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Economic and biological value of medicinal and fodder herbs for feed production

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Abstract. The relevance of the research lies in the need to involve in the feed production of grass species containing biologically active substances for use as natural animal growth stimulants. The purpose of the study was to experimentally establish the economic and biological value of medicinal and fodder grass species, their technological suitability for growing in clean crops, obtaining raw materials and forming phyto-mixtures from them for use as organic feed additives**.** In the course of conducting research, the following methods were used: field, laboratory, analytical,

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and statistical. The economic and biological value for the growth of the following types of medicinal herbs in the feed production was determined: hyssop, fennel, white horehound, Moldavian dragonhead, coriander, yarrow, purple coneflower, dandelion, milk thistle, anise hyssop, St. John's wort, sneezeweed, sweet wormwood. It was established that annuals in the year of sowing, and perennial species in the second or fourth years of use provided a dry mass of grasses – 1.7-5.0 t/ha and seeds – 0.3-1.8 t/ha. These types of herbs contain biologically active substances (polysaccharides, essential oils, flavonoids, organic acids, mainly vitamins, and trace elements) that have a positive effect on the animal body. The technological suitability for harvesting raw materials and forming phyto-mixtures of the following species is also proved: milk thistle, Moldavian dragonhead, coriander, hyssop, fennel, purple coneflower, anise hyssop, white horehound, and yarrow. As a result of the research, a database was created on the selection of medicinal herbs, their technological suitability for cultivation, and optimal harvesting times for harvesting raw materials with subsequent use in feed production. The inclusion of medicinal and feed species in feeding rations can ensure the production of organic livestock products that meet the requirements of the European Green Deal strategy

Keywords. medicinal and fodder species; yield; chemical composition; technological suitability; phyto-mixtures; biologically active substances; raw materials; harvesting time

INTRODUCTION

Numerous studies, in particular, by researchers of the National Academy of Agrarian Sciences (NAAS) have established that cereals and legumes are the most suitable for use in fodder production for feeding animals. Among the cereal species in the zone of Polissia, Forest-Steppe, and Carpathians, timothy, bromegrass, cat grass, perennial ryegrass, and meadow fescue are most often used, and among legume species – white and red clover, alfalfa, deervetches, etc. They are highly productive, have a high nutritional value and fully provide animals with all the necessary elements of nutrition (Kurhak *et al.,* 2019; 2022; Kaminskyi *et al.,* 2021). However, to further increase the productivity of farm animals in animal feeding, artificial animal growth stimulators (premixes) have been widely used in recent decades and added to animal feeding diets.

The substances of these additives in feeding livestock, even in small amounts, provide a positive physiological effect (Vdovichenko, 2017; Novakovska *et al.,* 2022). However, it turned out that the substances of these feed additives cause negative effects on the animal and human body. Therefore, the composition of these supplements has been slightly changed and, in particular, the use of antibiotics is significantly limited, as described in the papers (Darmohrai, 2018; Kryzhak, 2020). However, modern feed additives, as noted by leading scientists of Ukraine (Ibatullin, 2017; Gladiy *et al.,* 2019), worsen the quality of livestock products. Given these circumstances, as an alternative to artificial animal growth stimulants, attempts were made to use medicinal and fodder herbs as natural animal growth stimulants. It was based on the fact that medicinal herbs containing biologically active substances are widely used in medicine.

The same applies to veterinary medicine and feed production for use as biological growth stimulators of animals. This area of research is new and poorly understood. However, there are publications of previous years on the effectiveness of using purple coneflower on pigs at the Institute of Pig Breeding of NAAS and fish at the Institute of Fisheries of NAAS. Chudak (2020) and Poberezhets (2019) established the effectiveness of using pale purple coneflower on poultry (quails) at the Vinnytsia National University.

There is very limited information on the use of medicinal herbs as phytobiotics in the world. Thertefore an important task is to search for types of herbs containing biologically active substances (BAS) in feed production, as substitutes for artificial growth stimulants for feeding animals. Such attempts to include medicinal herbs in feed were the subject of study by the researchers (Chudak, 2018; De Falco, 2019). However, the very possibility of such a replacement and the list of such types of herbs, the content of biologically active substances in them (essential oils, flavonoids, organic acids, polysaccharides, etc.) and their dosage of use for certain types of farm animals are extremely insufficiently studied.

One of the ways of such application may be the inclusion of medicinal and fodder herbs such as yarrow, dandelion, chicory, oregano, etc. in the composition of sown herbage (Kurhak *et al.,* 2019; Shtakal *et al.,* 2020). However, such use is still problematic due to the inability to accurately determine the doses of medicinal and fodder herbs in cereal and legume stands, since their content varies by year, mowing, and depending on weather conditions. Therefore, this line of research still requires a thorough investigation. Some papers (Vdovichenko *et al.,* 2017; Moisiienko, 2019) indicate that a more promising way is to grow them in clean crops, followed by the preparation of phytocompositions based on them and use them as feed fortifiers or organic feed additives for feeding to farm animals. Therefore, the solution to the question of the possibility of using medicinal and fodder herbs with the content of biologically active substances as organic feed additives for feeding farm animals, in this regard, can be a new

area of research in feed production and requires a deep systematic study.

Therefore, the purpose of the study was to establish the possibility of using certain types of medicinal and fodder herbs, considering their technological suitability for growing in clean crops to obtain raw materials and create phyto-mixtures from them and use them in animal feeding.

MATERIALS AND METHODS

Field work was carried out in a stationary experiment on typical chernozems of the Panfyliv Experimental Station of the National Research Centre "Institute of Agriculture of the National Academy of Agrarian Sciences" in 2020-2022. Typical light loamy chernozems have the following physical and agrochemical properties in the arable layer: humus content – 3.08-3.15%, mobile phosphorus – 237-270, and exchangeable potassium – 80-100 mg/kg of soil, pH_{salt} – 5.7, supine saturation of the absorption complex with bases – 85-99%, hydrolytic acidity – 2.1 mg-eq./100 g of soil, density – 1.18 g/cm^3.

Plants officially approved in EU countries by the Register of Regulation 1831/2003 "Feed additives for use in animal feeding" (Community Register, 2003) were selected for study. The accounting area was 10 m^2, repetition – four times. Medicinal and fodder herbs were sown in late March and early April. The seeding rates were as follows: purple coneflower – 10 kg, hyssop – 6 kg, white horehound – 5 kg, fennel – 10 kg, coriander – 10 kg, milk thistle – 11 kg, anise hyssop – 4 kg, St. John's wort – 4 kg, Moldavian dragonhead – 6 kg, sneezeweed – 5 kg, sweet wormwood – 2 kg, yarrow – 3 kg, dandelion – 7 kg/ha of germinating seeds. The method of sowing is wide-row with a row spacing of 45 cm. Sowing was carried out with a manual seed drill.

For growing herbs in clean crops, mineral fertilisers were not applied, as this contradicts the conduct of organic farming. Care for crops on annual crops (milk thistle, coriander, and Moldavian dragonhead) and biannual fennel consisted of 1-2 row-by-row treatments to control weeds. Perennials needed careful care in the year of sowing (one manual weeding and 2-3 row-to-row treatments). In subsequent years, the care of crops in them was similar to annual crops. Weather conditions of growing seasons over the years of research are characterised by a higher 0.9-1.3°C average air temperature and above normal precipitation by 35-70 mm, which was observed mainly in the second half of the growing season.

Harvesting of medicinal and fodder species was carried out in the flowering phase once per growing season, and coriander – in the seed maturation phase. All records and observations of the growth and development of medicinal and fodder herbs were carried out according to the methods of the Institute of Feed and Podillia of NAAS. The dry matter content in the green mass was determined by the thermostatic weight method with drying of samples at 105°C, and the complete zootechnical analysis and digestibility of the feed in vitro and the content of mineral elements in it were determined according to DSTU 4117:2007 by infrared spectrometry with computer support. The content of biologically active substances in air-dry raw materials was carried out according to the methods given in the state pharmacopoeia of Ukraine and in the European Pharmacopoeia (State Pharmacopoeia of Ukraine, 2015; European pharmacopeia: 7.0., 2010). Statistical processing of the obtained results of field experiments was carried out by the method of variance analysis using electronic computing equipment using the Microsoft Excel table processor according to B.A. Dospekhov.

RESULTS AND DISCUSSION

As a result of the conducted research, a list of medicinal and fodder herbs that are most suitable for use as organic feed additives has been established. First of all, this concerns their technological suitability in growing and harvesting raw materials for the creation of phyto-mixtures. Regarding the technological suitability of growing individual medicinal and fodder herbs, it is worth noting that such annual species as milk thistle, Moldavian dragonhead, and coriander do not require significant cultivation costs. It is enough to carry out 1-2 inter-row tillages. The same applies to biannual fennel. As for perennial species: purple coneflower, hyssop, anise hyssop, white horehound, these species require specific care in the year of sowing (manual weeding and 2-3 inter-row treatments to control weeds), and in subsequent years also do not require significant care for crops. The above annual and perennial species are mostly tall (66-155 cm) and are able to compete in crops with weeds.

Phenological observations of the passage of plant growth and development phases and the development of green mowing mass and seeds have established optimal terms of mowing ripeness of certain types of medicinal and fodder herbs. Thus, the harvesting of raw materials in the context of individual types lasts from April to August, which allows its successful implementation and avoiding peaks in the load on the equipment during harvesting and drying of the slope mass.

Studies have also established that the most productive for use as organic feed additives for feeding farm animals are the following species: purple coneflower, hyssop, fennel, milk thistle, anise hyssop, Yarrow, white horehound, dandelion, Moldavian dragonhead, coriander, and other species. The vast majority of them, with the exception of purple coneflower and dandelion, form a yield in the year of sowing, which was 2.8-15.5 t/ha of green mass or 0.7-4.2 t/ha of dry mass. In subsequent years, the most productive among medicinal fodder herbs in terms of green and dry mass yield were milk thistle 14-18 and 3.1-4.2 t/ha, respectively, purple coneflower – 13-20 and 3.3-4.7 t/ha, fennel – 15-21.5 and 3.0-5.0 t/ha, and Moldavian dragonhead –

11-15 and 2.5-4.3 t/ha, and in terms of seed yield – coriander – 0.3-1.8 t/ha. Hyssop, anise hyssop, yarrow, and white horehound are also quite productive. The yield of green and dry mass in the flowering phase in these species reached 8-15 and 1.7-4.8 t/ha, respectively. Purple coneflower, milk thistle, Moldavian dragonhead, and fennel (0.4-0.8 t/ha) are also productive in terms of seed yield (Table 1).

Table 1. *Yield of medicinal and fodder types of herbs, t/ha*

Types of herbs	**Yield**								
Years of research	Green mass			Dry weight			Seeds		
	2020	2021	2022	2020	2021	2022	2020	2021	2021
Purple coneflower *Echinacea purpurea*	13.2	20	13.5	3.3	4.7	3.6	0.22	0.4	0.3
Hyssop *Hyssopus officinalis*	7.5	11	11.3	1.9	4.0	3.8	0.12	0.2	0.2
Fennel *Foeniculum vulgare*	15.0	19	21.5	3.0	4.0	5.0	0.1	0.6	0.6
Coriander *Coriandrum sativum*	9.4	8.4	9.0	1.9	1.6	1.9	0.3	1.8	0.8
Milk thistle *Silybum marianum*	15.5	18	13.8	3.9	4.2	3.1	0.3	0.5	0.2
Anise hyssop *Lophantus anisatus*	2.8	12	15.3	0.7	3.3	4.8	0.02	0.2	0.3
Yarrow *Achilea millefolium*	10.7	14	9.2	2.4	2.7	2.8	0.2	0.2	0.2
White horehound *Marrubium vulgare*	8.5	7	6.0	1.7	2.5	1.6	0.1	0.15	0.1
Dandelion *Taraxacum officinale*	10.7	8	7.3	2.4	1.7	1.5	0.05	0.1	0.1
St. John's wort *Hypericum perforatum*	0.8	3	10.5	0.2	0.7	3.5	-	0.1	0.1
Moldavian dragonhead *Dracocephalum moldavica*	13.8	15	10.8	2.8	4.3	2.5	0.14	0.6	0.3
Sneezeweed *Cephalophora aromatica Schrod.*	1.1	0.7	0.8	0.25	0.2	0.2	0.03	0.02	0.05
Sweet wormwood *Artemisia annua*	0.5	0.3	0.4	0.15	0.1	0.1	0.01	-	0.01
LSD_{05}				0.3	0.78	0.89			

Source*: based on author's research*

Over the years of research, sweet wormwood and sneezeweed remained unclear for obtaining raw materials, the shoots of which were obtained very sparse in the conditions of the dry spring growing season. In addition, the height of these plants is low and they are not able to successfully control weeds in crops, and the use of herbicides in conditions of growing organic raw materials is unacceptable. As for St. John's wort, it formed a satisfactory density only in the third or fourth years of growth. Therefore, these crops are still valuable for obtaining biologically active substances. However, the technologies of their cultivation require thorough improvement.

Evaluating the importance of using medicinal and feed herbs as organic feed additives, it is worth noting that many researchers also consider amino acids, carotene, vitamins, trace elements, etc. to be biologically active substances, including those of non-plant origin, but most of them are normalised by existing animal feeding diets (Petrychenko *et al.,* 2018). According to the research, this complex of biologically active substances primarily includes essential oils (0.1-4.0%), flavonoids and flavonolignans (0.5-3.0%), organic acids, mainly vitamins, polysaccharides (2-8%), and trace elements that provide a positive effect on the animal body. Although the effectiveness of the action of individual components of biologically active substances on the animal body is still poorly understood.

It was found that the aboveground mass of purple coneflower contains up to 7.4% polysaccharides, the sum of chicory and caftaric acids – from 2.2% in the first year of vegetation and up to 4.3% in the third year of vegetation. The content of hydroxycinnamon acid in

purple coneflower raw materials ranges from 2.1% in stems and 4.9 and 6.4% in inflorescences and buds, respectively, in terms of dry matter. The complex of BAS of purple coneflower has a positive effect on metabolism and has an immunostimulating and immunomodulatory effect. The aboveground mass of hyssop contains up to 1.32% essential oil, as well as phenocarbolic acids, including rosmarinic. The complex of biologically active ingredients of hyssop has a positive effect on the gastrointestinal tract and has a sedative effect. Yarrow grass contains from 0.3 to 3.1% essential oil, which contains more than 80 components, and the aboveground part of Moldavian dragonhead – up to 0.33%. The main components of the essential oil of which are citral and geraniol. Essential oil provides anti-inflammatory and antispasmodic effects.

Anise hyssop, in addition to essential oil, contains up to 4% of the amount of flavonoids in terms of luteolin, and white horehound – 2.0-2.8% of the bitter substance marubiin, as well as tannins up to 0.05% and 0.06% of essential oil, which, in addition to a positive effect on the digestive process, increases appetite. Dandelion grass contains sesquiterpene lactones, three terpenes, carotenoids, fatty acids and flavonoids, vitamin A, and inulin. The BAS complex contained in dandelion grass has a significant diuretic effect and improves metabolism. The main components of biologically active substances in fennel is essential oil, the content of which ranges from 2% in the stems to 6.5% in the seeds; in coriander, the content of essential oil in the seeds is 1.5% and fatty oil – 22%; the content of essential oil in Moldavian dragonhead – 0.33%; in sneezeweed – 0.1-0.22%. The dry mass of sweet wormwood also contains 0.5% essential oil and flavonoids, coumarin, etc. Milk thistle is a valuable plant that contains 3% flavonoids, and St. John's wort – flavonoids – 3%, essential oil – 1.25%, tannins – 8%, anthocyanins – 5%.

The authors also determined the content of vitamins in certain types of medicinal and fodder herbs. Thus, the content of vitamin C in purple coneflower and hyssop is 170-250 mg per 100 g of freshly picked raw materials; in fennel, St. John's wort, and coriander – 90-130 mg; in anise hyssop, yarrow, Moldavian dragonhead, dandelion – 30-60 mg per 100 g. The highest carotene content was found in purple coneflower (170 mg per 100 g), slightly lower – in St. John's wort (55 mg), and in other species it was only 5-10 mg per 100 g. Coriander had a high content of rutin (vitamin P) and amounted to 145 mg per 100 g. In other species, it did not exceed 10-15 mg per 100 g. All this complex of biologically active substances, if used in the prescribed doses in animal diets, provides a stimulating effect and the possibility of obtaining organic meat and dairy products.

It is also worth considering that these crops have in their composition not only BAS, but also nutrients inherent in feed species (protein, including amino acids, fat, fibre, without nitrogenous extractives, ash, trace elements, etc.), the chemical composition of which is shown in Table 2. Such types of herbs as anise hyssop, purple coneflower, hyssop, yarrow, dandelion, and Moldavian dragonhead have a high content of crude protein, which is equal to the content of legume species (14.6-18.4%). According to the content of other indicators of complete zootechnical analysis, they and other species under study have a sufficient amount of fibre (22-28%) and BAS (48-53%), and are well provided with potassium, phosphorus and calcium and good digestibility of feed (55.5-63%).

Table 2. *Chemical composition of medicinal and fodder herbs, % for dry matter (average for 2020-2022)*

Types of herbs	Crude protein	Protein	Fat	Fibre	BAS	Ash	Digestibility	K_2O	R_2O_5	CaO
Anise hyssop	14.6	13.6	2.74	23.71	50.5	8.52	59.65	2.67	0.81	1.57
Purple coneflower	16.1	14.7	2.43	21.84	50.9	8.69	63.3	2.77	0.88	1.69
Hyssop	14.9	13.8	3.01	21.49	52.9	7.81	64.1	2.78	0.86	1.45
Coriander	14.4	12.7	3.78	25.62	47.4	8.50	60.9	3.06	0.80	1.66
Milk thistle	12.0	10.9	2.53	28.80	48.4	8.35	54.4	2.52	0.86	1.88
Yarrow	15.8	14.4	2.40	23.46	49.7	8.71	62.1	2.83	0.85	1.41
Fennel	11.6	10.4	2.65	27.20	49.9	8.71	57.9	2.89	0.82	1.63
Dandelion	18.4	16.9	2.03	23.10	48.0	8.48	68.9	2.51	0.86	1.34
St. John's wort	13.2	12.5	2.7	24.2	53.0	6.9	55.5	2.0	0.67	1.4
Moldavian dragonhead	16.4	15.0	2.6	23.2	50.4	8.85	62.8	2.9	0.82	1.5
White horehound	12.6	11.2	2.51	25.3	51.2	8.43	52.1	2.41	0.80	1.43

Source: *based on author's research*

These data on the chemical composition indicate that medicinal and fodder species are equated with cereals and legumes in terms of nutritional value, and when feeding livestock, their nutritional value should be considered in diets. Thus, the presented experimental data show the high value and prospects of use in feed production, due to the content of biologically active substances in them and their technological suitability in the preparation of raw materials, such medicinal feed species: purple coneflower, hyssop, fennel, milk thistle, anise hyssop, Yarrow, white horehound, dandelion, Moldavian dragonhead, coriander.

The uniqueness of these studies lies in the fact that the methodological basis for the use of medicinal and fodder herbs in feed production for the first time is based on the principle that medicinal herbs, when used in established doses in veterinary medicine, provide a therapeutic effect (Paskudska *et al.,* 2018; Moisiienko, 2020), and when these doses are reduced, the stimulating effect (Palapa *et al.,* 2016; Zubova, 2021). In particular, the authors' studies have shown a positive effect of phyto-mixtures formed from certain types of medicinal and fodder herbs on the productivity of a dairy herd of cattle (Shtakal *et al.,* 2022). Therefore, solving the problems of creating sown phytocenoses based on medicinal and feed species with the content of biologically active substances and the development of phyto-mixtures from them is a promising area of research in feed production, since their use increases the productivity of animal husbandry and is able to ensure the production of organic meat and dairy products. In EU countries and in Ukraine, hundreds of plant species are used in veterinary medicine (Vlizlo *et al.,* 2018; Karomatov *et al.,* 2019; Salomon *et al.,* 2019). In addition, the experimental station of medicinal plants of the Institute of Agroecology of NAAS has developed technologies for growing the vast majority of these crops for use in veterinary medicine (Pryvedenyuk *et al.,* 2020). Separate studies on the cultivation of fennel were conducted at the Zhytomyr National Agroecological University of the Ministry of Education and Science of Ukraine (Moisiienko *et al.,* 2019) and chamomile at Kamianets-Podilsky State Agrarian and Technical University of the Ministry of Education and Science of Ukraine (Padalko *et al.,* 2021). However, these studies did not aim to grow medicinal and fodder herbs on a large scale, using phyto-mixtures as feed additives specifically for establishing their technological suitability for this purpose. In addition, the uniqueness of this study lies in the fact that for the first time, the chemical composition and nutritional value of medicinal and fodder herbs are presented, including the content of active substances in them, that is, biologically active substances, namely: polysaccharides, essential oils, flavonoids, vitamins, tannins, anthocyanins, bitterness, etc.

Research on the use of medicinal and fodder herbs as feed additives is extremely limited, which is explained by the originality of their use for this purpose. However, some studies have shown the prospects of this area of research. In particular, at the Vinnytsia National Agrarian University (Chudak *et al.,* 2020) the effectiveness of using pale purple coneflower on poultry (quails) has been proven. Previous publications indicate the effectiveness of using purple coneflower on pigs at the Institute of Pig Breeding of NAAS and on fish at the Institute of Fisheries of NAAS, as well as milk thistle for feeding turkeys and piglets.

That is, these studies have considered the value for feed production not only of certain types of medicinal and fodder herbs for certain types of livestock, but also a fairly wide range of medicinal and fodder herbs (purple coneflower, hyssop, white horehound, fennel, anise hyssop, milk thistle, coriander, St. John's wort, yarrow, dandelion, Moldavian dragonhead), established the content of biologically active substances in them and their technological suitability for mechanised harvesting. Summarising the literature data on the solution of such an important national economic problem as increasing the productivity of livestock and poultry and obtaining organic livestock products from it, it becomes clear that such data are not enough in the modern literature in the region. In particular, it requires a deep study of both the positive effect on the animal body of certain types of medicinal and fodder herbs, and phyto-mixtures, as well as the effect of individual biologically active substances of plants. Therefore, this paper is actually the first attempt to solve this problem. All this encourages joint actions of specialists in feed production and animal feeding to successfully solve this problem. As a result, it would be possible to introduce medicinal and fodder herbs into production to replace existing feed additives (premixes) in the production of pure organic products of animal origin for the health of the nation.

CONCLUSIONS

Promising types of medicinal and fodder herbs with the content of biologically active substances for animal feeding as organic feed additives can be hyssop, fennel, white horehound, Moldavian dragonhead, coriander, yarrow, purple coneflower, milk thistle. They are technologically suitable for harvesting and provided the yield of annuals (coriander, milk thistle, Moldavian dragonhead) in the year of sowing 2.5-4.3 t/ha of dry weight and 0.3-1.8 t/ha of seeds, and in the second and subsequent years of use of herbage and perennials (purple coneflower, hyssop, white horehound, fennel, anise hyssop, yarrow) respectively – 2.5-5.0 t/ha of dry weight and seeds 0.2-1.8 t/ha.

The value of medicinal herbs that can be used for feeding animals lies in the content of such biologically active substances in them: in purple coneflower – polysaccharides (2-8%), vitamin C – 250 mg, and carotene – 170 mg per 100 g of freshly picked raw materials;

hyssop – essential oils – 1.32% and vatamine C – 170 mg per 100 g; milk thistle – flavonoids – 3%; anise hyssop – flavonoids – 4%; yarrow – essential oils – 0.3-3.1%; Moldavian dragonhead – essential oils – 0.33%; St. John's wort – flavonoids – 3% and essential oil – 1.25%; white horehound – 2-2.8% marubin; fennel – essential oils – 2-6.5%; coriander seed – essential oils – 1.5% and rutin content – 145 mg per 100 g; sweet wormwood – essential oils – 0.5%, sneezeweed – essential oils – 0.1-0.22%; dandelion – vitamin C content – 30-60 mg per 100 g of raw materials, flavonoids, sesquiterpenes.

Medicinal and fodder types of herbs have a sufficient amount of fibre for animals (22-28%) and BAS (48-53%) and are well provided with potassium, phosphorus, and calcium, and such species as anise hyssop, purple coneflower, hyssop, yarrow, dandelion, Moldavian dragonhead also have a high content of crude protein, which is equal to the content of legumes (14.6-18.4%), which should be considered when creating animal feeding rations. As raw materials for the production of biologically active substances, such crops as sweet wormwood, sneezeweed, and St. John's wort have shown low prospects when used in organic feed production, and the technologies of their cultivation and mechanised harvesting of raw materials require additional study.

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CONFLICT OF INTEREST

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Господарсько-біологічна цінність лікарсько-кормових трав для кормовиробництва

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Анотація. Актуальність проведених досліджень полягає в необхідності залучення в кормо виробництво видів трав з вмістом біологічно активних речовин для використання їх в якості природних стимуляторів росту тварин. Метою досліджень було експериментально встановити господарсько-біологічну цінність видів лікарсько-кормових трав, їх технологічну придатність за вирощування в чистих посівах, отримання сировини та формування з неї фіто сумішей для використання в якості органічних кормових добавок**.** В процесі проведення досліджень були використані наступні методи – польовий, лабораторний, аналітичний, статистичний. Було визначено господарсько-біологічну цінність для виростання в кормо виробництві таких видів лікарсько-кормових трав: гісоп лікарський, фенхель звичайний, шандра звичайна, змієголовник молдавський, коріандр посівний, деревій звичайний, ехінацея пурпурова, кульбаба лікарська, розторопша плямиста, лофант анісовий, звіробій звичайний, цефалофлора ароматна, полин однорічний. Встановлено, що однорічники в рік посіву, а багаторічні види на другий-четвертий роки користування забезпечували отримання сухої маси трав – 1,7-5,0 т/га та насіння – 0,3-1,8 т/га. Дані види трав мають в своєму складі біологічно активні речовини (полісахариди, ефірні масла, флавоноїди, органічні кислоти, переважно вітаміни, мікроелементи), що позитивно впливають на тваринний організм. Доведено також технологічну придатність для заготівлі сировини і формування фіто сумішей таких видів: розторопша плямиста, змієголовник молдавський, коріандр посівний, гісоп лікарський, фенхель звичайний, ехінацея пурпурова, лафант анісовий, шандра звичайна, деревій звичайний. В результаті досліджень створена база даних щодо добору лікарсько-комових трав, їх технологічної придатності вирощування, оптимальних строків збирання для заготівлі сировини з наступним використанням у кормо виробництві. Включення лікарсько-кормових видів в раціони годівлі може забезпечувати отримання органічної продукції тваринництва, що відповідає вимогам стратегії Європейського зеленого курсу

Ключові слова: лікарсько-кормові види; урожайність; хімічний склад; технологічна придатність; фітосуміші; біологічно активні речовини; сировина; строки збирання