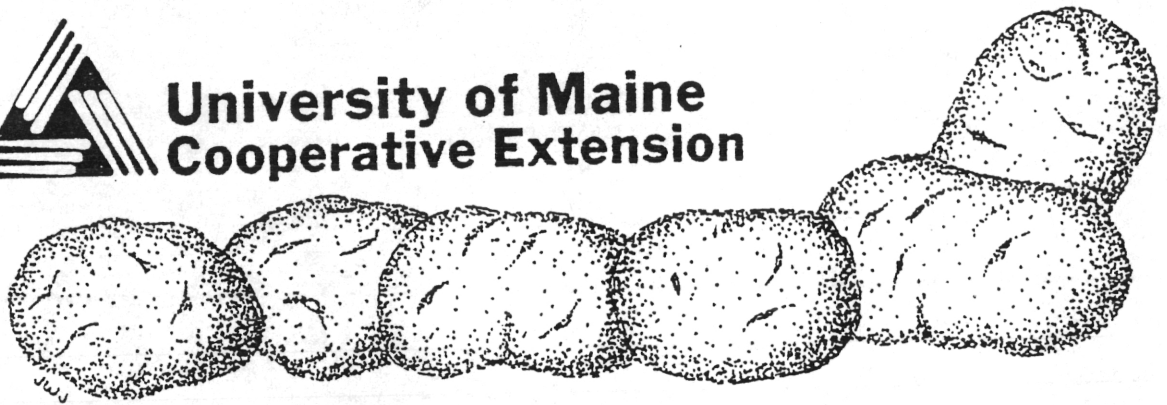


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**University of Maine
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Potato Program

**POTATO CONFERENCE
19 - 21 JANUARY
1994**

COMPOST APPLICATION FOR SOIL IMPROVEMENT AND NITROGEN LOSS REDUCTION

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Use of compost is important for two reasons: soil improvement and waste utilization. Local soils often suffer from deficient levels of organic matter. This will directly influence moisture holding and nutrient holding abilities of the soils.

The volume of waste potatoes in Aroostook County is currently stretching the limits of traditional waste disposal methods. Alternative methods which are cost-effective and environmentally benign must be identified and explored. Composting and land application appear to meet the current needs.

The importance of organic matter in soil is well documented. The value of organic matter in soil has been appreciated, if not completely understood, for decades. Its presence in soil promotes granulation and aggregation while reducing cohesion of soil particles. Organic soils have greater water holding capacity than mineral soils. Effects of organic matter on chemical holding capacity are also significant, accounting for 30 to 90 percent of the adsorbing power of mineral soils; cation adsorption capacity of organic matter is two to thirty times greater than that of mineral colloids (Brady, 1974). Cations present are easily replaceable and major crop nutrients (N-P-K) are held in organic form (Brady, 1974). There is a direct correlation between organic matter and soil nitrogen. Organic matter improves soil texture and structure through binding, lightening and expanding aggregates. Extremely fine and extremely coarse soils both benefit from organic matter addition (Martin and Focht, 1977; Brady, 1974).

Current research efforts related to compost application and its environmental impacts will be discussed. Organic matter management as an alternative means of moisture management will be explored.

REFERENCES

1. Brady, N. C. 1974. The Nature and Properties of Soils (8th edition). Macmillan Publishing Co., Inc. 639 pp.
2. Martin, J. P. and D. D. Focht. 1977. Biological properties of soils. Chapter 6 in: Soils for Management of Organic Wastes and Waste Waters, L. F. Elliott and F. J. Stevenson, eds. Soil Sci. Soc. of Am., Am. Soc. of Agron., and Crop Sci. Soc of Am., Madison, WI.