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**B. N. Nasiyev**, doctor of agricultural sciences, professor, corresponding member of NAS RK,  
**N. Zh. Zhanatalapov**, master of agricultural sciences,  
**A. K. Isteleuova**, master student  
Zhangir khan West Kazakhstan agrarian-technical university, Uralsk, Kazakhstan

## STADY OF TECHNOLOGY OF PRODUCTION OF HIGH-CLEAN FORAGE

### Abstract

In only 5 years in the Republic of Kazakhstan it is planned to construct about 60 feedlots with single keeping of 150 thousand heads or 300 thousand heads a year. Now in feeding complexes young growth is grown up and fattened in the extensive way on unbalanced diets that leads to large expenses of forages and work for gain unit. Therefore one of the important conditions of further increase in beef production is the development of effective technologies of providing feeding complexes and farms of industrial type with own food supply, at economical expenditure of fodder grain.

As a result of carried out researches, the data allowing to estimate efficiency of mixed crops of fodder crops at different terms of harvest for their use in technologies on own forages production in feeding complexes and industrial type farms in conditions of West Kazakhstan region were obtained.

**Keywords:** *Feeding complexes, mixed agrophytocenosis, efficiency, forage crops, protein, exchange energy*

Cultivation of mixed seeds of forage crops is important at the increase of collecting fodder protein. According to the researches carried out in different countries even such grain feed crops as barley do not satisfy completely zootechnical norms of animals' food at harvest for monoforage. Its combination with high-proteinaceous components gives real chance to receive highly nourishing and balanced grain feed forage. Long-term scientific and operating experience says that mixed crops of grain feed crops with leguminous are good raw materials for preparation of high-quality forages of the increased nutritiousness. Barley mixes with chick-pea provide grain feed forage rich with protein, with the sufficient sugar content. At the cultivation of barley and chick-pea mix, collecting of protein depends on harvest terms. The sufficient digestible protein content is noted in fodders from mixes harvested at dairy and wax ripeness phase. The content of 1 fodder unit in haylage with digestible protein was 115 g that is 28,6 g higher than at traditional terms of harvest. Many researchers suggest to carry out preparation of haylage from the mixes of one-year crops (barley+chickpea), to carry out harvest by direct combining at dairy and wax ripeness phase. The output of nutrients decreases from 1 hectare in earlier and later terms. Forage nutritiousness decreases as well. According to the three-year data, collecting of dry substance at dairy and wax ripeness phase of barley and chickpea mix in comparison with dairy ripeness of grain increases from 25,1 to 38,9 c/hectare, protein from 371,3 to 494,2 kg/ha [1, 2, 3, 4, 5].

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The purpose of researches is development of the technology providing productions of own forages balanced on protein in conditions of feeding complexes and industrial type farms.

Field experiments were put on the experiment field of Zhangir khan WKATU for the objectives solution.

Soil of experiment site is dark-brown heavy loamy. On morphological features of genetic bedrocks of profile and agrochemical indicators of arable layer, the soil of experiment site is characteristic for dry steppe zone of West Kazakhstan.

The area of allotments is 50 m<sup>2</sup>, frequency is triple, arrangement of allotments is random. Agrotechnology of forage crops cultivation is accepted, grades are zoned for West Kazakhstan region.

At the field experiments with forage crops, accounts and supervision over approach of phenological phases and over growth of forage crops were carried out by standard techniques.

Creation of valuable food supply for the development of animal breeding depends both on the

correct set of crops, and on the terms of these crops harvest. Therefore according to the purpose of researches we studied features of efficiency formation of barley and chick-pea mixed crops at different terms of harvest in conditions of dry steppe zone of West Kazakhstan region.

For the fodder purposes, bigger interest is represented not only by one-specific seeds of different crops, but use of mixed seeds of forage crops. Correctly chosen mixed crops allow to receive balanced production in fodder relation.

In the researches on study of mixed seeds at different terms of harvest, the following data on agrophitocenosis efficiency was obtained: output of green material on the option of joint seeds of barley and chickpea at the harvest at chick-pea blossoming phase (for green forage use) was equal to 75,25 c/ha that in terms of dry weight was 13,45 c/ha.

On the option of joint seeds of barley and chick-pea at the use for grain-silage (harvest at barley dairy ripeness phase), the efficiency of green material equaled to 78,14 c/ha, dry weight – 15,20 c/ha.

On the seeds option of barley + chick-pea at the harvest at dairy and wax ripeness phase (for grain-silage use), these indicators were equal to 70,44 and 16,24 c/ha (table 1).

Table 1 – Efficiency of forage crops at different terms of harvest in dry steppe zone of West Kazakhstan

Options	Grain, c/ha	Green material, c/ha	Dry weight, c/ha	Fodder units, c/ha
Barley for forage (control)	12,35	–	–	16,00
Barley + chickpea (harvest at the beginning of chickpea blossoming for green forage)	–	75,25	13,45	12,26
Barley + chickpea (harvest at dairy ripeness of barley for grain-silage)	–	78,14	15,20	14,55
Barley + chickpea (harvest at barley dairy and wax ripeness for grain-silage)	–	70,44	16,24	15,54
Barley + chickpea (harvest at barley full ripeness for forage)	18,85	–	–	26,26

HCP<sub>05</sub> - 1,81 c/ha

Grain productivity of one-specific seeds of barley (control) and mixes of barley and chick-pea at the use for forage were respectively 12,35 and 18,85 c/ha.

Production important total indicators of fodder advantages of crop is collecting of fodder units, digestible protein and forage-protein units with crop.

Comparative test of different terms of mixed seeds harvest allowed to reveal the most valuable mixes in fodder relation by output of fodder units and crude protein from the area units. So, in researches the greatest production output on fodder unit and crude protein is received on the option with the use of barley and chickpea at their harvest at full ripeness (for forage) (26,26 and 3,25 c/hectare, respectively), indicators on the option at the harvest of barley and chickpea mix at dairy and wax ripeness (use for grain-silage) were slightly lower than 15,54 c/hectare of fodder units and 2,27 c/hectare of crude protein.

Harvest of barley and chickpea mix at dairy ripeness phase (use for grain-silage) provided collecting of fodder units at the level of 14,55 c/ha and crude protein – 2,17 c/ha.

At the use in feeding complexes for green forage, mix of barley and chickpea (harvest at chickpea blossoming phase) provides collecting of fodder units and crude protein at the level of 12,26 and 2,42 c/ha.

On the control option (barley), the collecting of fodder units was 16,00 c/hectare at the output of crude protein of 1,60 c/ha.

On protein content of fodder units, the option of barley and chickpea combination at the harvest was allocated for grain-silage (at dairy phase) 197,71 g and for green forage (at chickpea blossoming phase) 213,4 g. The level of protein fodder units on the options of barley and chickpea at the harvest at barley dairy and wax ripeness phase (146,16 g) was slightly lower and at the harvest for forage (full ripeness) (123,83 g). This indicator was rather low on the control option of one-specific seed of barley (99,94 g) (table 2).

Table 2 – Fodder value of agrophitocenoses at different terms of harvest in dry steppe zone of West Kazakhstan

Options	Crude protein, c/ha	Protein content of fodder units, g	Exchange energy, GJ/ha
Barley for forage (control)	1,60	99,94	13,86
Barley + chickpea(harvest at the beginning of chickpea blossoming for green forage)	2,42	197,71	11,43
Barley + chickpea (harvest at dairy ripeness of barley for grain-silage)	2,17	148,87	13,30
Barley + chickpea (harvest at barley dairy and wax ripeness for grain-silage)	2,27	146,16	14,91
Barley + chickpea (harvest at barley full ripeness for forage)	3,25	123,83	22,57

High level of exchange energy characterized option of mixed crops of barley and chick-pea at the use for grain-silage at the harvest at barley full ripeness phase – 22,57 GJ/ha.

On the options of barley and chick-pea combination at their harvest at dairy and dairy-wax ripeness phases, collecting of exchange energy was approximately at the identical level – 13,30 and 14,91 GJ/ha.

Low level of exchange energy were on barley combination options with chickpea at early harvest of mix for green forage (11,43 GJ/ha) and on one-specific crops of barley (13,86 GJ/ha).

Thus, in dry steppe zone of West Kazakhstan region in feeding complexes and industrial type farms for own production of green forages (in green conveyors), grain-silage and forage it is expediently to use mixed crops of barley and chickpea. It is necessary to make harvest of mix for production of grain-silage at barley dairy and wax ripeness phase. To harvest mix at chickpea blossoming phase on green conveyors. To harvest at barley full ripeness at the mix use for the production of grain forage.

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#### ТҮЙІН

Жуырдағы 5 жылда Қазақстан Республикасында бір мезгілде 150 мың бас немесе жылына 300 мың бас семіртетін 60 мал бордақылау кешендері салынады. Қазіргі уақытта мал бордақылау кешендерінде жас малдар мал азығы мен еңбек ресурстарын шығындататын қарқынсыз жолмен семіртіледі. Сондықтан да мал етін өндірудің тиімді жолдарының бірі өндірістік типтегі фермалар мен мал бордақылау кешендерінде жемдік дәнді үнемді жұмсауды қамтамасыз ететін тиімді технологияларды құрастыру болып табылады.

Жүргізілген зерттеулердің нәтижесінде Батыс Қазақстан облысы жағдайында өндірістік типтегі фермалар мен мал бордақылау комплекстерін қажетті азықпен өздігінен қамтамасыз ету үшін мал азықтық даылдардың аралас егістіктерінің өнімділігі жөнінде мәліметтер алынды.

**РЕЗЮМЕ**

Всего за 5 лет в Республике Казахстан планируется построить до 60 откормочных площадок с одновременным содержанием 150 тыс. голов или 300 тыс. голов в год. В настоящее время в откормочных комплексах выращивают и откармливают молодняк экстенсивным путем на несбалансированных рационах, что ведет к большим затратам кормов и труда на единицу прироста. Поэтому одним из важных условий дальнейшего увеличения производства говядины является разработка эффективных технологий обеспечения откормочных комплексов и ферм промышленного типа собственной кормовой базой, при экономном расходовании фуражного зерна.

В результате проведенных исследований получены данные, позволяющие оценить продуктивность смешанных посевов кормовых культур при разных сроках уборки для использования их в технологиях по производству собственных кормов в откормочных комплексах и фермах промышленного типа в условиях Западно-Казахстанской области.