

**Appendices to the Standard Pasture Management Plan for North Kazakhstan,
Pavlodar, Karaganda and Kostanay regions**

North Kazakhstan region

5. Recommended pasture rotation schemes*

Recommended schemes of pasture rotation for the I forest-steppe zone of North Kazakhstan region

Years	Plot numbers			
	I	II	III	IV
1	single pasturing from June 27 to August 25	single pasturing from August 26 to October 20	resting field	single pasturing from April 27 to June 26
2	single pasturing from August 26 to October 20	resting field	single pasturing from April 27 to June 26	single pasturing from June 27 to August 25
3	resting field	single pasturing from April 27 to June 26	single pasturing from June 27 to August 25	single pasturing from August 26 to October 20
4	single pasturing from April 27 to June 26	single pasturing from June 27 to August 25	single pasturing from August 26 to October 20	resting field

Recommended schemes of pasture rotation for the II steppe zone of North Kazakhstan region

Years	Plot numbers			
	I	II	III	IV
1	single pasturing from June 25 to August 24	single pasturing from August 25 to October 22	resting field	single pasturing from April 25 to June 24
2	single pasturing from August 25 to October 22	resting field	single pasturing from April 25 to June 24	single pasturing from June 25 to August 24
3	resting field	single pasturing	single pasturing	single pasturing

		from April 25 to June 24	from June 25 to August 24	from August 25 to October 22
4	single pasturing from April 25 to June 24	single pasturing from June 25 to August 24	single pasturing from August 25 to October 22	resting field

*Pasture rotations should be made taking into account the natural and climatic conditions, type, species composition, and productivity of vegetation in pasture lands, i.e. pasture rotations will differ in the conditions of each region.

Recommendations for improving the cultural and technical condition of pasture lands in the I forest-steppe zone of North Kazakhstan region

Radical improvement:

- accelerated grassing, creation of new grass stand.

Superficial improvement:

- destruction of bushes and weeds;
- destruction of hummocks and removal of garbage:
- snow retention;
- rejuvenation of natural grass stands, fertilization;
- sowing of grasses;

Improved use (operation):

- conducting paddock grazing and pasture rotations;
- compliance with the seasonality of grazing;
- watering;
- compliance with the pasture load taking into account their productivity and period of use, types and breeds of livestock.

Recommendations for improving the cultural and technical condition of pasture lands in the II forest-steppe zone of North Kazakhstan region

Radical improvement:

- accelerated grassing, creation of new grass stand.

Superficial improvement:

- destruction of bushes and weeds;
- destruction of hummocks and removal of garbage:
- snow retention;
- rejuvenation of natural grass stands, fertilization;
- sowing of grasses;

Improved use (operation):

- conducting paddock grazing and pasture rotations;
- compliance with the seasonality of grazing;
- watering;
- compliance with the pasture load taking into account their productivity and period of use, types and breeds of livestock.

Calendar schedule for the use of pastures, establishing seasonal routes for grazing and movement of farm animals in North Kazakhstan region

No.	Agroclimatic zones	Time for driving farm animals to distant pastures	Time for return drive from distant pastures
1	I	April 27	October 20
2	II	April 25	October 22

*Dates may vary depending on the specific climatic conditions of the year

Pavlodar region

5. Recommended pasture rotation schemes*

Recommended schemes of pasture rotation for the I moderately arid zone of Pavlodar region

Table 1 – Scheme of five-field pasture rotation for the I moderately arid zone of Pavlodar region

Years	Pen numbers				
	I	II	III	IV	V
1	spring-summer season	summer season	autumn season	resting area	use for haymaking
2	summer season	autumn season	resting area	use for haymaking	spring-summer season
3	autumn season	resting area	use for haymaking	spring-summer season	summer season
4	resting area	use for haymaking	spring-summer season	summer season	autumn season
5	use for haymaking	spring-summer season	summer season	autumn season	resting area

Recommended schemes of pasture rotation for the II arid zone of Pavlodar region

Table 2 – Scheme of four-field pasture rotation for the II arid zone of Pavlodar region

Years	Pen numbers			
	I	II	III	IV
1	spring-summer season	summer season	autumn season	resting area

2	summer season	autumn season	resting area	spring-summer season
3	autumn season	resting area	spring-summer season	summer season
4	resting area	spring-summer season	summer season	autumn season

Recommended schemes of pasture rotation for the III dry zone of Pavlodar region

Table 3 – Scheme of four-field pasture rotation for the III dry zone of Pavlodar region

Years	Pen numbers			
	I	II	III	IV
1	spring-summer season	summer season	autumn season	resting area
2	summer season	autumn season	resting area	spring-summer season
3	autumn season	resting area	spring-summer season	summer season
4	resting area	spring-summer season	summer season	autumn season

*Pasture rotations should be made taking into account the natural and climatic conditions, type, species composition, and productivity of vegetation in pasture lands, i.e. pasture rotations will differ in the conditions of each region.

Recommendations for improving the cultural and technical condition of pasture lands in the 1st moderately arid zone of Pavlodar region

Radical improvement:

– accelerated grassing, creation of new grass stand (agro-steppe).

Superficial improvement:

– cultural and technical work (destruction of hummocks, removal of stones, clearing of bushes and undergrowth);

- creation of cultivated pastures;
- weed control;
- snow retention;
- rejuvenation of natural grass stands, fertilization;
- sowing of grasses;

Improved use (operation):

- monitoring the condition of soil and grass;
- conducting paddock grazing and pasture rotations;
- observing the seasonality of grazing;
- watering;

- observing the pasture load taking into account their productivity and period of use, types and breeds of livestock.

Recommendations for improving the cultural and technical condition of pasture lands in the II arid zone of Pavlodar region

Radical improvement:

– accelerated grassing, creation of new grass stand (agro-steppe).

Superficial improvement:

– cultural and technical work (destruction of hummocks, removal of stones, clearing of bushes and undergrowth);

- creation of cultivated pastures;
- weed control;
- snow retention;
- rejuvenation of natural grass stands, fertilization;
- sowing of grasses;

Improved use (operation):

- monitoring the condition of soil and grass;
- conducting paddock grazing and pasture rotations;
- observing the seasonality of grazing;
- watering;
- observing the pasture load taking into account their productivity and period of use, types and breeds of livestock.

Recommendations for improving the cultural and technical condition of pasture lands in the III dry zone of Pavlodar region

Radical improvement:

– accelerated grassing, creation of new grass stand (agro-steppe).

Superficial improvement:

– cultural and technical work (destruction of hummocks, removal of stones, clearing of bushes and undergrowth);

- creation of cultivated pastures;
- weed control;
- snow retention;
- rejuvenation of natural grass stands, fertilization;
- sowing of grasses;

Improved use (operation):

- monitoring the condition of soil and grass;
- conducting paddock grazing and pasture rotations;
- observing the seasonality of grazing;
- watering;
- observing the pasture load taking into account their productivity and period of use, types and breeds of livestock.

Calendar schedule for the use of pastures, establishing seasonal routes for grazing and movement of farm animals in Pavlodar region

No.	Agroclimatic zones	Time for driving farm animals to distant pastures	Time for return drive from distant pastures
1	I	First ten days of May	Third decade of October
2	II	First ten days of May	Third decade of October

3	III	Third ten days of April	Third decade of October
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*Dates may vary depending on the specific climatic conditions of the year

Karaganda region

5. Recommended pasture rotation schemes*

Recommended schemes of pasture rotation for the I steppe zone of Karaganda region*

Years	Plots			
	1	2	3	4
1	spring	summer	autumn	rest
2	rest	spring	summer	autumn
3	autumn	rest	spring	summer
4	summer	autumn	rest	spring

Recommended schemes of pasture rotation for the II desert zone of Karaganda region

Years	Plots			
	1	2	3	4
1	spring (grazing 30 days)	summer (grazing 90 days)	autumn (grazing 30 days)	winter (rest)
2	winter (rest)	spring (grazing 30 days)	summer (grazing 90 days)	autumn (grazing 30 days)
3	autumn (grazing 30 days)	winter (rest)	spring (grazing 30 days)	summer (grazing 90 days)
4	summer (grazing 90 days)	autumn (grazing 30 days)	winter (rest)	spring (grazing 30 days)

*Pasture rotations should be made taking into account the natural and climatic conditions, type, species composition, and productivity of vegetation in pasture lands, i.e. pasture rotations will differ in the conditions of each region.

Recommendations for improving the cultural and technical condition of pasture lands in the I steppe zone:

Low-productivity, overgrazed pasture areas with sparse grass stand, occupied by low-quality grasses (during the rest period) should be subject to radical improvement, i.e. complete destruction of the existing grass stand and creation of new sown pastures.

The main recommended elements of the technology for radical improvement of pastures:

1. Turf processing (harrowing BDT-10 to a depth of 8-10 cm);

2. Deep loosening or plowing to a depth of 20-25 cm PG-3-5, PLN 8-35 (early spring or late autumn);
3. Harrowing BDT-10 to a depth of 6 cm;
4. Rolling 3KKSh-6A;
5. Selection of xeromesophilic grasses and grass mixtures (wheatgrass, awnless brome, couch grass, bluegrass, white bentgrass, Russian wild rye, yellow alfalfa, slender wheatgrass), long-term with a service life of 7-10 years or more;
6. Sowing grasses and grass mixtures to a depth of 2-3 cm, the seeding rate of grasses is 15-20 kg/ha SZT -3.6;
7. Rolling ZKKSh-6A;
8. Care of crops in the year of sowing (the first year of grass life) mowing weeds;
9. Care of crops in subsequent years of use (harrowing rejuvenation, fertilizing, paraploughing).

The use of a system of surface improvement of pasture areas involves the elimination of the causes leading to deterioration and change in the botanical composition of vegetation, a decrease in productivity - primarily improving the water, air and food regimes, caring for the turf and grass stand.

The main activities included in the system of surface improvement of pastures in the steppe zone:

1. Landscaping work - removal of hummocks, leaving and creating shrub and semi-shrub strips on slopes, sands, etc.;
2. Measures to improve the water regime - snow retention, slitting, drainage of stagnant surface water, drainage, irrigation, flooding, adjustment of the relief to control water runoff and increase moisture reserves, creation of small ponds or reservoirs to retain rainwater;
3. Improving the food regime (fertilization, composting);
4. Measures to care for turf and grass stand, rejuvenation of grass stands (harrowing, disking, milling, control of harmful, poisonous plants, invasions, overseeding of grasses and grass mixtures).
5. Grazing control (introduction of rotational grazing, pasture rotation to give the grass stand time to recover);

Recommendations for improving the cultural and technical condition of pasture lands in the II desert zone:

Low-productivity, overgrazed pasture areas with sparse grass stand, occupied by low-quality grasses (during the rest period) should be subject to radical improvement, i.e. complete destruction of the existing grass stand and creation of new sown pastures.

The main recommended elements of the technology for radical improvement of pastures:

1. Evaluation of salt levels and other factors affecting the productivity of grass stand;
1. Sod processing (harrowing BDT-10 to a depth of 8-10 cm);
2. Plowing to a depth of 20-25 PLN 8-35 (late autumn);
3. Harrowing BDT-10 to a depth of 6 cm;
4. Rolling ZKKSh-6A;
5. Selection of xerophilic grasses and grass mixtures, salt-resistant (desert wheatgrass, prostrate summer cypress, eurotia, saltwort, wormwood, Calligonum), long-term with a service life of 7-10 years or more;
6. Sowing grasses and grass mixtures to a depth of 2-3 cm, grass seeding rate 8-10 kg/ha SZT -3.6;
7. Rolling ZKKSh-6A;
8. Crop care in the year of sowing (first year of grass life) fertilizing;

9. Crop care in subsequent years of use (harrowing, rejuvenation, fertilizing, paraploughing).

The use of a system of surface improvement of pasture areas involves the elimination of the causes leading to deterioration and change in the botanical composition of vegetation, a decrease in productivity - primarily improving the water, air and food regimes, caring for the turf and grass stand.

The main activities included in the system of surface improvement of pastures in the desert zone:

1. Landscaping work - removal of hummocks, leaving and creating shrub and semi-shrub strips on slopes, sands, etc.;

2. Measures to improve the water regime - snow retention, slitting, drainage of stagnant surface water, drainage, irrigation, flooding, adjustment of the relief to control water runoff and increase moisture reserves, creation of small ponds or reservoirs to retain rainwater, construction of terraces, ditches and other structures for collecting rainwater;

3. Improving the food regime (fertilization, composting);

4. Measures to care for turf and grass stand, rejuvenation of grass stands (harrowing, disking, milling, control of harmful, poisonous plants, invasions, sowing of grasses and grass mixtures).

5. Grazing control (implementation of rotational grazing, pasture rotation to give the grass time to recover);

6. Use of shelters to protect animals and plants from strong sun and wind

Calendar schedule for the use of pastures, establishing seasonal routes for grazing and movement of farm animals in Karaganda region*

No.	Agroclimatic zones	Calendar dates for driving farm animals to distant pastures	Calendar dates for return drive from a distant pasture to the camp
1	I	first ten days of May - second ten days of June	third decade of September - second decade of October
2	II	third decade of April - third decade of June	third decade of September - first decade of November

*Dates may vary depending on the specific climatic conditions of the year

Kostanay region

5. Recommended pasture rotation schemes*

Recommended schemes of pasture rotation for the I forest-steppe and steppe zone of Kostanay region

Years	Field numbers			
	I	II	III	IV
1	Single pasturing from 25.04 to 24.06	Single pasturing from 25.06 to 24.08	Single pasturing from 25.08 to 22.10	Resting field

2	Resting field	Single pasturing from 25.04 to 24.06	Single pasturing from 25.06 to 24.08	Single pasturing from 25.08 to 22.10
3	Single pasturing from 25.08 to 22.10	Resting field	Single pasturing from 25.04 to 24.06	Single pasturing from 25.06 to 24.08
4	Single pasturing from 25.06 to 24.08	Single pasturing from 25.08 to 22.10	Resting field	Single pasturing from 25.04 to 24.06

Recommended schemes of pasture rotation for the II semi-desert zone of Kostanay region

Years	Field numbers			
	I	II	III	IV
1	Spring-summer pasturing 1	Summer pasturing 2	Autumn pasturing 3	Resting field 4
2	Resting field 4	Spring-summer pasturing 1	Summer pasturing 2	Autumn pasturing 3
3	Autumn pasturing 3	Resting field 4	Spring-summer pasturing 1	Summer pasturing 2
4	Summer pasturing 2	Autumn pasturing 3	Resting field 4	Spring-summer pasturing

Note: 1, 2, 3, 4 - sequence of field use in the year

Recommended schemes of pasture rotation for the III desert zone of Kostanay region

Years	Field numbers			
	I	II	III	IV
1	Resting field 4	Spring-summer pasturing 1	Summer pasturing 2	Summer-autumn 3
2	Summer-autumn pasturing 3	Resting field 4	Spring-summer pasturing 1	Summer pasturing 2

3	Spring-summer pasturing 1	Summer pasturing 2	Summer-autumn 3	Resting field 4
4	Summer pasturing 2	Summer-autumn 3	Resting field 4	Spring-summer pasturing

Note: 1, 2, 3, 4 - sequence of field use in the year

*Pasture rotations should be made taking into account the natural and climatic conditions, type, species composition, and productivity of vegetation in pasture lands, i.e. pasture rotations will differ in the conditions of each region.

Recommendations for improving the cultural and technical condition of pasture lands in the I forest-steppe and steppe zone of Kostanay region

Radical improvement:

- accelerated grassing, creation of new grass stand (sowing of perennial grasses).

Superficial improvement:

- destruction of bushes, weeds and harmful vegetation;
- destruction of hummocks and removal of garbage:
- snow retention;
- rejuvenation of natural grass stands, fertilization;
- sowing of perennial grasses;

Improved use (operation):

- conducting paddock grazing and pasture rotations;
- compliance with the seasonality of grazing;
- watering;
- compliance with the pasture load approved by the authorized body, taking into account their productivity, actual condition (restored or degraded) and season of use, types and breeds of livestock.

Recommendations for improving the cultural and technical condition of pasture lands in the II semi-desert zone of Kostanay region

Radical improvement:

- carried out on heavily compacted and low-value grass stands on gentle slopes, sodium soils and sodium soil complexes, in the structure of which the share of sodium soil spots is 10-30%. It is advisable to carry out grassing in an accelerated manner.

Superficial improvement:

- carried out on hayfields and pastures that contain at least 30-40% of valuable grass species, if the areas are not subject to erosion, have a sufficiently high total projective cover (not less than 40%) and relatively good moisture (floodplains, valleys, estuaries).

The main agrotechnical measures include:

- reseeding grasses into the turf;
- application of fertilizers, when reseeding legumes - the use of phosphorus and potassium, when reseeding cereals - nitrogen and nitrogen-potassium.
- rejuvenation of grass stand;
- the combination of these techniques increases their effectiveness.

Improved use (operation):

- application of fertilizers;
- irrigation;
- use of different herbage at different times;
- allocation of several paddocks with early maturing (winter and perennial rye) and late vegetating plants (annual forage crops and grasses sown in summer);
- establishment of pasture load;
- preparation of winter feed in the first half of summer by using surplus grass;
- additional feeding of cattle by sowing annual forage crops, concentrates or silage in the second half of summer

Recommendations for improving the cultural and technical condition of pasture lands in the III desert zone of Kostanay region

Radical improvement:

- accelerated grassing using arid plants growing in the desert zone when creating seeded pastures.

Superficial improvement:

- sowing seeds of arid crops, harvested mechanically in areas of virgin steppe of the desert zone.
- sowing seeds of arid crops with additional enrichment with grass species of various economic importance.
- reseeding of shrubs, subshrubs and grasses without soil cultivation.

Improved use (operation):

- application of fertilizers;
- efficient water management;
- use of different herbage at different times;
- introduction of crop rotation
- establishment of pasture load.

Calendar schedule for the use of pastures, establishing seasonal routes for grazing and movement of farm animals in Kostanay region

No.	Agroclimatic zones	Time for driving farm animals to distant pastures	Time for return drive from distant pastures
1	I	3rd ten days of April	Beginning of the 3rd ten days of October
2	II	2nd ten days of April	Beginning of the 1st ten days of November
3	III	1st ten days of April	2nd ten days of November

*Dates may vary depending on the specific climatic conditions of the year