

130th MAINE LEGISLATURE

FIRST SPECIAL SESSION-2021

Legislative Document

No. 1535

H.P. 1139

House of Representatives, April 19, 2021

An Act To Allow Green Death Care Practices by Alkaline Hydrolysis and Natural Organic Reduction

Received by the Clerk of the House on April 15, 2021. Referred to the Committee on Health and Human Services pursuant to Joint Rule 308.2 and ordered printed pursuant to Joint Rule 401.

R(+ B. Hunt

ROBERT B. HUNT Clerk

Presented by Representative WILLIAMS of Bar Harbor. Cosponsored by Representative: PIERCE of Falmouth.

- 1 Be it enacted by the People of the State of Maine as follows: 2 Sec. 1. 13 MRSA §1031-A is enacted to read: 3 §1031-A. Definitions 4 As used in this chapter, unless the context otherwise indicates, the following terms have the following meanings. 5 6 **1.** Alkaline hydrolysis. "Alkaline hydrolysis" means the reduction of human remains to bone fragments and essential elements in a licensed alkaline hydrolysis facility using 7 8 heat, pressure, water and base chemical agents. 9 2. Alkaline hydrolysis facility. "Alkaline hydrolysis facility" means a building or 10 structure or a room or other space in a building or structure containing one or more hydrolysis vessels to be used for alkaline hydrolysis. 11 12 3. Natural organic reduction. "Natural organic reduction" means the contained accelerated conversion of human remains to soil. 13 14 4. Natural organic reduction facility. "Natural organic reduction facility" means a building or structure or a room or other space in a building or structure or real property 15 where natural organic reduction is facilitated and occurs. 16 17 Sec. 2. 13 MRSA §1032 is amended to read: 18 §1032. Disposal of bodies 19 Except as otherwise provided by law, or in case of a dead body being rightfully carried 20 through or removed from the State for the purpose of burial or disposition elsewhere, every 21 dead body of a human being dying within the State and the remains of any body after 22 dissection therein shall must be decently buried, entombed in a mausoleum, vault or tomb, 23 or cremated or subjected to alkaline hydrolysis or natural organic reduction within a 24 reasonable time after death. The permanent disposition of such bodies or remains shall 25 must be by interment in the earth, or deposit in a chamber, vault or tomb of a cemetery 26 owned, maintained and operated in accordance with the laws of this State, by deposit in a crypt of a mausoleum, or by cremation, alkaline hydrolysis or natural organic reduction. 27 28 The remains of a human body after cremation, alkaline hydrolysis or natural organic 29 reduction may be deposited in a niche of a columbarium or a crypt of a mausoleum, buried 30 or disposed of in any manner not contrary to law. No deposit of the bodies or remains of 31 the human dead shall may be made in a single chamber, vault or tomb partly above and 32 partly below the natural surface of the ground, unless the part thereof below such surface 33 is of a permanent character, constructed of materials capable of withstanding extreme 34 climatic conditions, waterproof and air tight, and capable of being sealed permanently to 35 prevent all escape of effluvia, and unless the part thereof above the natural surface of the 36 ground is constructed of natural stone of a standard not less than that required by the United 37 States Government for monuments erected in national cemeteries, or durability sufficient 38 to withstand all conditions of weather. 39 Sec. 3. 13 MRSA §1035, as amended by PL 2019, c. 113, Pt. C, §25, is further 40 amended to read:
- 41 **§1035.** Penalties

Except as otherwise provided in this chapter, a person who fails to comply with or violates any of the provisions of this chapter in respect to the establishment, maintenance or operation of a cemetery, community mausoleum, crematory, <u>alkaline hydrolysis facility</u> <u>or natural organic reduction facility</u> or columbarium or to the disposal of dead human bodies commits a Class E crime except that, notwithstanding Title 17-A, sections 1704 and 1705, the fine may not be less than \$100 or more than \$500.

7 Sec. 4. 13 MRSA §1101-A, sub-§2, as enacted by PL 2003, c. 421, §1, is amended
 8 to read:

2. Columbarium. "Columbarium" means a structure or room or space in a mausoleum or other building containing niches or recesses for disposition of cremated human remains that have undergone cremation, alkaline hydrolysis or natural organic reduction.

Sec. 5. 13 MRSA §1264, sub-§1, as enacted by PL 1995, c. 474, §1, is amended to read:

14 1. Trust accounts. Pre-need funds received for cemetery Θ , crematory, alkaline hydrolysis or natural organic reduction services or property to be delivered at or after the 15 date of death must be placed in a cemetery or, crematory or alkaline hydrolysis facility or 16 17 natural organic reduction facility trust account in a bank, trust company, credit union or savings institution. For purposes of this subsection, "pre-need funds" means all money 18 paid during a person's lifetime to a cemetery or, crematory or alkaline hydrolysis facility 19 20 or natural organic reduction facility by that person or by another person on that person's behalf under an agreement that services will be performed or property will be delivered in 21 22 connection with the disposition of that person's body after that person's death.

23 Sec. 6. 13 MRSA §1264, sub-§3, as enacted by PL 1995, c. 474, §1, is amended to
 24 read:

25 3. Services and property covered. This section applies to cemetery or, crematory, alkaline hydrolysis or natural organic reduction services such as cremation fees, grave 26 opening and closing charges and inscription of death dates. This section does not apply to 27 28 the sale of cemetery lots or plots, monuments and memorials, garden crypts, lawn crypts, 29 mausoleum crypts, cremation urns and niches, vaults, liners and similar tangible personal property if title to and physical possession of the specific property has passed to the buyer. 30 31 Any funds expended to purchase tangible personal property when that personal property is 32 held by the payee until the time of need are not considered funds that must be placed in the 33 trust account.

- Sec. 7. 13 MRSA §1265, as enacted by PL 1995, c. 474, §1, is amended to read:
- 35 §1265. Tangible personal property

9

10

11

12

13

34

Upon written request and payment of any reasonable out-of-pocket expenses, a cemetery or, crematory, alkaline hydrolysis facility or natural organic reduction facility shall deliver to a person, the person's attorney-in-fact or the person's personal representative any item of tangible personal property purchased by that person but remaining in the possession of the cemetery or, crematory, alkaline hydrolysis facility or natural organic reduction facility.

- 42 Sec. 8. 13 MRSA §1266, as enacted by PL 1995, c. 474, §1, is amended to read:
- 43 §1266. Solicitation of cemetery or crematory services or property

1 Uninvited telephone or door-to-door solicitations for crematory or, cemetery, alkaline 2 hydrolysis or natural organic reduction services or property are prohibited. This section 3 may not be construed to limit the raising of funds for capital improvements as long as those funds are not raised through the purchase of cemetery or, crematory, alkaline hydrolysis 4 facility or natural organic reduction facility services or property. Uninvited solicitations 5 may not be construed to include solicitations resulting from uninvited good-faith personal 6 referrals from individuals purchasing services or property from a cemetery or, crematory, 7 alkaline hydrolysis facility or natural organic reduction facility. 8

9

Sec. 9. 13 MRSA §1303, 2nd ¶ is amended to read:

10 Every such cemetery shall must be located in accordance with statutes already in force 11 and effect, and only after consent for such location has been obtained from the municipality 12 or other political subdivision where the same is proposed to be located, as well as from the Bureau of Health Department of Health and Human Services. No A cemetery, community 13 14 mausoleum, crematory, alkaline hydrolysis facility or natural organic reduction facility or columbarium hereafter established shall may not be maintained or operated for the purpose 15 of private profit or gain, either directly or indirectly, to any director, officer or member of 16 the cemetery association or other agency owning, maintaining or operating the same, or of 17 any holding company or development company employed to develop, build and dispose of 18 19 the same. A cemetery lawfully established prior to July 24, 1937 may continue to be owned, maintained and operated under the form of organization adopted therefor. Any 20 corporation organized prior to July 24, 1937 which that is authorized or empowered to own, 21 22 construct, maintain or operate cemeteries or burial grounds may lawfully own, construct, 23 maintain or operate mausoleums, crematories or columbaria in connection therewith, in accordance with the laws existing and effective up to the time of July 24, 1937. 24

25 Sec. 10. 13 MRSA §1304 is amended to read:

26 §1304. Sales for speculation or investment

27 The sale of cemetery lots and plots, or the sale of crypts in a community mausoleum or niches in a columbarium for speculative or financial investment purposes, or the 28 29 conveyance of any portion of a cemetery already dedicated to burial purposes as security for debt, is prohibited. Every such conveyance, whether made by a person or by a cemetery 30 association, or by a company or association owning and operating a community 31 mausoleum, crematory, alkaline hydrolysis facility or natural organic reduction facility or 32 columbarium, or by any holding, development or subsidiary company, shall be is void and 33 34 of no effect. Whoever makes or attempts to make a sale or conveyance contrary to this section shall be is guilty of a misdemeanor and must be punished as provided in section 35 36 1035.

- 37 Sec. 11. 13 MRSA §1341, sub-§1, as amended by PL 2003, c. 421, §2, is further
 38 amended to read:
- Mausoleum, crematory or other structure. A Except for an alkaline hydrolysis
 facility or natural organic reduction facility, a community mausoleum, community
 crematory, or other community structure that holds or contains dead human bodies may
 only be erected only in a cemetery that is at least 20 acres in size and has been in existence
 and used for burial for at least 2 years preceding the erection of the structure.

1 Sec. 12. 13 MRSA §1341, sub-§2, as enacted by PL 1999, c. 620, §1, is amended 2 to read:

2. Columbarium. A columbarium that holds or contains the eremated remains of dead human bodies <u>that have been cremated or subjected to alkaline hydrolysis or natural organic reduction</u> may only be erected <u>only</u> in a cemetery that is at least 5 acres in size and has been in existence and used for burial for at least 2 years preceding the erection of the structure.

Sec. 13. 22 MRSA §2841-A is enacted to read:

9 §2841-A. Definitions

3

4

5

6

7 8

10As used in this chapter, unless the context otherwise indicates, the following terms11have the following meanings.

12 <u>1. Alkaline hydrolysis. "Alkaline hydrolysis" means the reduction of human remains</u>
 13 to bone fragments and essential elements in a licensed alkaline hydrolysis facility using
 14 heat, pressure, water and base chemical agents.

15 2. Alkaline hydrolysis facility. "Alkaline hydrolysis facility" means a building or
 16 structure or a room or other space in a building or structure containing one or more
 17 hydrolysis vessels to be used for alkaline hydrolysis.

18 3. Natural organic reduction. "Natural organic reduction" means the contained
 accelerated conversion of human remains to soil.

4. Natural organic reduction facility. "Natural organic reduction facility" means a
 building or structure or a room or other space in a building or structure or real property
 where natural organic reduction is facilitated and occurs.

Sec. 14. 22 MRSA §2843, first ¶, as amended by PL 2009, c. 601, §27, is further
 amended to read:

25 Except as authorized by the department, a dead human body may not be buried, 26 cremated, subjected to alkaline hydrolysis or natural organic reduction or otherwise disposed of or removed from the State until a funeral director or other authorized person in 27 charge of the disposition of the dead human body or its removal from the State has obtained 28 29 a permit from the State Registrar of Vital Statistics or the clerk of the municipality where 30 death occurred or where the establishment of a funeral director having custody of the dead human body is located as specified by department rule. The permit is sufficient authority 31 32 for final disposition in any place where dead human bodies are disposed of in this State, as 33 long as the requirements of Title 32, section sections 1405 and 1405-B are met in 34 appropriate cases. The permit may not be issued to anyone other than a funeral director 35 until the state registrar or the clerk of the municipality receives a medical certificate that has been signed by a physician or a medical examiner that indicates that the physician or 36 medical examiner has personally examined the body after death. A permit must also be 37 issued if a nurse practitioner or physician assistant has signed the medical certificate 38 indicating that the nurse practitioner or physician assistant has knowledge of the deceased's 39 40 recent medical condition or was in charge of the deceased's care and that the nurse practitioner or physician assistant has personally examined the body after death. The 41 authorized person may transport a dead human body only upon receipt of this permit. 42

Sec. 15. 22 MRSA §2843, 2nd ¶, as amended by PL 2009, c. 601, §27, is further
 amended to read:

The State Registrar of Vital Statistics or a municipal clerk may issue a permit for final disposition by cremation, burial at sea, use by medical science, <u>alkaline hydrolysis</u>, <u>natural organic reduction</u> or removal from the State only upon receipt of a certificate of release by a duly appointed medical examiner as specified in Title 32, section 1405 <u>or 1405-B</u>.

6 7 8

3

4

5

Sec. 16. 22 MRSA §2843, sub-§3, as amended by PL 2013, c. 20, §1, is further amended to read:

9 **3.** Permit for burial. The person in charge of each burying ground Θ_{τ} , crematory, 10 alkaline hydrolysis facility or natural organic reduction facility in this State shall endorse, and provide the date the body was disposed of on, each such permit with which that person 11 12 is presented, and return it to the State Registrar of Vital Statistics or to the clerk of the 13 municipality in which such burying ground or, crematory or facility is located within 7 days after the date of disposition. If there is no person in charge of the burying ground, an 14 15 official of the municipality in which the burying ground is located shall endorse, and provide the date the body was disposed of on, each such permit, and present it to the State 16 Registrar of Vital Statistics or the clerk of the municipality. The funeral director or 17 authorized person shall present a copy of each permit, after endorsement, to the State 18 19 Registrar of Vital Statistics or the clerk of the municipality where death occurred and to the 20 clerk who issued the permit.

Sec. 17. 22 MRSA §2843, sub-§3-A, as amended by PL 2019, c. 257, §1, is further
 amended to read:

23 3-A. Authorization for burial of cremated or other remains in public burying 24 ground. The State Registrar of Vital Statistics shall provide an authorization to be used 25 for the purposes of this subsection. If cremated human remains that have been cremated or 26 subjected to alkaline hydrolysis or natural organic reduction are buried in a public burying ground in the State, the person in charge of the public burying ground shall endorse and 27 28 record the date the cremated remains were buried on an authorization for the remains and 29 return the authorization to the State Registrar of Vital Statistics or to the clerk of the 30 municipality in which the public burying ground is located within 7 days after the cremated 31 remains were buried. If there is no person in charge of the public burying ground, an official of the municipality in which the public burying ground is located shall endorse and 32 33 record the date the eremated remains were buried on the authorization and present the 34 authorization to the State Registrar of Vital Statistics or the clerk of the municipality. If an 35 authorization is not returned to the State Registrar of Vital Statistics within 7 days after eremated remains were buried, the funeral director or authorized person may present a copy 36 of the authorization, if the authorization has been endorsed, to the State Registrar of Vital 37 38 Statistics or the clerk of the municipality where death occurred and to the clerk who issued 39 the authorization.

For purposes of this subsection, unless the context otherwise indicates, the following terms
have the following meanings.

42 A. "Authorization" means the form or electronic process prescribed and furnished by 43 the State Registrar of Vital Statistics for the purpose of recording the consent of an 44 authorized person for the burial or removal of cremated human remains that have been

- cremated or subjected to alkaline hydrolysis or natural organic reduction in a public
 burying ground as specified by department rule.
- B. "Burial" means all manner of dispersal or deposit in or on the ground or in a structure.
- 5 C. "Public burying ground" has the same meaning as in Title 13, section 1101-A, subsection 4.
- Sec. 18. 22 MRSA §2843-A, sub-§2, as repealed and replaced by PL 2017, c. 475,
 Pt. A, §31, is amended by amending the 4th blocked paragraph to read:

9 The remains or a dead body is considered abandoned if no one takes custody and control of the remains or dead body for a period of 15 days. A funeral director or practitioner of 10 funeral service who has physical possession of abandoned remains or an abandoned dead 11 body may bury or, cremate or subject the remains or dead body to alkaline hydrolysis or 12 natural organic reduction. The funeral director or practitioner of funeral service may 13 embalm or refrigerate abandoned remains or an abandoned dead body without 14 authorization. A certificate of abandonment that indicates the means of disposition must 15 16 be filed in the municipality where the death occurred.

- Sec. 19. 22 MRSA §2843-A, sub-§10, as amended by PL 2017, c. 101, §3, is
 further amended to read:
- 19 10. Funeral director or practitioner of funeral service. The following provisions
 apply to the actions and liability of a funeral director or practitioner of funeral service,
 cemeteries and crematories and their employees.
- A. If there is a dispute regarding custody and control, a funeral director or practitioner of funeral service may refuse to accept the remains or dead body, inter or otherwise dispose of the remains or dead body or complete funeral arrangements until the funeral director or practitioner of funeral service is provided with a court order under subsection 4 or a written agreement of the person who has custody and control.
- B. If there is a dispute regarding custody and control, pending a court determination under subsection 4 a funeral director or practitioner of funeral service who has physical possession of the remains or a dead body may embalm or refrigerate and shelter the remains or a dead body and may bill the estate of the subject for those costs, plus attorney's fees and court costs.
- C. A person who signs a statement of funeral goods and services, <u>or a</u> cremation, <u>alkaline hydrolysis or natural organic reduction</u> authorization form or other authorization for disposition of the remains or a dead body is deemed to warrant the truthfulness of the facts set forth in the document, including but not limited to the existence of custody and control and the identity of the subject.
- D. A funeral director or practitioner of funeral service, cemetery, <u>alkaline hydrolysis</u> facility or natural organic reduction facility or crematory may rely on a statement of funeral goods and services, <u>or a</u> cremation, <u>alkaline hydrolysis or natural organic</u> reduction authorization form or other authorization signed by a person who has custody and control of the remains or a dead body and may carry out the instructions provided for in the statement of funeral goods and services or on the form or authorization unless the funeral director or practitioner of funeral service, cemetery, <u>alkaline hydrolysis</u>

1 2	<u>facility or natural organic reduction facility</u> or crematory knows of objections from another person.
3 4 5	E. A funeral director or practitioner of funeral service, cemetery, <u>alkaline hydrolysis</u> <u>or natural organic reduction facility</u> or crematory is not required to independently investigate custody and control of the remains or a dead body or who is next of kin.
6 7 8 9 10 11 12 13 14 15 16 17 18	F. Upon cremation, alkaline hydrolysis or natural organic reduction of the remains or dead body, the crematory, alkaline hydrolysis facility or natural organic reduction facility shall prepare a certificate of cremation, alkaline hydrolysis or natural organic reduction signed and dated by the person in charge of the cremation, alkaline hydrolysis or natural organic reduction indicating the date of cremation, alkaline hydrolysis or natural organic reduction and the identity of the eremated remains or dead body as identified by the funeral director or practitioner of funeral service or the cremation, alkaline hydrolysis or natural organic reduction form, including the deceased person's full name, date and place of death, gender and veteran status. The crematory, alkaline hydrolysis facility or natural organic reduction to the funeral director or practitioner of funeral service or the person to the crematory of the remation or natural organic reduction facility shall provide the certificate of cremation, alkaline hydrolysis or natural organic reduction to the funeral director or practitioner of funeral service or the person who has custody and control of the remains or dead body.
19 20	Sec. 20. 22 MRSA §2883, 3rd ¶, as enacted by PL 2001, c. 386, §5, is amended to read:
21 22 23	As used in this section, "burial" includes cremation, alkaline hydrolysis as defined in section 2841-A, subsection 1 or natural organic reduction as defined in section 2841-A, subsection 3 and burial of the eremated remains of the body.
24	Sec. 21. 22 MRSA §2900, sub-§1, ¶D is enacted to read:
25 26 27	D. "Cremated" or "cremation" means subject to the process of cremation, alkaline hydrolysis as defined in section 2841-A, subsection 1 or natural organic reduction as defined in section 2841-A, subsection 3.
28	Sec. 22. 32 MRSA §1400, sub-§1-B is enacted to read:
29 30 31	1-B. Alkaline hydrolysis. "Alkaline hydrolysis" means the reduction of human remains to bone fragments and essential elements in a licensed alkaline hydrolysis facility using heat, pressure, water and base chemical agents.
32	Sec. 23. 32 MRSA §1400, sub-§1-C is enacted to read:
33 34 35	1-C. Alkaline hydrolysis facility. "Alkaline hydrolysis facility" means a building or structure or a room or other space in a building or structure containing one or more hydrolysis vessels to be used for alkaline hydrolysis.
36	Sec. 24. 32 MRSA §1400, sub-§4-A is enacted to read:
37 38 39	 <u>4-A. Natural organic reduction.</u> "Natural organic reduction" means the contained accelerated conversion of human remains to soil. Sec. 25. 32 MRSA §1400, sub-§4-B is enacted to read:
59	500. 25. 52 MINON 31700, 500-37-D 15 CHalled to Icau.

4-B. Natural organic reduction facility. "Natural organic reduction facility" means 1 2 a building or structure or a room or other space in a building or structure or real property 3 where natural organic reduction is facilitated and occurs.

Sec. 26. 32 MRSA §1405-B is enacted to read:

4

5

11

§1405-B. Alkaline hydrolysis or natural organic reduction

6 A person, firm or corporation within the State, after obtaining a license from and paying 7 a license fee to the Department of Health and Human Services may establish and maintain 8 suitable buildings and appliances for subjecting the bodies of the dead to alkaline 9 hydrolysis or natural organic reduction and, subject to the rules of the department, may 10 subject to alkaline hydrolysis or natural organic reduction such bodies and dispose of the remains of the same. The department shall adopt rules to implement this section. Rules adopted pursuant to this section are routine technical rules as defined by Title 5, chapter 12 13 375, subchapter 2-A.

14 The body of a deceased person may not be subjected to alkaline hydrolysis or natural organic reduction within 48 hours after death unless the person died of a contagious or 15 16 infectious disease, and in no event may the body of a deceased person be subjected to 17 alkaline hydrolysis or natural organic reduction until the person, firm or corporation in 18 charge of the disposition has received a certificate from a duly appointed medical examiner 19 or medicolegal death investigator appointed pursuant to Title 22, section 3023-A that the 20 medical examiner or medicolegal death investigator has made personal inquiry into the 21 cause and manner of death and is satisfied that further examination or judicial inquiry 22 concerning the cause and manner of death is not necessary. This certificate, a certified 23 copy of the death certificate and a burial transit permit when presented by the authorized 24 person as defined in Title 22, section 2846 is sufficient authority for the body to be 25 subjected to alkaline hydrolysis or natural organic reduction, and the person, firm or 26 corporation in charge of the disposition may not refuse to subject the body to alkaline 27 hydrolysis or natural organic reduction or otherwise dispose of the body solely because 28 these documents are presented by such an authorized person. The certificate must be 29 retained by the person, firm or corporation in charge of subjecting the body to alkaline 30 hydrolysis or natural organic reduction or disposition for a period of 15 years. For the 31 certificate, the medical examiner must receive a fee of \$25 payable by the person requesting 32 the certificate. This fee may be waived at the discretion of the Chief Medical Examiner.

33 Human remains may not be removed, transported or shipped to an alkaline hydrolysis 34 facility or natural organic reduction facility unless encased in a casket or other suitable 35 container. Following alkaline hydrolysis or natural organic reduction, the facility shall label 36 the container of the human remains with the name of the person who was subjected to 37 alkaline hydrolysis or natural organic reduction.

Sec. 27. 32 MRSA §1405-C is enacted to read: 38

39 §1405-C. Disposition of remains subjected to alkaline hydrolysis or natural organic 40 reduction

41 A funeral director or a practitioner of funeral service who receives remains subjected 42 to alkaline hydrolysis or natural organic reduction or has received remains subjected to 43 alkaline hydrolysis or natural organic reduction prior to the effective date of this section

- may dispose of those remains in accordance with Title 13, section 1032, if the following
 conditions have been met:
- **1. Remains not claimed for one year.** The remains subjected to alkaline hydrolysis
 or natural organic reduction have not been claimed after a time period of at least one year
 from the time of completion of the alkaline hydrolysis or natural organic reduction; and
- 2. Notice. The funeral director or practitioner of funeral service has sent notice by
 certified mail, return receipt requested, to the last known address of the person who
 authorized the alkaline hydrolysis or natural organic reduction at least 60 days prior to
 disposal.
- 10 Sec. 28. 32 MRSA §1455-B, sub-§6, as enacted by PL 2007, c. 402, Pt. J, §7, is 11 amended to read:
- 6. Unauthorized commission; crematory, mausoleum, facility for alkaline
 hydrolysis or natural organic reduction or cemetery. Solicitation or acceptance by a
 licensee of any commission, bonus or rebate in consideration of recommending or causing
 human remains to be disposed of in any crematory, mausoleum, alkaline hydrolysis facility,
 natural organic reduction facility or cemetery;
- 17 SUMMARY

18 This bill allows for the treatment of human remains by alkaline hydrolysis or natural 19 organic reduction as an alternate to burial in a casket or cremation. Alkaline hydrolysis is 20 the reduction of human remains to bone fragments and essential elements in a licensed 21 alkaline hydrolysis facility using heat, pressure, water and base chemical agents and natural 22 organic reduction is the contained accelerated conversion of human remains to soil.