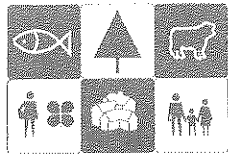


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**EXTENSION
SERVICE**

Oregon State University Fertilizer Guide for

Extension Service, Oregon State University, Henry A. Wadsworth, director. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Extension invites participation in its programs and offers them equally to all people.

FG 15

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PEPPERMINT

(Western Oregon-West of Cascades)

Production of a successful crop of peppermint is dependent on *good management* - weed control, irrigation, fertilization, and flaming of the crop following harvest.

In western Oregon, the stubble remaining after harvest should be flamed within one week. If flaming cannot be done within 10 days after harvest, it should be deferred until after the first frost. Delaying flaming until fall frosts will result in some additional spread of wilt.

Fields with weak roots should be flamed within 1 week after harvest and *irrigated immediately*. Flaming after regrowth has a good start will weaken roots. A light fall application of nitrogen will often help the regeneration of weak roots. Fields that are *dry* should be *irrigated before flaming*.

SOIL SAMPLES

Mint fields should be soil tested to plow depth before planting. This provides a basis for lime and fertilizer applications and for comparing changes in soil test values with succeeding years of production.

Soil samples on *established fields* that are not plowed should be *taken from 2 depths*: (1) The surface 2" (5 cm) of soil and (2) 2 to 6" (5-15 cm) layer of soil. Changes in soil test values in the surface 2" (5 cm) of soil give a more sensitive measure of changes in soil fertility. Comparisons between soil test values when the field was established with the 0 to 2" and 2 to 6" (0 to 5 and 5-15 cm) soil samples help evaluate changes in soil fertility levels. Soil samples should not be taken within one month following a fertilizer application. Further information on soil sampling is available from the county Extension agent.

For established stands suggested lime, phosphorus, and potassium applications are based on soil samples from the surface 2" (5 cm) of soil.

PLANT SAMPLES

In addition to soil testing, the chemical analysis of plant samples is useful in planning a fertilizer and liming program and in evaluating the previous year's fertilizer program. *Growers should contact the county Extension agent for information about plant sampling.*

NITROGEN (N)

Mint farmers spend most of their fertilizer dollars for N. Research conducted by OSU indicates that the annual application of 200 lbs/A

(225 kg/ha) N is optimum. *A continuous N supply throughout the growing season is important to maintain active vegetative growth and development of new leaves for optimum oil production.*

Suggested N application

Fall application of 20 to 30 lbs/A (22 to 34 kg/ha) of N following harvest may help the growth of weak roots.

1. *Apply a total of about 200 lbs N/A during the growing season.* Apply 40 to 60 lbs/A (45-65 kg/ha) of N one week before the last spring flaming or immediately after spring flaming in the Willamette Valley. Apply the remaining N (about 150 lbs N/A) between June 1 and July 10. Applications in early June can be made with conventional spreaders with little mechanical damage to the mint plants. A pipe, small pole, or chain can be dragged behind the spreader to reduce the burn that sometimes occurs when dry fertilizer falls on growing vegetation.

2. N application through sprinkler systems is a good way of providing a continual N supply. The following N fertilizer materials can be applied through sprinkler systems: ammonium sulfate, ammonium nitrate, urea, calcium nitrate, and solution 32.

PHOSPHORUS (P)

Adequate P is important to stimulate new root growth after harvest. *P should be fall applied.* Liberal P fertilization has resulted in very high P soil test values in many fields.

If OSU soil test ^{1/} for P reads (ppm):	Apply this amount of P ₂ O ₅	
	lbs/A	kg/ha
0 - 20	100 - 150	110 - 170
20 - 40	60 - 100	65 - 110
40+	None	

The P content of fertilizer is expressed as the oxide (P₂O₅) on fertilizer labels. Multiply P₂O₅ by 0.44 to convert to P.

^{1/} On established stand, the suggested P application is based on 0-2" (0-5 cm) soil sample. Increase P rates 50% when the 2" to 6" (5-15 cm) soil test is below 20 ppm of P.

POTASSIUM (K)

Response of mint to K has been observed on soil with low K soil test values in western Oregon. Three tons of peppermint hay/A removes about

250 lbs of K/A from fields and soils with a low K supplying power can be rapidly depleted of K. K should be applied in the fall or early spring.

If OSU soil test ^{1/} for K reads (ppm):	Apply this amount of K ₂ O	
	lbs/A	kg/ha ²
0 - 100	120 - 200	135 - 225
100 - 200	60 - 120	65 - 135
200+	None	

The K content of fertilizer is expressed as the oxide (K₂O) on fertilizer labels. Multiply K₂O by 0.83 to convert to K.

^{1/}On established stand, the suggested K application is based on 0-2" (0-5 cm) soil sample. Increase K rates 50% when the 2" to 6" (2-15 cm) soil test is below 100 ppm of K.

SULFUR (S)

Peppermint has responded to applications of S in western Oregon. Apply about 30 lbs/A (35 kg/ha) S each year. S is often a constituent of N, P and N, P, K fertilizer materials.

MAGNESIUM (Mg) and MICRONUTRIENTS (Zn, Mn, Fe, Cu, B)

To date, there has been no indication of a need for the application of Mg or micronutrients (zinc-Zn, manganese-Mn, iron-Fe, copper-Cu, boron-B) on peppermint fields in western Oregon. Plant analysis for these nutrients in peppermint plants has indicated levels that would be considered relatively high for other plants.

LIME

New Plantings: *New plantings should be limed* when the soil pH is below 6.0 or the Ca (calcium) soil test is below 8 meq Ca/100g of soil. This would give some allowance for increase in soil acidity during the life of the mint stand. Half of the lime should be mixed with 6 to 8" (15-20 cm) of surface soil to counteract soil acidity throughout the plow layer. Half of the lime should be mixed with the surface 1 or 2" (2.5-5 cm) of soil where most of the acidification from N fertilizer takes place.

If the OSU buffer test for lime reads:	Apply this amount of lime	
	T/A	Tm/ha
below 5.2	5 - 6	11 - 13
5.2 - 5.6	4 - 5	9 - 11
5.6 - 5.9	3 - 4	7 - 9
5.9 - 6.1	2 - 3	4.5 - 7
6.1 - 6.5	1 - 2	2 - 4.5
Over 6.5	None	

The liming rate is based on 100-score dry lime.

Lime should be mixed into the soil at least several weeks before planting. A lime application is effective over several years.

High rates of *nitrogen fertilization increase soil acidity* during the six or seven year life of a mint field. Plowing and discing of established mint fields has been eliminated to reduce the spread of verticillium wilt in western Oregon. This eliminates mixing lime with the soil on established plantings.

When soil pH drops below 5.5 in the surface 2" (5 cm) of soil *on established fields*, broadcast about 1 1/2 T/A (3.5 Tm/ha) of lime as soon after harvest as possible. Surface application of lime will stimulate root growth during the fall and winter on acid fields.

The surface application of lime may stimulate volatilization losses from surface applications of N fertilizer. Irrigation immediately following the N application should reduce this loss where lime has been recently broadcast and left on the soil surface. A winter season or several irrigations following the surface lime application will greatly reduce the N volatilization hazard.

CONVERSION TO METRIC UNITS

In this FG, English and metric units are used. The abbreviations and Conversion Factors (C.F.) are:

From	To	C.F.
Feet (')	Meters (m)	0.305
Inches (")	Centimeters (cm)	2.54
Pounds (lb)	Kilograms (kg)	0.454
Acres (A)	Hectares (ha)	0.405
Tons (T)	Metric tons (Tm)	0.907
Pounds per Acre (lb/A)	Kilograms per Hectare (kg/ha)	1.12
Tons per Acre (T/A)	Metric Tons per Hectare (Tm/ha)	2.24

The suggested P, K, and lime applications are based on soil test values from the Soil Testing Laboratory, Oregon State University.

Suggested fertilizer applications are based on a survey and experiments conducted by T. L. Jackson, Department of Soil Science, Oregon State University, and observation of growers' results.

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