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- (54) Benævnelse: **LANDBRUGSSPRØJTE OG FREMGANGSMÅDE TIL UDSPREDNING AF SPRØJTEVÆSKE PÅ ET LANDBRUGSNYTTEAREAL**
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AGRICULTURAL SPRAYER AND METHOD FOR APPLYING SPRAY LIQUID ON AN AGRICULTURAL WORKING SURFACE

Description

The invention relates to an agricultural sprayer according to the preamble of claim 5 1 and to a method for applying spray liquid to an agricultural surface according to the preamble of claim 6.

In many utilization scenarios, particularly in agriculture, sprayers are used to apply spray liquid to an agricultural surface. Depending on the field of utilization, weedkillers and/or plant protectants, such as herbicides, fungicides and/or 10 insecticides, and/or fertilizers are used for the growing vegetation. Sprayers of the generic type comprise at least one reservoir from which the spray liquid can be applied to the agricultural surface via at least one supply line and discharge elements, in particular nozzles, arranged downstream thereto. Typically, at least a part of the supply line and/or the discharge elements, in particular nozzles, are 15 arranged on a boom which consists of multiple sections, preferably substantially transverse to a direction of travel. Particularly during application of the spray liquid, it is extremely important to set a needs-based application rate in order to achieve good application results on the one hand and good increases in yield on the other hand. Furthermore, due to constantly increasing requirements in terms of 20 environmental pollution, it is becoming more and more important to reduce the use of weedkillers and/or plant protectants as much as possible.

Besides various parameters that depend on the sprayer, the nature of the agricultural surface, in particular the population of crops and/or weeds thereon, is of crucial importance for the quantity of spray liquid to be applied. To achieve an 25 application rate that can be controlled in as needs-based a manner as possible, modern agricultural sprayers typically comprise a plurality of discharge elements which can be controlled selectively along the boom in an open-loop and/or closed-loop manner.

WO 2018/154490 A1 discloses an agricultural sprayer comprising at least one first 30 and one second discharge element which are arranged on a spray boom and are designed to apply spray liquid to the agricultural surface, in particular to the

vegetation thereof, depending on an operating state. Furthermore, the sprayer comprises at least one detection device which is designed to detect vegetation, in particular in the form of weed and/or wild growth, on the agricultural surface. In addition, the sprayer comprises at least one adjusting device by means of which
5 the impact area of the spray liquid which can be applied by the at least one first and/or second discharge element can be adjusted.

One disadvantage of said device is that only a particularly large part of the agricultural surface can be wetted with spray liquid by means of the respective discharge elements. This means that at least some areas that contain little or no
10 weeds and/or wild growth are also contaminated with spray liquid.

Such a sprayer is also known from document WO 2019/094266 A1. In this case, in addition, the operating state is selectable depending on the vegetation detected, and the spray liquid is applicable via the at least one first discharge element in a first operating state and via the at least one second discharge element in a second
15 operating state.

In contrast, US 2015/0245565 A1 discloses a sprayer for treating individual plants, in particular individual weed and/or wild growth, in a needs-based manner. Besides a detection device for detecting the vegetation, in particular for detecting at least one individual plant, the sprayer additionally comprises an adjusting device
20 for adjusting the impact area of the spray liquid which can be discharged by the discharge elements.

The discharge elements, in particular nozzles, have a spray fan with a particularly acute angle of the spray fan, which is suitable for wetting in each case only a particularly small portion of the agricultural surface, in particular an individual plant.

25 However, it has been found that only comparatively low working speeds for treating the agricultural surface can be achieved with such a sprayer. In order to wet at least almost the entirety of the vegetation with spray liquid and/or not to overload the respective discharge elements and/or adjusting devices, either a particularly large number of discharge elements or particularly low working speeds
30 of the sprayer have therefore been necessary to date.

The object of the invention is therefore to design a sprayer such that the spray liquid can be applied to the agricultural surface, in particular to the vegetation thereof, with increased efficiency. The object of the invention is also to specify a method for applying spray liquid.

- 5 This object is achieved according to the invention by the identifying features of claim 1. Furthermore, with regard to the method, the object is achieved by the subject-matter of claim 6.

As a result of this measure, discharge elements having different spray profiles are used within a sprayer. Depending on the operating state, the spray liquid can thus
10 be discharged via discharge elements, in particular nozzles, having a first or second spray profile. The sprayer can thus be used not only to treat areas and/or rows but also to treat individual plants in the vegetation, in particular weed and/or wild growth. This makes it possible not only to treat individual plants in a way that, in particular, saves on spray liquid and/or is environmentally friendly, but also to
15 treat areas and/or rows with a particularly high working speed of the sprayer.

According to the invention, the at least one first and second discharge elements may be arranged separately and/or together on the boom. As an alternative or in addition, it is conceivable that the at least one first and second discharge elements are arranged at different positions along the boom. Particular preference is given
20 to at least two separate supply lines, wherein the at least one first and second discharge element can in each case be fluidically connected to different supply lines. In this case, the first discharge element can be connected to a first supply line and the second discharge element can be connected to a second supply line. Furthermore, it is preferred if a first spray liquid having a first, in particular high,
25 concentration of active ingredient can be applied from the first discharge element and a second spray liquid having a second, in particular low, concentration of active ingredient can be applied from the second discharge element. In this case, a suitable premixing system and/or different reservoirs are conceivable, which are fluidically connected to the supply lines via a suitable delivery system.

In an alternative or additionally preferred embodiment, the first and second discharge elements are combined into one nozzle, the spray profile of the nozzle being adjustable.

The sprayer is additionally assigned at least one open-loop and/or closed-loop
5 control system, which is designed to select the operating state of the sprayer, preferably automatically, depending on the vegetation that can be detected. As an alternative or in addition, the operating state can be selected by a machine operator by means of a display and/or operating element assigned to the sprayer. The sprayer is therefore suitable for discharging the spray liquid via the at least
10 one first discharge element during the first operating state and via the at least one second discharge element during the second operating state. Furthermore, particular preference is given to a sprayer in which a plurality of first and second discharge elements are arranged along the boom, wherein in each case at least one first and second discharge element are assigned to each other in groups, in
15 particular in sections, and wherein the operating state of a particular group, in particular of a section, can be switched. The operating state of the respective individual first and second discharge elements associated in groups, in particular in sections, along the boom is therefore adjustable.

The detection device may comprise at least one optical sensor and/or at least one
20 optical, in particular image-capturing, camera, which are preferably arranged in the region of the boom, in particular in front of the spray nozzles in the direction of travel. Furthermore, the vegetation within a detection area that depends, in particular objectively, on the field of view can be detected by means of the at least one detection device. Particular preference is given to a plurality of sensors and/or
25 cameras, each of which is assigned to at least one discharge element and/or to a group of discharge elements. Furthermore, preference is given to an embodiment of the detection device in which at least one sensor and/or one camera is arranged behind the discharge elements in the direction of travel, the field of view being oriented toward a portion of the agricultural surface which is located in front of the
30 discharge elements in the direction of travel.

In another preferred embodiment of the sprayer according to the invention, the adjusting device comprises at least one actuator, the at least one first and/or

second discharge element being adjustable by means of the actuator. The adjusting device is preferably designed to adjust the position of the at least one first and/or second discharge element on the spray boom and/or the orientation of the at least one first and/or second discharge element. Furthermore, the impact area of the spray liquid which can be discharged from the at least one first and/or second discharge element is therefore at least partially adjustable. In one particularly preferred embodiment, the position of the at least one second discharge element along the boom is fixed, while the position and/or the orientation, in particular the impact area, of the first discharge element is adjustable by means of the adjusting device. The at least one first discharge element and/or the impact area of the first discharge element can thus be adjusted to at least one plant, in particular one weed and/or wild plant, that can be detected by means of the detection device. The adjustment can preferably be carried out via at least one actuator assigned to the first discharge element. In another preferred embodiment, the at least one first discharge element is at least partially pivotable about an axis that is at least substantially perpendicular to the spray fan. By means of such an embodiment, the application area of the individual discharge elements is in particular enlarged. The area of the agricultural surface onto which spray liquid can be applied by a discharge element therefore depends not only on the width of the spray fan but also on the adjustment range of the discharge element in question.

According to the invention, the at least one first discharge element has a spray profile suitable for treating individual plants and the at least one second discharge element has a spray profile suitable for treating an area. In this case, the spray liquid can be applied to the individual plant at least almost in spot form via the at least one first discharge element. Particular preference is given to a spray profile which is designed at least partially as a round and/or spot jet, which can be discharged from the at least one first discharge element. Furthermore, the spray liquid can be applied via the at least one second discharge element to at least one individual plant, preferably at least partially to multiple plants simultaneously. The second discharge element is designed in the form of a flat-jet nozzle with a spray fan that at least partially spreads out starting from the discharge element. This embodiment offers the advantage that the application area of the sprayer

according to the invention is particularly flexible. A sprayer designed in this way is therefore particularly suitable not only for treating individual plants but also for treating areas and/or rows.

In one development of the sprayer according to the invention, the spray liquid can
5 be applied via the at least one first and the at least one second discharge element in a third operating state. In this case, the spray liquid can be discharged from the at least one first and second discharge elements at least almost simultaneously. As an alternative or in addition, the spray liquid can also be discharged sequentially from the first and second discharge elements. In this case, the
10 discharge elements can additionally be selected and/or activated depending on the position of the sprayer, in particular of the respective discharge elements. Furthermore, it is preferred that, in the case of a plurality of discharge elements, at least one second discharge element is assigned to at least one first discharge element. In this way, on the one hand particularly high working speeds and on the
15 other hand particularly high levels of accuracy when applying the spray liquid can be achieved by means of the sprayer according to the invention.

In another preferred embodiment of the sprayer according to the invention, the dimensions and/or the type and/or the number of plants can be detected, in particular in a predetermined detection area, by means of the detection device. In
20 this case, the operating state can be selected depending on the dimensions and/or the type and/or the number of plants, in particular weed and/or wild growth. The first operating state can be used to wet a small number of plants and/or plants with small dimensions. For a large number of plants and/or plants with large dimensions, which in particular cannot be sufficiently wetted by means of the spray
25 profile of the first discharge element, the second and/or third operating state can be used. Furthermore, preferably the type of plant, in particular the species and/or variety, can be taken into account by means of the detection device and/or the open-loop and/or closed-loop control system. The discharge element can thus be selected, for example, depending on the resistance of the plant in question, in
30 particular weed growth, and/or the concentration of the active ingredient of the spray liquid. Furthermore, when the density of the vegetation, in particular weed and/or wild growth, is low, a reduction in the spray liquid and thus a particularly high efficiency of the sprayer can be achieved.

Furthermore, the position of the vegetation, in particular of the weed and/or wild growth, can be detected by means of the detection device. The open-loop and/or closed-loop control system assigned to the sprayer is designed to select and/or activate the at least one first and/or second discharge element depending on the detected position of the vegetation such that the spray liquid which can be applied, in particular the impact area, at least partially wets the detected vegetation.

Furthermore, the at least one first and/or second discharge element, in particular the impact area thereof, can be oriented toward the at least one detectable plant, in particular the weed and/or wild growth, by means of the adjusting device. The efficiency of the sprayer according to the invention is increased even further by means of the resulting targeted application of the spray liquid.

In another development of the sprayer according to the invention, the speed of the sprayer, in particular of at least one discharge element, can be detected and the operating state can be selected depending on the speed. The open-loop and/or closed-loop control system is designed to select and/or activate the operating state and thus the discharge elements depending on the speed of the sprayer, in particular of the discharge elements. Furthermore, the number and/or the dimensions of the plants within the detectable vegetation can preferably also be taken into account for selecting the operating state. In addition, it is conceivable that further boundary conditions, such as wind speed, can be obtained by means of a sensor assigned to the sprayer and/or from a provision device, in particular a data storage device and/or server, and can be taken into account, preferably by the open-loop and/or closed-loop control system, for selecting and/or activating the operating state.

The object of the invention is also achieved by a method for applying a spray liquid to an agricultural surface by means of an agricultural sprayer according to any of the embodiments described above, the method being designed according to claim 6. Accordingly, the method according to the invention also comprises at least the following steps:

- selecting the operating state depending on the vegetation detected; and

- applying the spray liquid in a first operating state and a first spray profile via the at least one first discharge element; and/or
- applying the spray liquid in a second operating state and a second spray profile via the at least one second discharge element.

5 With regard to the advantages and modifications of the method according to the invention, reference is made first of all to the advantages and modifications of the sprayer according to the invention.

In the method according to the invention, in a first step the vegetation, in particular in the form of weed and/or wild growth, on the agricultural surface is detected by
10 means of the detection device. Furthermore, in a further step, depending on the operating state, the spray liquid is applied to the agricultural surface by means of the at least one first and/or second discharge elements which are arranged on the spray boom. In another step, the impact area of the spray liquid which can be discharged from the first and/or second discharge elements is preferably changed
15 by means of an adjusting device.

Furthermore, preference is given to a method according to the invention in which the spray liquid is applied via the at least one first and second discharge element in a third operating state. In this case, the application preferably takes place at least almost simultaneously or sequentially by means of the first and second
20 discharge elements. In the case of spray liquid being applied at least almost simultaneously, the spray profile, in particular the spray fan, of the first and second discharge elements may at least partially overlap. In the case of sequential application, the first and second discharge elements are arranged at least partially offset from one another, in particular in the direction of travel. The first and second
25 discharge elements are each fluidically connected to the same supply line or to different supply lines. In the case of different supply lines, at least partially different spray liquids, in particular with different concentrations of active ingredient, can be discharged by the first and second discharge elements. Furthermore, in this case, the quantity of spray liquid to be applied from the first and second discharge
30 element, in particular adjacent discharge elements, is preferably taken into account and/or adjusted. By means of the third operating state, it is thus possible

to achieve a high working speed of the sprayer for an at least almost identical or higher density of the vegetation, in particular weed and/or wild growth.

In the method according to the invention, the dimensions and/or the type and/or the number of plants is detected, in particular in a prespecified detection area, by means of the detection device, and/or the operating state is switched depending on the detected dimensions and/or the type and/or the number of plants, in particular by exceeding a prespecified threshold value. In this case, a specific sub-area, in particular a section, of the agricultural surface, in particular immediately in front of the discharge elements in the direction of travel, is detected and/or taken into account. The spray liquid can thus be discharged predominantly from the at least one first discharge element, and can alternatively or additionally be discharged from the at least one second discharge element only when an overload is reached. Here, an overload is a threshold value for the number, dimensions and/or types of plants which cannot be sufficiently wetted with spray liquid by means of the first discharge elements, in particular when the speed of the sprayer and/or of the discharge elements remains at least almost constant.

In one particularly preferred development of the method according to the invention, the operating state is switched depending on a speed that can be detected by the sprayer, in particular of at least one discharge element. In order to determine the threshold value required to switch the operating states, the speed of the sprayer, in particular of at least one discharge element, is additionally detected and/or taken into account by the open-loop and/or closed-loop control system. The threshold value may for example thus be lower at higher speeds than at lower speeds.

In an alternative embodiment, wind speed, in particular in the area of the sprayer, is also detected and taken into account, in particular by the open-loop and/or closed-loop control system, for selecting and/or activating the operating state.

Further details of the invention can be found in the description of examples and in the drawings. In the figures:

Fig. 1 shows an exemplary embodiment of a boom segment of an agricultural sprayer according to the invention; and

Fig. 2 shows a flowchart of a method according to the invention for applying spray liquid by means of an agricultural sprayer.

Fig. 1 shows part of a foldable boom 11, arranged on an agricultural sprayer 10, for applying spray liquid to the vegetation N2, N3 of an agricultural surface N1.

- 5 The boom 11 comprises a plurality of first and second discharge elements 30, 40 which are arranged on the underside of the boom 11 and are designed to apply the spray liquid to the vegetation, in particular weed and/or wild growth N3, depending on an operating state B1-B3. Furthermore, a plurality of application nozzles 50 are arranged on the boom 11 and are designed to apply spray liquid to
- 10 the crops N2. The agricultural sprayer 10 additionally comprises at least one detection device 20 which has a plurality of camera lenses 21 arranged on the boom 11. The detection device 20 is designed to detect the vegetation, in particular crops N2 and/or weed and/or wild growth N3, in the agricultural surface N1. The impact area A of the spray liquid which can be applied by the first and
- 15 second discharge elements 30, 40 can be adjusted via an adjusting device 32 assigned to the sprayer 10, in particular to the discharge elements 30, 40.

Also assigned to the sprayer 10 is an open-loop and/or closed-loop control system 60, via which the operating state of the sprayer 10 and/or of the discharge elements 30, 40 can be selected and/or activated.

- 20 The spray liquid can be applied via the first discharge elements 30 in a first operating state B1 and via the second discharge elements 40 in a second operating state B2. The first and second discharge elements 30, 40 each have different spray profiles 31, 41, the first discharge elements 30 having a spray profile 31 suitable for treating individual plants and the second discharge elements
- 25 40 having a spray profile 41 suitable for treating an area. The first discharge elements 30 are designed as round- and/or spot-jet nozzles and the second discharge elements 40 are designed as flat-jet nozzles, in particular with a spray fan 41 that spreads out in a downward direction. In an alternative embodiment (not shown), the first discharge elements 30 are designed as flat-jet nozzles with a
- 30 particularly acutely angled spray fan 31, which in particular is smaller than that of the second discharge elements 40. The operating state B1-B3 can be selected

depending on the vegetation that can be detected, in particular the weed and/or wild growth N3.

Furthermore, the sprayer 10 is designed to apply the spray liquid via the first and second discharge elements 30, 40 in a third operating state B3. In this case, the spray liquid is applied, in particular at least almost simultaneously, by the first and second discharge elements 30, 40. In an alternative embodiment (not shown), it is conceivable that the spray liquid be applied sequentially by the first and second discharge elements 30, 40 in the third operating state. If the first and second discharge elements 30, 40 are arranged offset in the direction of travel of the sprayer 10, the spray liquid is applied first via the first discharge elements 30 and then via the second discharge elements 40. In another alternative embodiment, it is also conceivable that the order of application is reversed.

The dimensions and/or the type and/or the number of plants N2, N3 can be detected, in particular in a prespecified detection area E, by means of the detection device 20. Furthermore, the operating state B1-B3 can be selected and/or activated depending on the plants N2, N3 that can be detected. The first operating state B1 is used for a small number or low density of plants, in particular weeds N3, with small dimensions. The second operating state B2 is used for a high number and/or large size of plants, in particular weeds N3. The third operating state B3 is suitable for a particularly high number and/or large dimensions of plants, in particular weeds N3.

In addition, the speed of the sprayer 10, in particular of the discharge elements 30, 40, can be detected by means of the open-loop and/or closed-loop control system 60 and the operating state B1-B3 can be selected and/or activated depending on the speed. A threshold value for switching the operating states B1-B3 can thus be adjusted. For example, the threshold value can accordingly be reduced at high speeds and can be increased at low speeds.

The adjusting device 32 comprises at least one actuator (not shown in the figures) on each of the first discharge elements 30. By means of the actuator, the adjusting device 32 is designed to pivot the respective first discharge elements 30 by a substantially perpendicular angle to the spray fan 31. The impact area A of the first

discharge elements 30 is therefore adjustable transversely to the direction of travel of the sprayer 10, in particular of the boom 11. In an alternative embodiment (not shown), the first discharge elements 30, in particular the impact area A thereof, are adjustable in a direction that at least substantially corresponds to the direction of travel. In a further embodiment (not shown), the second discharge elements 40, in particular the impact area A thereof, are adjustable in at least almost the same way.

Fig. 2 shows a flowchart of a method for applying a spray liquid by means of an agricultural sprayer 10. The method is initiated by at least one of the following steps:

100) detecting vegetation N2, N3, in particular in the form of weed and/or wild growth, in an agricultural surface N1 by means of a detection device 20; and/or

101) detecting the dimensions and/or the type and/or the number of plants, in particular in a prespecified detection area, by means of the detection device 20.

In the context of detecting the vegetation N2, N3 in the agricultural surface N1, at least one of the following two steps is carried out first:

200) selecting the operating state B1-B3 depending on the vegetation N2, N3 detected; and/or

201) switching the operating state B1-B3 depending on the dimensions detected and/or on the type and/or the number of plants N2, N3, in particular by exceeding a prespecified threshold value.

Once the operating state B1-B3 required at the respective discharge elements 30, 40 has been selected and/or activated, the following step can be carried out:

300) changing the impact area A of the spray liquid emitted by the at least one first and/or second discharge element 30, 40 during the application process by means of the adjusting device 32.

As soon as one or more operating states B1-B3 have been selected and/or activated and/or the respective impact areas A have been changed, the following step is carried out:

400) applying spray liquid to the agricultural surface N1, in particular to the vegetation N2, N3 thereof, depending on the operating state B1-B3, by means of at least one first and second discharge element 30, 40 which are arranged on the spray boom 11.

- 5 According to the invention, the step of applying the spray liquid via the discharge elements 30, 40 is supplemented by the following steps:

401) applying the spray liquid in a first operating state and a first spray profile via the at least one first discharge element 30; and/or

- 10 402) applying the spray liquid in a second operating state and a second spray profile via the at least one second discharge element 40; and/or

403) applying the spray liquid in a third operating state via the at least one first and second discharge element 30, 40.

For selecting and/or activating the respective operating state B1-B3, the method optionally comprises the additional step of:

- 15 202) switching the operating state depending on a speed that can be detected by the sprayer 10, in particular of at least one discharge element 30, 40.

All the steps described above can be repeated continuously during the application and/or discharge process.

List of reference signs

10	agricultural sprayer
11	boom, spray boom
20	detection device
5 21	camera, camera lens
30	first discharge element
31	spray fans of the first discharge elements
32	adjusting device
40	second discharge element
10 41	spray fans of the second discharge elements
50	application nozzles
60	open-loop and/or closed-loop control system
A	impact area
B1	first operating state
15 B2	second operating state
B3	third operating state
E	detection area
N1	agricultural surface
N2	vegetation
20 N3	weed, wild growth, vegetation

PATENTKRAV

1. Landbrugssprøjte (10), især en marksprøjte, der omfatter mindst én detekteringsindretning (20), som er udformet til at detektere vegetation (N2, N3), især i form af ukrudt og/eller vildvækst, på et landbrugsareal, mindst ét første og ét
5 andet udbringningselement (30, 40), der er anbragt på en sprøjtebom (11) og er udformet til at udsprede sprøjtevæske på landbrugsnyttearealet (N1), især på vegetationen (N2, N3) deraf, afhængigt af en driftstilstand (B1-B3), hvor driftstilstanden (B1-B3) kan vælges afhængigt af den detekterede vegetation (N2, N3), og mindst én indstillingsindretning, ved hjælp af hvilken det område (A), som
10 rammes af sprøjtevæsken, der kan udsprede med det mindst ene første og/eller andet udbringningselement (30, 40), kan indstilles, hvor sprøjtevæsken kan udsprede via det mindst ene første udbringningselement (30) i en første driftstilstand (B1) og via det mindst ene andet udbringningselement (40) i en anden driftstilstand (B2), **kendetegnet ved, at** det mindst ene første og andet
15 udbringningselement (30, 40) har forskellige sprøjteprofiler, hvor det mindst ene første udbringningselement (30) har en sprøjteprofil, der er egnet til behandling af individuelle planter, og det mindst ene andet udbringningselement (40) har en sprøjteprofil, der er egnet til behandling af et areal.
2. Landbrugssprøjte (10) ifølge mindst et af de foregående krav,
20 **kendetegnet ved, at** sprøjtevæsken kan udsprede via det mindst ene første og det mindst ene andet udbringningselement (30, 40) i en tredje driftstilstand (B3).
3. Landbrugssprøjte (10) ifølge mindst et af de foregående krav,
kendetegnet ved, at dimensionerne og/eller typen og/eller antallet af planter ved hjælp af detekteringsindretningen (20) kan detekteres, især på et forudbestemt
25 detekteringsområde (E).
4. Landbrugssprøjte (10) ifølge mindst et af de foregående krav,
kendetegnet ved, at hastigheden for sprøjten (10), især for mindst ét udbringningselement (30, 40), kan detekteres, og driftstilstanden (B1-B3) kan vælges afhængigt af hastigheden.
- 30 5. Landbrugssprøjte (10) ifølge mindst et af de foregående krav,
kendetegnet ved, at indstillingsindretningen omfatter mindst én aktuator, hvor det

mindst ene første og/eller andet udbringningselement (30, 40) kan indstilles ved hjælp af aktuatoren.

6. Fremgangsmåde til udspredning af sprøjtevæske på et landbrugsnytteareal (N1) ved hjælp af en landbrugssprøjte (10) ifølge et hvilket
5 som helst af de foregående krav, hvilken fremgangsmåde omfatter følgende trin:

- detektering af vegetation (N2, N3), især i form af ukrudt og/eller vildvækst, på et landbrugsnytteareal (N1) ved hjælp af en detekteringsindretning (20),

- udspredning af sprøjtevæske på landbrugsnyttearealet (N1), især på vegetationen (N2, N3) deraf, afhængigt af en driftstilstand (B1-B3), ved hjælp af
10 mindst ét første og ét andet udbringningselement (30, 40), der er anbragt på en sprøjtebom (11), og

- ændring af det område (A), som rammes af sprøjtevæsken, der ved hjælp af en indstillingsindretning afgives af det mindst ene første og/eller andet udbringningselement (30, 40) i løbet af udbringningsforløbet,

15 **kendetegnet ved følgende trin:**

- detektering af dimensionerne og/eller typen og/eller antallet af planter, især på et forudbestemt detekteringsområde (E), ved hjælp af detekteringsindretningen (20); og

- omskiftning af driftstilstanden (B1-B3), afhængigt af de detekterede
20 dimensioner og/eller typen og/eller antallet af planter, især ved overskridelse af en forudbestemt tærskelværdi; og

- valg af driftstilstanden (B1-B3), afhængigt af den detekterede vegetation (N2, N3); og

- udspredning af sprøjtevæsken i en første driftstilstand (B1) og med en
25 første sprøjteprofil via det mindst ene første udbringningselement (30); og/eller

- udspredning af sprøjtevæsken i en anden driftstilstand (B2) og med en anden sprøjteprofil via det mindst ene andet udbringningselement (40);

hvor det mindst ene første udbringningselement har en sprøjteprofil, der er egnet til behandling af individuelle planter, og det mindst ene andet udbringningselement har en sprøjteprofil, der er egnet til behandling af et areal.

7. Fremgangsmåde ifølge krav 6, **kendetegnet ved følgende trin:**

- 5 - udspredning af sprøjtevæsken via det mindst ene første og andet udbringningselement (30, 40) i en tredje driftstilstand (B3).

8. Fremgangsmåde ifølge krav 7, **kendetegnet ved følgende trin:**

- omskiftning af driftstilstanden (B1-B3), afhængigt af en hastighed, der kan detekteres af sprøjten (10), især af mindst ét udbringningselement (30, 40).

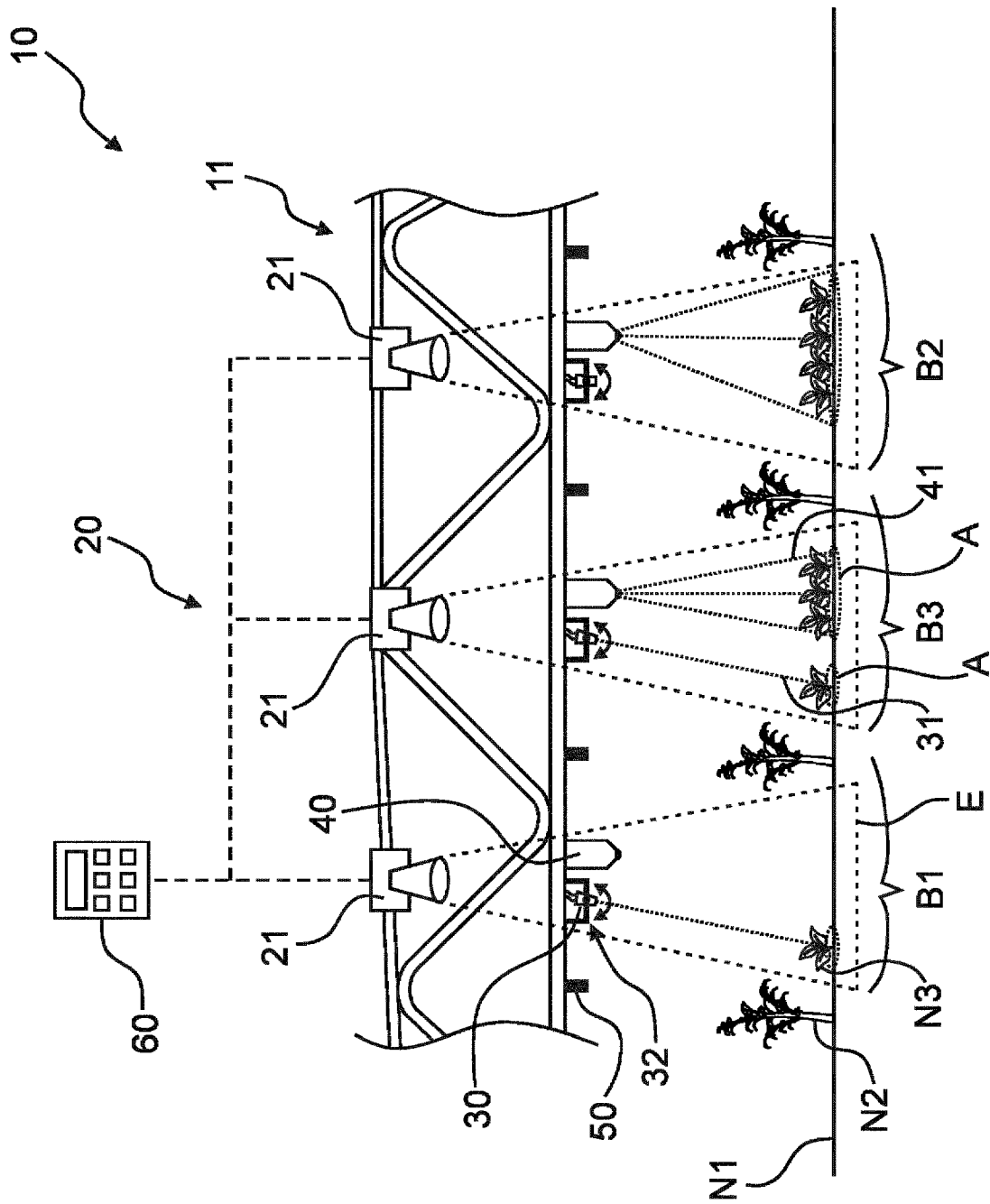


Fig.1

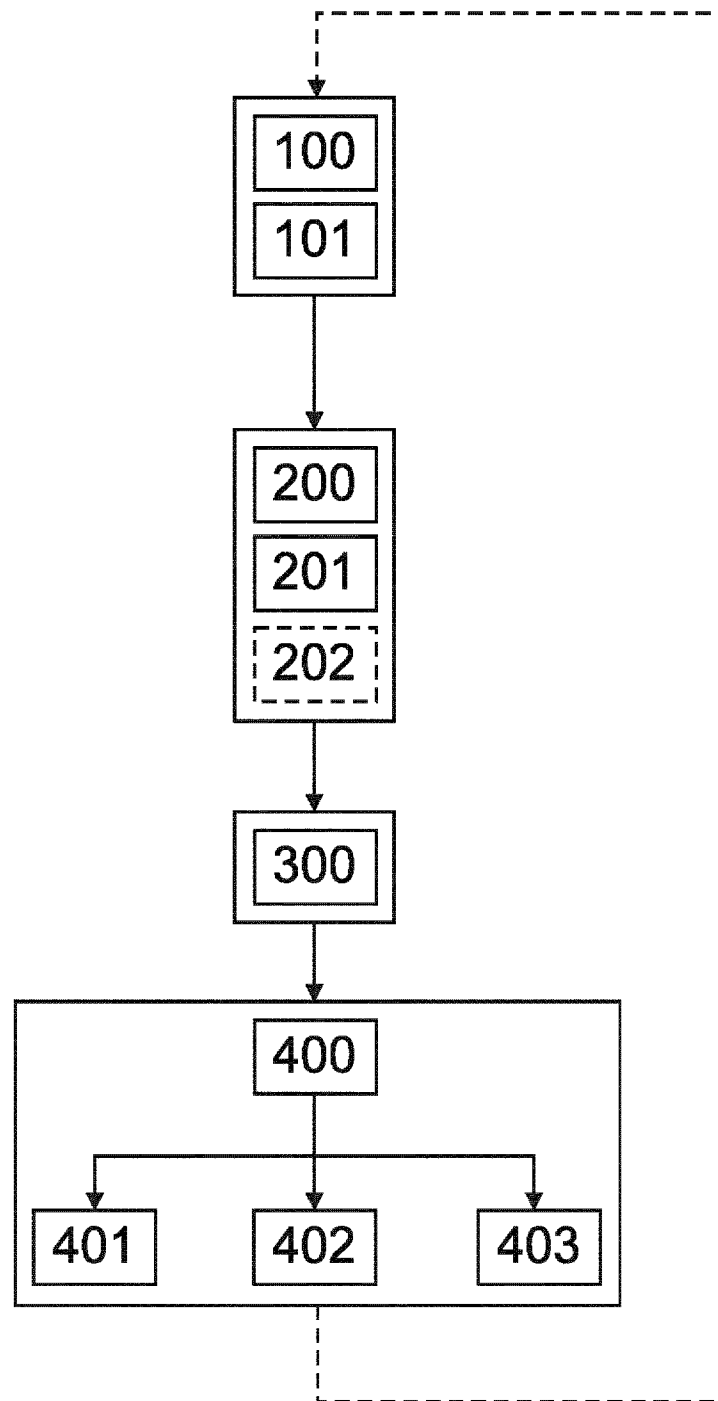


Fig.2