate.edu/cattlecomposting/guidelines.
115. **Fertilizing with Manure.** Washington State University Cooperative Extension, Pub. PNW 0533, <http://cru.cahe.wsu.edu/CEPublications/pnw0533>.

Best Management Practices for Maine Agriculture

116. **Land Application of Manure.** Prince Edward Island Dept. of Agriculture and Forestry, www.gov.pe.ca/af/agweb/index.php3?number=73079.
117. **The Perishability and Profitability of Manure.** McGill University, www.eap.mcgill.ca/MagRack/SF/July%2087%20B.htm.
118. **Methods and Timing for Manure Applications.** Minnesota Dept. of Agriculture, www.landwise.ca/Nutrient/Step4MethodsandTiming.htm.
119. **Pesticides and Groundwater: A Guide for the Pesticide User.** Cornell University, <http://pmep.cce.cornell.edu/facts-slides-self/facts/pest-gr-gud-grw89.html>.
120. **Pesticides and Groundwater Contamination.** Ohio State University, Bulletin 820, http://ohioline.osu.edu/b820_9.html.
121. **Managing Large-Scale Applications of Pesticides to Prevent Contamination of Drinking Water.** United States Environmental Protection Agency, Office of Water, Pub. EPA 916-F-01-030, www.epa.gov/safewater/protect.
122. **Pesticide Movement in Soils.** Washington State University Cooperative Extension Pub. EB 1543, <http://cru.cahe.wsu.edu/CEPublications/eb1543/eb1543.html>.
123. **Best Management Practices for Agricultural Pesticides to Protect Water Resources.** University of Nebraska Cooperative Extension, Pub. G93-1182-A, <http://ianrpubs.unl.edu/water/g1182.htm>.
124. **Organic Matter Management.** University of Minnesota Extension Service, Pub. BU-07402, www.extension.umn.edu/distribution/cropsystems/components/7402_01.html.
125. **What Does Organic Matter Do in Soil?** Noble Foundation, www.noble.org/Ag/Soils/OrganicMatter/Index.htm.
126. **Six Steps to Minimizing Compaction.** University of Minnesota Extension Service, Pub. BU-07400, www.extension.umn.edu/distribution/cropsystems/components/7400_01.html.
127. **Introduction to Precision Agriculture: Sources of Soil and Crop Yield Variation within a Field.** McGill University, www.paguide.mcgill.ca/GuideEnglish/introduction/introduction.htm.
128. **Nutrient Management Planning: Plant Nutrients.** Agriculture and Agri-Food Canada, www1.agr.gc.ca/pfra/water/nutrient_e.htm.

Best Management Practices for Maine Agriculture

129. **Crop Nutrition and Fertilizer Requirements.** Alberta Agriculture, Food and Rural Development,
[www1.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex3791?opendocument](http://www1.gov.ab.ca/$department/deptdocs.nsf/all/agdex3791?opendocument).
130. **Potato Fertilization on Irrigated Soils.** University of Minnesota Extension Service, Pub. FO-03425-GO,
www.extension.umn.edu/distribution/cropsystems/DC3425.html.
131. **Forage Fertilization Based on Yield and Management Goals.** West Virginia University Extension Service, www.caf.wvu.edu/~forage/5202.htm.
132. **Irrigation Water Management – Code 449.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
133. **Sprinkler Irrigation Systems – Code 442.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
134. **Manure Management Guidelines.** New Brunswick Dept. of Agriculture, Fisheries and Aquaculture, www.gnb.ca/0173/10/0173010002-e.asp.
135. **Pesticide Use and Personal Protective Equipment.** Maine Board of Pesticides Control, www.state.me.us/agriculture/pesticides.
136. **Environmental Issues in Livestock Production.** Iowa State University, www.abe.iastate.edu/homestudy/app.htm.
137. **Meeting Odour Head On: Odour Reduction Practices – Animal Diets and Land Application of Manure.** University of Alberta,
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/epw8450](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/epw8450).
138. **Ohio Livestock Manure and Wastewater Management Guide: Insect and Pest Control.** Ohio State University Extension Service, Bulletin 604, http://ohioline.ose.edu/b604_26.html.
139. **Poultry Pest Management.** (extensive information – see website) Ohio State University, Bulletin 853 <http://ohioline.osu.edu/b853/>.
140. **Controlling Flies on Dairy Farms.** Purdue University Cooperative Extension Service, Bulletin E-10-W, www.entm.purdue.edu/Entomology.
141. **Chem Search.** Section 1, NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
142. **Insect Control on Poultry.** University of Kentucky Cooperative Extension Service, Bulletin ENT-28,

Best Management Practices for Maine Agriculture

143. **Poultry Pest Management – Cultural Control, Chemical Control, Mechanical Control. (flies)** Ohio State University Cooperative Extension, Bulletin 853, Http://ohioline.osu.edu/b853/b853_2.html.
144. **Pest Management Recommendations for Poultry.** Pennsylvania State University/Cornell Cooperative Extension, www.nysipm.cornell.edu/publications/poultryrec00.pdf.
145. **Horse Manure Management.** Colorado State Cooperative Extension, Bulletin 1.219, www.ext.colostate.edu/pubs/livestk.
146. **Nutrient Management Plans - What Industry Agronomists are Doing.** University of Manitoba, www.umanitoba.ca/afs/agronomists.
147. **Beneficial Management Practices: Environmental Manual for Crop Producers in Alberta.** Government of Alberta, [www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex9331](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex9331).
148. **Establishing and Using a Farm Financial Record-Keeping System.** University of Tennessee Agricultural Extension Service, Pub. PB 1540, www.uteextension.utk.edu/publications.
149. **Computerized Farm Record Keeping with Quicken 2003.** Ohio State University Extension, Bulletin 908, <http://ohioline.osu.edu/b908/>.
150. **Agriculture, Fisheries and Aquaculture – Record Keeping (forms).** Government of Prince Edward Island, www.gov.pe.ca/af/agweb/index.php3?number=75354.
151. **Restricted- Use Pesticide Recordkeeping Inspection.** USDA/AMS Pesticide Records Branch, www.ams.usda.gov/science/prb/prbqa.htm.
152. **Crop and Field Management Software.** Center for Dairy Profitability, http://cdp.wisc.edu/crop_software.htm.
153. **Slow-Release Fertilizers.** Virginia State University Cooperative Extension, www.ext.vt.edu/departments/envirohort/atricles/misc/slowrels.html.
154. **Nutrite Turf** (fertilizer release rates). www.nutriteturf.ca/fooled/.
155. **50 Ways Farmers Can Protect Their Groundwater.** University of Illinois Extension, North Central Regional Extension publication 522, www.thisland.uiuc.edu.
156. **Water Quality – Agriculture.** Government of British Columbia, Ministry of Water, Land and Air Protection, <http://wapwww.gov.bc.ca/wat/wq/nps>.

Best Management Practices for Maine Agriculture

157. **Nutrient Management – Code 590.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
158. **Manure: Nutrient Management and Field Application.** Cornell University, Agricultural Environmental Management Reference Sheets, www.mediarsv.cornell.edu.
159. **Organic Farming Systems – Overview-- Rotations, Insects & Diseases, Weeds, Livestock Systems.** Sustainable Agriculture, Research and Education (SARE), www.sare.org/publications/organic/organic03.htm.
160. **Manure and Pasture Management for Horse Owners: The Environmentally Friendly Horse.** Government of Alberta, [www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdez7949](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdez7949).
161. **Noise Control on Farms.** Ministry of Agriculture and Food, Ontario, Canada, Fact sheet ISSN 1196-712X, www.gov.on.ca/OMAFRAenglish/engineer/facts/96-033.htm.
162. **About the Countryside Initiative.** The Countryside Initiative – Cuyahoga Valley, www.nps.gov/cuva/management/countryside/country.htm.
163. **Building Positive Neighbor Relations.** Ohio Livestock Coalition, Ohio Livestock Environmental Assurance Program, <http://dairy.osu.edu/landscape/olc>.
164. **Agricultural and Nature Tourism: Good for the People and the Land.** University of California, Division of Agriculture and Natural Resources, http://groups.ucanr.org/Ag_Tour/Overview_of_the_Manual/.
165. **Field Border – Code 386.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
166. **Components of Good Manure Management.** University of Minnesota Extension Service, Pub. BU-07401, www.extension.umn.edu/distribution/cropsystems/components/7401_01.html.
167. **It Takes Two to be a Good Neighbor.** Ohio Livestock Coalition, www.oardc.ohio-state.edu/ocamm.
168. **Building and Maintaining Good Relationships with Neighbors.** (Available as slide show), University of Wisconsin, www.discoveryfarms.org/training/heifergrowers.ppt.

Best Management Practices for Maine Agriculture

169. **The Benefits of Planting Trees around Poultry Farms.** University of Delaware, College of Agriculture and Natural Resources, Bulletin 159, [www.the poultry site.com/frame.asp](http://www.the-poultry-site.com/frame.asp).
170. **Nutrient and Pesticide Best Management Practices for Wisconsin Farms.** Wisconsin Department of Agriculture, Pub. A-3467, Cooperative Extension.
171. **Livestock Water Development.** Ohio State University Extension Fact sheet ANR-12-02, <http://ohioline.osu.edu/anr-fact>.
172. **Human-Wildlife Conflict Management – A Practitioner’s Guide.** <http://wildlifecontrol.info/NEWDMCLPDFs/H-W%20Guide.pdf>.
173. **Wildlife Causing Damage or Nuisance.** Title 12, Part13, Chapter 21 <http://janus.state.me.us/legis/statutes/12title12sec12404.html>.
174. **USDA Agency Helps Solve Problems Between Humans and Wildlife.** www.aphis.usda.gov/lpa/news/1997/04/ADCME.HTM.
175. **Summary of Enacted Legislation.** Maine Dept. of Inland Fisheries and Wildlife, www.nesportsman.com.
176. **Controlling Birds on Fruit Crops.** University of Pennsylvania, College of Agricultural Sciences, Cooperative Extension, www.wildlifemanagement.info/publications/birds.
177. **Controlling Birds around Farm Buildings.** (Specific reference covering many bird species) University of Pennsylvania, College of Agricultural Sciences, Cooperative Extension, www.wildlifemanagement.info/publications/birds.
178. **Rules for the Disposal of Animal Carcasses.** Chapter 211, Maine Dept. of Agriculture, 207-287-1132.
179. **MDAFFF Policy/Rules Regarding the Disposal of up to 500 lbs. Of Sheep or Goat Carcasses (including offal) per Year by Burial.** Maine Dept. of Agriculture, 207-287-1132.
180. **Harvest and Storage of High-Quality Corn Silage for Dairy Cows.** University of Wisconsin, Dept. of Dairy Science, www.wisc.edu/dysci/uwex/nutritn.
181. **Making Quality Silage Bales.** University of Wisconsin, “Focus on Forage” Vol.6: No.4, www.uwex.edu/ces/crops/uwforage/SilageBales-FOF.htm.
182. **Successful Wrapping and Storage of Square Bales.** University of Wisconsin, www.uwex.edu/ces/forage/wfc/proceedings2003/squarebales.htm.

Best Management Practices for Maine Agriculture

183. **Forage Fadeout Losses for Various Storage Systems.** University of Wisconsin, “Focus on Forage” Vol. 4: No.7, www.uwex.edu/ces/crops/uwforage/FeedLossFOF.htm.
184. **Managing Forage in Bunker Silos.** University of Wisconsin, “Focus on Forage” Vol. 3: No.6, www.uwex.edu/ces/crops/uwforage/Manage/Bunker.html.
185. **Preventing Silage Storage Losses.** University of Wisconsin/U.S. Dairy Forage Research Center, <http://www.uwex.edu/ces/crops/uwforage/storage.htm>.
186. **Managing Forage in Tower Silos.** University of Wisconsin, “Focus on Forage”, www.uwex.edu/ces/crops/uwforage/ManagingTowerSilos.pdf.
187. **Preserving Baled Hay with Organic Acids.** University of Wisconsin, “Focus on Forage” Vol.2: No.5, www.uwex.edu/ces/crops/uwforage/Hay-OA.htm.
188. **Inoculants for Legume-Grass Silage.** University of Wisconsin, “Focus on Forage”, Vol.2: No.3, www.uwex.edu/ces/crops/uwforage/Inoculating_Legume_Grass_Silage.htm.
189. **Inoculants for Corn Silage.** University of Wisconsin, “Focus on Forage”, Vol. 2: No.2, www.uwex.edu/ces/crops/uwforage/Inoculating_Corn_Silage.htm.
190. **Dry Round Hay Bale Storage Costs.** University of Wisconsin, “Focus on Forage” Vol.6: No.5, www.uwex.edu/ces/crops/uwforage/LRB_StorageCosts-FOF.htm.
191. **Deciding on a Silage Storage Type.** University of Wisconsin, Biological Engineering Department, <http://www.uwex.edu/ces/crops/uwforage/storage.htm>.
192. **Choosing Forage Storage Facilities.** University of Wisconsin, Biological Systems Engineering Department, <http://www.uwex.edu/ces/crops/uwforage/storage.htm>.
193. **Bags vs. Bunkers vs. Uprights.** University of Illinois, Illini Dairy Net, www.traill.uiuc.edu/dairynet/paperDisplay.cfm?Type=currentTopic&ContentID=578.
194. **Harvesting Hay and Silage.** Minnesota Dept. of Agriculture/University of Minnesota, www.mda.state.mn.us/crp/harvest.htm.
195. **Reducing the Risk of Groundwater Contamination by Improving Silage Storage.** Washington State University, Fact Sheet 9, Pub. EB 1746-F9, <http://cru.cahe.wsu.edu/CEPublications/eb1746-f9/eb1746-f9.html>.

Best Management Practices for Maine Agriculture

196. **Harvesting, Storing and Feeding Forages as Round Bale Silage.** University of Florida, Dept. of Animal Sciences, Proceedings: 12th Annual Florida Ruminant Nutrition Symposium, www.animal.ufl.edu/dairy/2001ruminantprodconf/Kunkle.htm.
197. **Forage Testing: Why, How, and Where.** Purdue University, Cooperative Extension, <http://forages.oregonstate.edu/resources/publications.cfm?PubID=449>.
198. **Planning a Hay Storage.** British Columbia Ministry of Agriculture and Food, Pub. #372.210-1, www.agf.gov.bc.ca/resmgmt/publist.
199. **Barns and Structures.** (A general listing of plans and contractors), [http://directory.google.com/Top/Business/Agriculture and Forestry/Barns and Structures/](http://directory.google.com/Top/Business/Agriculture_and_Forestry/Barns_and_Structures/).
200. **Controlling Rats.** University of Nebraska, Institute of Agriculture and Natural Resources, Pub. G92-1106-A, <http://ianrpubs.unl.edu/wildlife/g1106.htm>.
201. **Controlling Rodents in Commercial Poultry Facilities.** Purdue University Cooperative Extension Service, Animal Damage Management Pub. ADM-3-W, www.ces.purdue.edu/extmedia/.
202. **Dust and Mold.** Ohio State University Extension, www.cdc.gov/nasd/docs/d001601-d001700/d001682/d001682.html.
203. **Treatment of Milkhouse Effluent.** New Brunswick, Canada, Dept. of Agriculture, Fisheries and Aquaculture, www.gnb.ca/0173/10/0173010004-e.asp.
204. **Pollution Control Guide for Milking Center Wastewater Management.** NCR 549, <http://cecommerce.uwex.edu>.
205. **Forage Resources – Harvesting and Storage.** (A listing of excellent references), University of Wisconsin Cooperative Extension, www.uwex.edu/ces/crops/uwforage/storage.htm.
206. **Utilizing Food Processing Waste as a Soil Amendment for Growing Cover Crops in an Organic Vegetable Production System.** University of Maine Cooperative Extension, www.mac.umaine.edu/projects/MAC031.htm.
207. **Residue Management, Ridge Till – Code 329c.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
208. **Residue Management, Seasonal – Code 344.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.

Best Management Practices for Maine Agriculture

209. **Access Road, Code 560.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
210. **Agronomic Utilization of Residuals.** Maine Dept. of Environmental Protection, Chapter 419, www.maine.gov/dep/rwm/residuals/regutil.htm.
211. **Milking Center Waste Water Treatment System.** NRCS electronic Field Office Technical Guide, <http://www.nrcs.usda.gov/technical/StandardDrawings.html>.
212. **Crop Rotations.** University of Maryland, Cooperative Extension Service, Fact Sheet 7, www.agr.umd.edu/users.
213. **Agronomy: Soil Quality is Critical Factor in Management of National Resources.** South Jersey RC&D Council, Inc., www.sjrcd.org/ag/agronomy.htm.
214. **Alternative Production Systems to Reduce Nitrates in Ground Water.** American Journal of Alternative Agriculture, McGill University, Canada, www.eap.mcgill.ca/MagRack/AJAAJAA_6.html.
215. **Disease Resistance and Crop Rotation.** Iowa State University, Department of Plant Pathology, www.ipm.iastate.edu/ipm/icm/1996/1-26-1996/disres.html.
216. **Principles and Practices of Crop Rotation.** Saskatchewan Agriculture, Food and Rural Revitalization, www.agr.gov.sk.ca/DOCS/crops/integrated_pest_management/soil_fertility_fertilize.
217. **Yankee Gardener's Garden Data – Crop Rotation Chart.** www.yankeegardener.com/resource/croprote.html.
218. **Best Management Practices – No-Till: Making it Work.** Ontario Ministry of Agriculture and Food, www.gov.on.ca/OMAFRA/english/environment/no_till/crop.htm.
219. **Crop Rotation as a Form of Conservation.** The Family Farm Project, www2.Kenyon.edu/Projects/Famfarm/environ/rotation/rotation.htm.
220. **CRoPS, the Crop Rotation Planning System for Whole-farm Planning.** (A computerized crop rotation planning system) Virginia Tech, www.isis.vt.edu/dss/crops/.
221. **Crop Rotations for Increased Productivity.** North Dakota State University, NDSU Extension Service, Pub. EB-48. www.ext.nodak.edu/extpubs/plantsci/crops/eb48-1.htm.

Best Management Practices for Maine Agriculture

222. **Effects of Long-Term Tillage and Crop Rotation on Soil Carbon and Soil Productivity.** Iowa State University, Armstrong Research and Demonstration Farm, Pub. ISRF03-12, www.ag.iastate.edu/farms.
223. **Crop Rotation and Intercropping Strategies for Weed Management.** University of California /SARE, www.sarep.ucdavis.edu/NEWSLTR/v5n4/sa13.htm.
224. **Planned Crop Rotation.** Fundamentals of Sustainable Agriculture, ATTRA, <http://attra.ncat.org/attra-pub/organiccrop;tools2.html>.
225. **Manure Packs – Solid System.**
www.epa.gov/seahome/manure/src/storfac7.htm.
226. **Manure Storage Systems.** (Covers various methods and potential environmental risks), www.epa.gov/seahome/manure/src/storfac10.htm.
227. **Livestock Manure Management Systems and Greenhouse Gases Production.** Agriculture and the Environment, Government of Canada, www.agr.gc.ca/policy/environment/air_03_03n_e.shtml.
228. **Livestock Manure Storage and Treatment Facilities.** Virginia State University, Virginia Cooperative Extension, Fact Sheet No. 9, Pub. No. 442-909, www.ext.vt.edu/pubs/farmasyst/442-909/442-909.html.
229. **Managing Sheep and Goat Manure.** Pennsylvania State University, http://goatconnection.com/articles/publish/article_85.shtml.
230. **National Goat Handbook.** University of Maryland, <http://www.inform.umd.edu/EdRes/topic/AgrEnv/ndd/goat/>.
231. **Manure Management and Composting.** McGill University, Ecological Agriculture Projects, www.eap.mcgill.ca/MagRack/COG/COGHandbook/COGHandbook_1_4.htm.
232. **Livestock and Poultry Yard Management.** Virginia State University, Virginia Cooperative Extension, Fact Sheet No. 8, Pub. No. 442-908, www.ext.vt.edu/pubs/farmasyst/442-908/442-908.html.
233. **Manure Storage, Handling and Transportation.** Environmental Manual for Feedlot Producers in Alberta, www1.agric.gov.ab.ca.
234. **South-Central Grazing News.** (covers wintering livestock outside plus manure packs), University of Wisconsin Extension Service, Phone 608-742-9682.

Best Management Practices for Maine Agriculture

235. **Generally Accepted Agricultural and Management Practices for the Care of Farm Animals.** Michigan Commission of Agriculture, www.michigan.gov/documents.
236. **An Overview of Current Beef Welfare Concerns.** University of California, Dept. of Animal Science, www.nal.usda.gov/awic/pubs/Beef/overview.htm.
237. **Sheep Housing and Equipment Handbook.** <http://www.msuextension.missouri.edu/explor/mwps/MW0003.htm>.
238. **Conservation Crop Rotation – Code 328.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
239. **Contour Buffer Strips – Code 332.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
240. **Filter Strip – Code 393.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
241. **Riparian Forest Buffer – Code 391.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
242. **Field Stripcropping – Code 586.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
243. **Residue Management, Mulch Till – Code 329B.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
244. **Critical Area Planting – Code 342.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
245. **Conservation Cover – Code 327.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
246. **Cover Crop – Code 340.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
247. **Diversion – Code 362.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
248. **Grassed Waterway – Code 412.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.

Best Management Practices for Maine Agriculture

249. **Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control.** University of California, Division of Agriculture and Natural Resources, Pub.# 3386, <http://danrcs.ucdavis.edu>.
250. **Water and Sediment Control Basin – Code 638.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
251. **Sediment Basin – Code 350.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
252. **Animal Trails and Walkways – Code 575.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
253. **Fencing – Code 382.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
254. **Streambank and Shoreline Protection – Code 580.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
255. **Contour Farming – Code 330.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
256. **Assessing the Risk of Groundwater Contamination from Livestock Manure Management.** Oregon State University Extension Service, Pub. EM 8596, <http://eesc.orst.edu/agcomwebfile/edmat/htm/EM/EM8596.html>.
257. **Managing Livestock Manure to Protect Groundwater.** Washington State University Cooperative Extension, Bulletin EB1717, <http://cru.cahe.wsu.edu/CEPublications/eb1717/eb1717.html>.
258. **Waterborne Pathogens in Agricultural Watersheds.** USDA, NRCS, Watershed Science Institute, NRAES – 147, www.nraes.org.
259. **Adjustments to Fertilizer Recommendations.** (compensation for manure or plowed-down legumes) Ontario Ministry of Agriculture and Food, www.gov.on.ca/OMAFRA/english/crops/pub610/c2adju.htm.
260. **Cover Crops – Adaptation, Use, Selection.** Ontario Ministry of Agriculture and Food, Pub. 610, www.gov.on.ca/OMAFRA/english/crops/pub610/c2covc.htm.
261. **Farm Practices – Stationary Equipment.** (Noise) British Columbia Ministry of Agriculture, Food and Fisheries, Pub. No 870.218-51 http://www.agf.gov.bc.ca/resmgmt/fppa/refguide/activity/870218-51_Stationary_Equipment.pdf.

Best Management Practices for Maine Agriculture

262. **Farm Noise and Hearing Loss.** (Noise levels for common farm machinery) Australian Centre for Agricultural Health and Safety.
www.farmsafe.org.au/images/uploads/farm_noise_injury_facts.pdf.

263. **Farm Noise.** The SafetyLine Institute,
www.safetyline.wa.gov.au/institute/level2/course26/lecture35/135_12.asp.

264. **Around Ohio with OLC.** (Aesthetics and neighbor relations)
www.ohiolivestock.org/Agricultural%20Districts.htm.

265. **Cover Crops and Intercrops for New York.**
<http://www.sarep.ucdavis.edu/cgi-bin/ccrop.exe>.

266. **Understanding your Soil Test: pH-Excess Lime-Lime Needs.** University of Nebraska Cooperative Extension, Bulletin G92-1096-A,
<http://ianrpubs.unl.edu/soil/g1096.html>.

267. **Building Soils for Better Crops.** Sustainable Agriculture Network, Handbook Series Book 4, National Agricultural Library, www.Sare.org/publications.

268. **Downeast Salmon Rivers Water Use Management Plan.** Maine State Planning Office, www.maine.gov/asc.

269. **Earthen Manure Storage Design Considerations.** NRAES – 109, www.NRAES.ORG/PUBLICATIONS/NRAES109.HTML.

270. **Windbreak/Shelter Establishment - Code 380.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.

271. **Air Quality and Health.** (Dust) Farm Business Communications,
www.agcanada.com/custompages/stories_story.aspx?mid=167&id=87.

272. **Using Shelterbelts to Reduce Odors Associated with Livestock Production Barns.** Ontario Ministry of Agriculture and Food,
www.gov.on.ca/OMAFRA/english/crops/facts/info_odours.htm.

273. **Environmental Stress in Confined Beef Cattle.** Journal of Animal Science, 81:E110-E119, University of Nebraska.

274. **Wind Protection Effects and Airflow Patterns in Outside Feedlots.** Journal of Animal Science, 82:3077-3087, University of Nebraska.

275. **Shade and Wind Barrier Effects on Summertime Feedlot Cattle Performance.** Journal of Animal Science, 77:2065-2072, University of Nebraska.

Best Management Practices for Maine Agriculture

276. **Prescribed Grazing Management to Improve Pasture Productivity in New York.** USDA/Cornell University, www.css.cornell.edu/forage/pasture/index.html.
277. **Intercropping Cover Crops with Corn.** Penobscot County Soil & Water Conservation District.
278. **Silage Leachate & Water Quality.** Environmental Quality Technical Note N5, USDA, NRCS.
279. **Site Selection for Animal Housing and Waste Storage Facilities.** University of Minnesota Extension Program, Pub. AEU-6, www.bae.umn.edu/extens/aeu/aeu6.html.
280. **Agricultural Practices and Environmental Conservation: Soil pollution and Soil Degradation.** Agriculture and Agri-Food Canada, www.agr.gc.ca/cal epub/1772-0009_e.html.
281. **Mulching for Improved Plant Cover.** University of Maine Cooperative Extension, Wild Blueberry Fact Sheet No. 228, UMCE # 2239, www.umext.maine.edu.
282. **Licensing Requirements for Pesticide Applicators in the State of Maine.** Maine Board of Pesticides Control, www.thinkfirstspraylast.org.
283. **Recommended Storage Practices for Pesticide Applicators.** Maine Board of Pesticides Control, www.thinkfirstspraylast.org.
284. **Leaf & Petiole Tissue Analysis Program.** Ontario Ministry of Agriculture and Food, www.gov.on.ca/OMAFRA/english/crops/resource/leaf.htm.
285. **Pesticide Storage and Disposal.** Maine Board of Pesticides Control, www.state.me.us/agriculture/pesticides/public/storage.htm.
286. **Pasture Condition Score Sheet.** Grazing Lands Technology Institute, USDA, NRCS, [ftp://ftp-fc.sc.egov.usda/GLTI/technical/publications/pasture-score-guide.pdf](http://ftp-fc.sc.egov.usda/GLTI/technical/publications/pasture-score-guide.pdf).
287. **Guideline for Dairy Odor Management.** The Dairy Production Council, NRAES – 146, www.nraes.org.
288. **Phosphorous in Agriculture.** Soil Quality Institute Technical Pamphlet No.2, NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
289. **The Agronomics of Manure Use for Crop Production.** University of Kentucky, www.ca.uky.edu/aagc/pubs/agr/agr165/agr165.htm.

Best Management Practices for Maine Agriculture

290. **Record Keeping Requirements for Commercial Agricultural Producers.** Maine Board of Pesticides Control, www.thinkfirstspraylast.org.
291. **Pesticide Applicator Training.** University of Maine Cooperative Extension, <http://pmo.umext.maine.edu/patrain/prices.htm>.
292. **Selecting the Right Cover Crop Gives Multiple Benefits.** University of California, SARE, www.sarep.ucdavis.edu/ccrop/CCPubs>SelectingCoverCrop.html
293. **Cull Potato Disposal Best Management Practices.** Maine Dept. of Agriculture.
294. **Planning Fencing Systems for Controlled Grazing.** Virginia State University, Virginia Cooperative Extension, Pub. # 442-130, www.ext.vt.edu/pubs/ageng/442-130/442-130.html.
295. **Constructing High-tensile Wire Fences.** Virginia State University, Virginia Cooperative Extension, Pub. # 442-132, www.ext.vt.edu/pubs/bse/442-132/442-132.html
296. **Building an Electric Antipredator Fence.** Pacific Northwest Extension, PNW 225, <http://eesc.orst.edu/agcomwebfile/edmat/html/pnw/pnw225/pnw225.html>.
297. **Pumping Water from Remote Locations for Livestock Watering.** Virginia State University, Virginia Cooperative Extension, Pub. # 442-755, www.ext.vt.edu/pubs/bse/442-755/442-755.html.
298. **Manure Management for Small Scale Livestock Operations,** Pennsylvania Small-Scale Livestock Committee, <http://www.agriculture.state.pa.us/agriculture/lib/agriculture/pasccfiles/nutrientmanagement/Small%20Scale%20Livestock%20Farm%20Manure.pdf>.
299. **Building for Cow Comfort.** University of Alberta, Agricultural, Food and Nutritional Science, www.cowdoc.net/pages/archive/archive03/.
300. **Lactating Dairy Cow Care.** University of California Cooperative Extension, www.vetmed.ucdavis.edu/vetext/INF-DA/INF-DA%20CAREPRAX4.HTML.
301. **Environmental Designs for Healthier and More Profitable Cows.** University of Alberta, Agriculture and Agri-Food Canada, www.wcds.afns.ualberta.ca/Proceedings/1999/chap28.htm.
302. **Dairy Production.** (Housing) University of Guelph, Department of Animal & Poultry Science, www.aps.uoguelph.ca/~gking/Ag_2350/dairy1.htm.

Best Management Practices for Maine Agriculture

303. **Farms, Communities and Collaboration: A Guide to Resolving Farm-Neighbor Conflict.** SARE Grant # ENE-99-50, 2003
http://www.cdtoolbox.org/agriculture_economic_development/fcandc.pdf.
304. **Cover Crops for Vegetable Production in the Northeast.** Cornell Cooperative Extension, Information Bulletin 244,
www.cce.cornell.edu/publications/catalog.html.
305. **Natural Enemies of Vegetable Insect Pests.** Cornell University Cooperative Extension, Dept. of Entomology,
www.cce.cornell.edu/publications/catalog.html.
306. **2005 Cornell Guide for Integrated Field Crop Management.** Cornell University Cooperative Extension,
www.cce.cornell.edu/publications/catalog.html. (Updates and extensive information at www.fieldcrops.org).
307. **Cornell Field Crops and Soils Handbook.** Cornell Cooperative Extension,
www.cce.cornell.edu/publications/catalog.html.
308. **On-Farm Agrichemical Handling Facilities.** Northeast Regional Agricultural Engineering Service, NRAES – 78, www.nraes.org.
309. **Dairy Manure Systems: Equipment and Technology.** NRAES – 143, www.nraes.org.
310. **Trickle Irrigation in the Eastern United States.** NRAES – 4, www.nraes.org.
311. **Pesticides and Groundwater: A Guide for the Pesticide User.** NRAES – 34, www.nraes.org.
312. **Livestock Waste Facilities Handbook.** USDA, Midwest Plan Service, MWPS – 18.
313. **Environmental Factors to Consider When Expanding Dairies.** NRAES – 95, www.nraes.org.
314. **Poultry Waste Management Handbook.** NRAES – 132, www.nraes.org.
315. **High-Tensile Wire Fencing.** NRAES – 11, www.nraes.org.
316. **Building Freestall Barns and Milking Centers: Methods and Materials.** NRAES – 148, www.nraes.org.
317. **Organic Vegetable Production.** Proceedings of Conference at New York State Agricultural Experiment Station, NRAES – 165, www.nraes.org.

Best Management Practices for Maine Agriculture

318. **Production of Vegetables, Strawberries, and Cut Flowers Using Plasticulture.** NRAES – 133, www.nraes.org.
319. **Animal Behavior and the Design of Livestock and Poultry Systems.** Proceedings from the Animal Behavior and the Design of Livestock and Poultry Systems International Conference, Indianapolis, Indiana, NRAES – 84, www.nraes.org.
320. **Horse Facilities Handbook 2005.** USDA, Midwest Plan Service, Iowa State University, www.mwpshq.org.
321. **Guide to Pasture Conditioning Scoring.** USDA, NRCS, Grazing Lands Technology Institute, <ftp://ftp-fc.sc.egov.usda/GLTI/technical/publications/pasture-score-guide.pdf>
322. **Odors from Livestock Operations: Causes and Possible Cures.** University of Missouri Extension, Pub. #1884, <http://muextension.missouri.edu/explore/agguides/agengin/g01884.htm>.
323. **Livestock Manure Sampling.** University of Minnesota Extension Service, Pub. #FO-06423-GO, www.extension.umn.edu/distribution/cropsystems/DC6423.html.
324. **Applying Manure in Sensitive Areas.** University of Minnesota Cooperative Extension, Minnesota Pollution Control Agency, NRCS, www.extension.umn.edu.
325. **Runoff Reductions with Incorporated Manure – A Literature Review.** Minnesota Pollution Control Agency, Feedlot Program, www.pca.state.mn.us/hot/feedlots.html.
326. **Land Application of Manure: Minimum State Requirements.** Minnesota Pollution Control Agency, Feedlot Program, Pub. #Wq-f8-11, www.pca.state.mn.us/hot/feedlots.html.
327. **Manure Management Plan.** Minnesota Pollution Control Agency, Feedlot Program, www.pca.state.mn.us/hot/feedlots.html.
328. **Windrow Construction & Maintenance.** (Carcass composting) Iowa State University, Dept. of Agricultural and Biosystems Engineering, www.abe.iastate.edu/cattlecomposting/results/construction.asp.
329. **On-Farm Strategies to Protect Water Quality: An Assessment and Planning Tool for Best Management Practices.** Massachusetts Dept. of Food and Agriculture.

Best Management Practices for Maine Agriculture

330. **Integrated Animal Waste Management.** Council for Agricultural Science and Technology (CAST), www.netins.net/showcase/cast/.
331. **Potato Integrated Pest Management in Maine.** (CD ROM) University of Maine Cooperative Extension, www.umext.maine.edu.
332. **Pest Management at the Crossroads.** Consumers Union of the United States, Inc., New York.
333. **Reducing Heat Stress for Dairy Cattle.** Virginia State University Cooperative Extension, Pub. # 404.200, <http://www.ext.ut.edu/pubs/dairy/404-200/404-200.html>.
334. **Natural Ventilation for Freestall Dairy Barns.** Virginia State University Cooperative Extension, Pub. # 442-763 <http://www.ext.ut.edu/pubs/dairy/442-763/442-763.html>.
335. **Erosion and Sediment Pollution Control.** Iowa State University Press, Ames, Iowa, 1972
336. **Know Your Soil – Soil Organic Matter Content.** University of Maine Cooperative Extension, Bulletin # 2288, www.umext.maine.edu.
337. **Effects of Residue Management and No-Till on Soil Quality.** Soil Quality Institute, Soil Quality Technical Note # 3, USDA, NRCS, electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
338. **Waste Utilization - Code 633.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
339. **Roof Runoff Structure - Code 558.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
340. **Heavy Use Area Protection, Code 561.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
341. **Forest Site Preparation - Code 490.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
342. **Pest Management - Code 595.** NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/>.
343. **Pumpkin Production Guide.** NRAES – 123, www.nraes.org.

Best Management Practices for Maine Agriculture

344. **A Quick Soil Test for Nitrogen (PSNT).** University of Maine Cooperative Extension, www.umext.maine.edu.
345. **Plant Tissue Test Instructions.** Pike Agri-Lab Supplies, Inc., Jay, Maine, www.pikeaagri.com/tissuetest.html.
346. **Nutrient Management Rules, Chapter 565. Maine Dept. of Agriculture, 1998.**
347. **New England Vegetable Management Guide.** University of Maine Cooperative Extension, www.umext.maine.edu.
348. **Farm Respiratory Protection.** Penn. State Cooperative Extension, Agricultural and Biological Engineering, Pub. # E36, www.age.psu.edu/extension/factsheets/e/E36.pdf.
349. **Lungs Need Protection from Farm Dust.** Safe Farm, Iowa State University, Pub. # Pm1518b, www.extension.iastate.edu/Publication/PM15188.pdf.
350. **Causes and Symptoms of Mold and Dust-Induced Respiratory Illness.** Virginia Cooperative Extension, <http://doityourself.com/mold/moldrespiratory.htm>.
351. **Agricultural Respiratory Protective Equipment.** Colorado State University Extension, Pub. # 5.020, www.ext.colostate.edu/pubs/farmmgt/05020.html.
352. **Personal Protection against Respiratory Hazards.** University of California – Davis, <http://agcenter.ucdavis.edu/Announce/AgChallenges2003Abstracts/PDF/10k:youngLee%20.pdf>.
353. **Strawberry Production Guide.** NRAES – 88, www.nraes.org.
354. **Bramble Production Guide.** NRAES – 55, www.nraes.org.
355. **Highbush Blueberry Production Guide.** NRAES – 55, www.nraes.org.
356. **Revegetating Sand and Gravel Borrow Pits in Maine.** USDA, NRCS ME Fact Sheet 1998, NRCS electronic Field Office Technical Guide, <http://efotg.nrcs.usda.gov/references/public/ME/RevegetatingSandGravel.pdf>.
357. **Pests in the Northeastern United States.** Cornell University, www.nysaes.cornell.edu/ent/factsheets/crops.html.
358. **Erosion and Sediment Control in North Carolina.** North Carolina Cooperative Extension, Pub. AG 473-20, www.p2pays.org/ref/01/00055.htm.

Best Management Practices for Maine Agriculture

359. **Weed Control Principles.** Purdue University,
www.btpny.purdue.edu/Pubs/WS/WS-16/WeedControlPrinciples05.pdf
360. **Forage Resources - Harvesting and Storage.** (An extensive listing of forage crop management and storage considerations) University of Wisconsin Extension,
www.uwex.edu/ces/crops/uwforage/storage.htm.
361. **Conducting Site Erosion and Sediment Control Best Management Practices for Iowa.**
www.iamu.org/main/stormwater/Erosion%20&%20Sed%20CH/Constr%20Site%20E&S%20Control.pdf
362. **Water Quality for Small-Scale Livestock Operations.** Pennsylvania Small-Scale Livestock Committee,
http://www.agriculture.state.pa.us/agriculture/lib/agriculture/pasccfiles/nutrientmanagement/Small_Scale_Livestock_Farm_WaterQuality.pdf.
363. **Electronic Forum on Area-Wide Integration of Specialized Crop and Livestock Production.**
http://lead.virtualcentre.org/en/ele/awi_2000/1session/1paper.htm.
364. **EXTOXNET.** (The Extension TOXicology NETwork) Oregon State University, et al.,
<http://extoxnet.orst.edu/>.
365. **Composting for Small-Scale Livestock Operations.** Pennsylvania Small-Scale Livestock Committee,
www.agriculture.state.pa.us/agriculture/lib/agriculture/pasccfiles/nutrientmanagement/Small_Scale_Livestock_Farm_Composting.pdf.
366. **Biointensive Integrated Pest Management: Fundamentals of Sustainable Agriculture.** National Center for Appropriate Technology, ATTRA,
www.attra.ncat.org.
367. **Granular Application Equipment Calibration.** South Dakota Dept. of Agriculture,
www.state.sd.us/doa/dag/granular%20application%equipment%20calibration.pdf.
368. **Damping Off.** University of Connecticut Integrated Pest Management,
www.hort.uconn.edu/ipm/greenhs/htms/dampofgh.htm.
369. **Damping-Off in Flower and Vegetable Seedlings.** North Carolina State University, College of Agriculture and Life Sciences,
www.ces.ncsu.edu/depts/pp/notes/oldnotes/od14.htm.

Best Management Practices for Maine Agriculture

370. **Damping Off.** Tom Clothier Horticulture, <http://tomclothier.hort.net/page13.html>.
371. **Carcass Disposal: A Comprehensive Review.** National Agricultural Biosecurity Center Consortium, USDA APHIS Cooperative Agreement Project, Carcass Disposal Working Group.
372. **Damping Off of Seedlings.** University of Minnesota Extension Service, Pub. # FS-01167, www.extension.umn.edu/distribution/horticulture/DG1167.html.
373. **Cover Crops on the Intensive Market Farm.** University of Wisconsin – Madison College of Agricultural and Life Sciences <http://www.hort.wisc.edu/FreshVeg/Publications/Cover%20Crops%20on%20the%20Intensive%20Market%20Farm.pdf>.
374. **Agricultural Environmental Management Systems.** University of Wisconsin, www.uwex.eduAgEMS.
375. **Understanding Soil Phosphorus: An Overview of Phosphorus, Water Quality and Agricultural Management Practices.** Nutrient and Pest Management Program, University of Wisconsin Extension, College of Agricultural and Life Sciences http://ipcm.wisc.edu/pubs/nutrient/USP_2002.htm.
376. **Nutrient Management in Kentucky.** University of Kentucky College of Agriculture, Cooperative Extension Service, Pub. IP-71, <http://www.ca.uky.edu/agc/pubs/ip/ip71/ip71.pdf>.
377. **Soil Facts: Nitrogen Management and Water Quality.** North Carolina Cooperative Extension Service, Pub. # AG 439-2, www.Soil.ncsu.edu/publicatons/Soilfacts/AG-439-02/.
378. **Cutting Edge Technologies & Opportunities: Agricultural Nutrient Management.** Alliance for the Chesapeake Bay, Contact: Allison Wiedeman, wiedeman.Allison@epa.gov.
379. **Maryland Small Ruminant Page.** University of Maryland Cooperative Extension, www.sheepandgoat.com/.
380. **Good Neighbor Guide for Horse-Keeping: Manure Management.** University of New Hampshire Cooperative Extension, USDA, NRCS, <http://ceinfo.unh.edu/Pubs/AgPubs/aahr1050.pdf>.
381. **Water Conservation on Dairy and Livestock Farms.** University of New Hampshire Cooperative Extension, www.ceinfo.unh.edu.

Best Management Practices for Maine Agriculture

382. **Nutrient Management.** University of Wisconsin – Madison, College of Agriculture and Life Sciences, Pub. A 3557, <http://ipcm.wisc.edu/pubs/pdf/a3557-02NMcorn.pdf>.
383. **Livestock Waste Sampling, Analysis and Calculation of Land Application Rates.** North Carolina State University Extension Service, Pub. EBAE 111-84, www.bae.ncsu.edu/programs/extension/publicat/wqwm/ebaе111_84.html.
384. **Calculating the Value of Manure for Crop Production.** Nebraska Cooperative Extension, Bulletin G03-1519-A, <http://ianrpubs.unl.edu/wastemgt/g1519.htm>.
385. **Using a Chlorophyll Meter to Improve N Management.** University of Nebraska Cooperative Extension, Pub. G93-1171-A, <http://cnmp.unl.edu/publications.html>.
386. **Determining Crop Available Nutrients from Manure.** University of Nebraska Cooperative Extension, Pub. G97-1335-A, <http://ianrpubs.unl.edu/wastemgt/g1335.htm>.
387. **Managing Livestock Manure to Protect Environmental Quality.** University of Nebraska Cooperative Extension, Pub. JEC 02-179, <http://ianrpubs.unl.edu/wastemgt/ec179.pdf>.
388. **Disposal Methods of Livestock Mortality.** University of Nebraska Cooperative Extension, Pub. G01-1421-A, <http://ianrpubs.unl.edu/animals/g1421.htm>.
389. **Odor from Feedlots Setback Estimation Tool (OFFSET).** University of Minnesota, Pub. FO 07680, 2001, www.extension.umn.edu/distribution/livestocksystems/DI7680.html.

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B. Reference Documents – By Category in Alphabetical Order

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Manure: What is it Worth on your Farm? University of Maine Cooperative Extension, Bulletin 2432, www	30
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