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HANDBOOK

OF

OFFICIAL HAY STANDARDS

Official Hay Standards of the United States as
established and promulgated by the
Secretary of Agriculture

Important features of United States hay standards
Important features of Federal Hay Inspection

PREPARED BY
EDWARD C. PARKER
Specialist, Hay Standardization
AND
K. B. SEEDS
Specialist, Hay Inspection



WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

U. S. Department of Agriculture
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FOREWORD

For several years the Acts of the Congress making appropriations for the Department of Agriculture have authorized the Secretary of Agriculture to acquire and diffuse among the people of the United States useful information on subjects connected with the grading of farm products and to establish an inspection service for certain farm products, including hay. Acting under the above authority, standards were recommended for Timothy, Clover and Grass hay on January 2, 1923. Similarly standards for Alfalfa and Alfalfa Mixed hay, Johnson and Johnson Mixed hay, Prairie hay, and Mixed hay, were recommended on July 1, 1925, and the standards for Timothy, Clover and Grass hay were revised slightly on the same date. On the 1st day of September, 1925, the Secretary of Agriculture made these standards the official standards of the United States for the inspection and certification of such hays as follows:

TIMOTHY CLOVER AND GRASS HAY (GROUP I)

DEFINITIONS

For the purposes of the United States standards for timothy, clover and grass hay:

Timothy as a part of any class may include not to exceed 10 per cent (of the total hay) of other grasses.

Clover as a part of any class shall be red clover, alsike clover and/or white clover and may include not to exceed 10 per cent (of the total hay) of alfalfa, vetches and other legumes which are not coarse and woody and which have a recognized feeding value.

Coarse clover hay shall be stemmy clover hay which contains 40 per cent or more of stalks with diameters greater than that of No. 11 steel wire (approximately twelve one-hundredths of an inch) by steel wire gage standards.

Grasses shall be redtop, orchard grass, Kentucky bluegrass, Canada bluegrass, meadow fescue, awnless brome-grass, quack-grass, early cut pigeon grass (sometimes called foxtail or wild millet), and such other cultivated and wild grasses, sedges and rushes as occur in meadows and are not coarse in texture and which have a recognized feeding value.

Alfalfa as a part of any class may include not to exceed 10 per cent (of the total hay) of other legumes which are not coarse and woody and which have a recognized feeding value.

Foreign material shall be weeds, late cut pigeon grass (sometimes called foxtail or wild millet), wire-grasses or needle-grasses (*Aristida*

spp. and *Stipa spp.*) and such sedges, rushes and other plants as are coarse or not suitable for feeding purposes; also cornstalks, stubble, chaff, and other objectionable matter which occurs naturally in hay.

Injurious foreign material shall be sand burs, poisonous plants, wild barley or squirreltail grass (*Hordeum jubatum*) or other harsh bearded grasses, and other matter which is injurious when fed to livestock.

Green color.—The term “per cent green” employed in these standards represents the amount of green color (green appearance) in field cured hay computed as a percentage of the 100 per cent green color of hay produced so as to have received no discoloration from maturity, sun bleach, dew, rain or other damage.

Percentages.—The standards for mixture percentages and foreign material are based upon percentages by weight of the total hay. The standard for coarse clover is based upon percentage by count of the clover. The color standard for timothy and grasses is based upon methods prescribed by the United States Department of Agriculture for closely estimating the percentage of total leaf, stem and head area which has retained the natural undamaged green color of field-cured timothy and grass hay.

Group I.—Timothy,

Class requirements	
Class	Mixture percentages
Timothy.....	Timothy with not over 10 per cent clover.
Timothy Light Clover Mixed.	A mixture of timothy and clover with over 10 per cent but not over 30 per cent clover.
Timothy Medium Clover Mixed.	A mixture of timothy and clover with over 30 per cent but not over 50 per cent clover.
Timothy Light Grass Mixed.	A mixture of timothy and other grasses with over 10 per cent but not over 30 per cent other grasses and not over 10 per cent clover.
Timothy Grass Mixed	A mixture of timothy and other grasses with over 30 per cent but not over 60 per cent other grasses and not over 10 per cent clover.
Timothy Light Alfalfa Mixed.	A mixture of timothy and alfalfa with over 10 per cent but not over 30 per cent alfalfa.
Grass Hay.....	Over 60 per cent of grasses other than timothy, Johnson grass, upland and midland grasses, or grain cut for hay.
Clover.....	Clover with not over 20 per cent timothy or other grasses.
Clover Light Timothy Mixed.	A mixture of clover and timothy with over 20 per cent timothy and over 50 per cent clover.
All classes.....	-----

(See p. 8 for special grades to supplement numerical grades under this group.)

Clover and Grass Hay

Grade requirements			
U. S. grade No.	Color		Maxi- mum per cent foreign ma- terial
	Timothy and other grasses (per cent green)	Clover	
1-----	50 or more-----	-----	10
2-----	30 or more-----	-----	15
3-----	Less than 30 ¹ -----	-----	20
1-----	50 or more-----	-----	10
2-----	30 or more-----	-----	15
3-----	Less than 30 ¹ -----	-----	20
1-----	50 or more-----	Green to greenish brown--	10
2-----	30 or more-----	Greenish brown to brown ² -----	15
3-----	Less than 30 ¹ -----	Dark brown ¹ -----	20
1-----	50 or more-----	-----	10
2-----	30 or more-----	-----	15
3-----	Less than 30 ¹ -----	-----	20
1-----	50 or more-----	-----	10
2-----	30 or more-----	-----	15
3-----	Less than 30 ¹ -----	-----	20
1-----	50 or more-----	-----	10
2-----	30 or more-----	-----	15
3-----	Less than 30 ¹ -----	-----	20
1-----	50 or more-----	-----	10
2-----	30 or more-----	-----	15
3-----	Less than 30 ¹ -----	-----	20
1-----	50 or more-----	Green to greenish brown--	10
2-----	30 or more-----	Greenish brown to brown ² -----	15
3-----	Less than 30 ¹ -----	Dark brown ¹ -----	20
1-----	50 or more-----	Green to greenish brown--	10
2-----	30 or more-----	Greenish brown to brown ² -----	15
3-----	Less than 30 ¹ -----	Dark brown ¹ -----	20
Sample grade	Hay of the above classes which has been threshed or headed, or which contains more than 20 per cent foreign material, or which contains more than a trace of injurious foreign material, or which has any objectionable odor, or which is heat- ing, hot, wet, moldy, musty, caked, or otherwise of distinctly low quality.		

¹ Does not apply to hay graded No. 3 on account of any other factor.

² Does not apply to hay graded No. 2 on account of any other factor in which case it may have the clover color of either No. 1 or No. 2.

Special Grades to Supplement Numerical Grades in Group I

Grades for high green color hay.—Hay of any numerical grade of any of the classes in Group I, in which the timothy and grass have 65 per cent or more green color and in which the leaves and stems of clover are uniformly natural green, shall have the words "High Green Color" added to the grade designation, as: "U. S. No. 1 Timothy, High Green Color," "U. S. No. 1 Timothy Light Clover Mixed, High Green Color," or "U. S. No. 1 Clover, High Green Color."

Grades for coarse clover hay.—Hay of any numerical grade of the classes Clover and Clover Light Timothy Mixed which is coarse shall have the word "Coarse" included in and made a part of the grade designation, as: "U. S. No. 2 Coarse Clover," "U. S. No. 3 Coarse Clover Light Timothy Mixed."

ALFALFA AND ALFALFA MIXED HAY (GROUP II)

DEFINITIONS

For the purposes of the United States standards for alfalfa and alfalfa mixed hay:

Alfalfa as a part of any class may include not to exceed 10 per cent (of the total hay) of other legumes which are not coarse and woody and which have a recognized feeding value.

Fine alfalfa hay shall be alfalfa hay which contains no stalks having diameters greater than that of No. 12 steel wire (approximately ten one-hundredths of an inch) and not to exceed 30 per cent of stalks having diameters greater than that of No. 14 steel wire (eight one-hundredths of an inch) by steel wire gage standards.

Coarse alfalfa hay shall be alfalfa hay which contains 30 per cent or more of round, hard stalks with diameters greater than that of No. 12 steel wire (approximately ten one-hundredths of an inch) by steel wire gage standards.

Soft alfalfa hay shall be alfalfa hay with clinging foliage and soft stems arising from early cutting and slow field curing or from the sweating of partially cured hay in the stack or mow.

Grasses shall be redtop, orchard grass, Kentucky bluegrass, Canada bluegrass, crab-grass, quack-grass, Paspalum, Bermuda grass, wheat-grasses, wild rye, early cut pigeon grass (sometimes called foxtail or wild millet), early cut wild brome-grasses such as cheat, and such other cultivated and wild grasses, sedges and rushes as occur in alfalfa meadows and are not coarse

in texture and which have a recognized feeding value, and may contain not to exceed 10 per cent (of the total hay) of timothy, Johnson grass or grain hay, singly or in combination.

Timothy as a part of any class may include not to exceed 10 per cent (of the total hay) of other grasses.

Clover as a part of any class shall be red clover, alsike clover and/or white clover.

Johnson grass as a part of any class may include not to exceed 10 per cent (of the total hay) of other grasses.

Grain hay as a part of any class shall be hay of the grains, oats, barley, wheat, rye, and wild oats, singly or in combination, cut before the grain has matured, and may include not to exceed 10 per cent (of the total hay) of other grasses.

Foreign material shall be weeds, ripe wild brome-grasses such as cheat, late cut pigeon grass (sometimes called foxtail or wild millet), wire-grasses or needle-grasses (*Aristida spp.* and *Stipa spp.*) and such sedges, rushes and other plants as are coarse or not suitable for feeding purposes; also cornstalks, stubble, chaff, and other objectionable matter which occurs naturally in hay.

Injurious foreign material shall be sand burs, poisonous plants, wild barley or squirreltail grass (*Hordeum jubatum*) or other harsh bearded grasses, and other matter which is injurious when fed to livestock.

Green color.—The term “per cent green” employed in these standards represents the amount of green color (green appearance) in field-cured hay computed as a percentage of the 100 per

cent green color of hay produced so as to have received no discoloration from maturity, sun bleach, dew, rain, or other damage.

NOTE.—Field-cured alfalfa hay which, on casual examination, appears to be of very high green color, nearly always contains slight discolorations which materially lower the amount of green color from the perfect color standard. Thus the 60 per cent green color standard for No. 1 Alfalfa represents an amount of color that is relatively high for field-cured hay.

Percentages.—The standards for mixture percentages and foreign material are based upon percentages by weight of the total hay. The standards for leafiness are based upon percentages by weight of the alfalfa. The standards for fine and coarse alfalfa are based upon percentages by count of the alfalfa. The standards for color are based upon color determinations ascertained by the Munsell color system and the method of use thereof prescribed by the United States Department of Agriculture, which determinations are expressed in popular terms as “per cent green.”

Group II.—Alfalfa

Class requirements	
Class	Mixture percentages
Alfalfa.....	Alfalfa with not over 5 per cent grasses.
Alfalfa Light Grass Mixed.	A mixture of alfalfa and grasses with over 5 per cent but not over 20 per cent grasses.
Alfalfa Grass Mixed...	A mixture of alfalfa and grasses with over 20 per cent but not over 60 per cent grasses.
Alfalfa Light Timothy Mixed.	A mixture of alfalfa and timothy with over 5 per cent but not over 30 per cent timothy.
Alfalfa Timothy Mixed	A mixture of alfalfa and timothy with over 30 per cent alfalfa and over 30 per cent timothy.
Alfalfa Clover Mixed...	A mixture of alfalfa and clover with over 10 per cent but not over 50 per cent clover and not over 10 per cent grasses.
Alfalfa Light Johnson Mixed.	A mixture of alfalfa and Johnson grass with over 5 per cent but not over 30 per cent Johnson grass.
Alfalfa Light Grain Mixed.	A mixture of alfalfa and grain hay with over 5 per cent but not over 20 per cent grain hay.
Alfalfa Grain Mixed...	A mixture of alfalfa and grain hay with over 20 per cent but not over 60 per cent grain hay.
All classes.....	.....

(See p. 14 for special grades to supplement numerical grades under this group.)

and Alfalfa Mixed Hay

Grade requirements				
U. S. grade No.	Leafiness of alfalfa (per cent leaves)	Per cent green color		Maxi- mum per cent for- eign ma- terial
		Alfalfa	Timothy, other grasses and grain hay	
1-----	40 or more----	60 or more----	-----	5
2-----	25 or more----	30 or more----	-----	10
3-----	Less than 25 ¹ ----	Less than 30 ¹ ----	-----	15
1-----	40 or more----	60 or more----	-----	5
2-----	25 or more----	30 or more----	-----	10
3-----	Less than 25 ¹ ----	Less than 30 ¹ ----	-----	15
1-----	-----	60 or more----	50 or more----	5
2-----	-----	30 or more----	30 or more----	10
3-----	-----	Less than 30 ¹ ----	Less than 30 ¹ ----	15
1-----	40 or more----	60 or more----	-----	5
2-----	25 or more----	30 or more----	-----	10
3-----	Less than 25 ¹ ----	Less than 30 ¹ ----	-----	15
1-----	-----	60 or more----	50 or more----	5
2-----	-----	30 or more----	30 or more----	10
3-----	-----	Less than 30 ¹ ----	Less than 30 ¹ ----	15
1-----	40 or more----	60 or more----	-----	5
2-----	25 or more----	30 or more----	-----	10
3-----	Less than 25 ¹ ----	Less than 30 ¹ ----	-----	15
1-----	-----	60 or more----	50 or more----	5
2-----	-----	30 or more----	30 or more----	10
3-----	-----	Less than 30 ¹ ----	Less than 30 ¹ ----	15
Sample grade.	Hay of the above classes which has been threshed, or which contains more than 15 per cent foreign material, or which contains more than a trace of injurious foreign material, or which has any objectionable odor, or which is heating, hot, wet, moldy, musty, caked or otherwise of distinctly low quality.			

¹ Does not apply to hay graded No. 3 on account of any other factor.

Special Grades to Supplement Numerical Grades in Group II

Grades for high green color hay.—Hay of any numerical grade of any of the classes in Group I, the color of which is 15 per cent or more higher than the minimum color requirement for the U. S. No. 1 grade of the same class, shall have the words "High Green Color" added to the grade designation, as "U. S. No. 1 Alfalfa, High Green Color."

Grades for fine alfalfa hay and coarse alfalfa hay.—Hay of any numerical grade of the class Alfalfa which is either fine or coarse shall have the word "Fine" or the word "Coarse," as the case may be, included in and made a part of the grade designation, as: "U. S. No. 1 Fine Alfalfa," "U. S. No. 2 Coarse Alfalfa."

Grades for soft alfalfa hay.—Hay of any numerical grade of the class Alfalfa which is soft shall have the word "Soft" included in and made a part of the grade designation, as: "U. S. No. 1 Soft Alfalfa," "U. S. No. 1 Soft Fine Alfalfa," "U. S. No. 2 Soft Alfalfa," "U. S. No. 3 Soft Alfalfa."

PRAIRIE HAY (GROUP III)

DEFINITIONS

For the purposes of the United States standards for prairie hay:

Prairie hay shall be hay which consists of those upland and/or midland grasses which have recognized feeding value.

Upland grasses shall be big bluestem (*Andropogon furcatus*), little bluestem (*Andropogon scoparius*), slender wheat-grass (*Agropyron tenerum*), western wheat-grass (*Agropyron smithii*), white beard-grass (*Andropogon saccharoides*), prairie June-grass (*Koeleria cristata*), Paspalum (*Paspalum spp.*), Indian grass (*Sorghastrum nutans*), side-oats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), and other grasses which grow commonly in upland virgin prairie meadows and have a recognized feeding value and may include not to exceed 10 per cent (of the total hay) of midland grasses or cultivated grasses such as timothy and redtop.

Midland grasses shall be slough-grass (*Spartina michauxiana*), bluejoint (*Calamagrostis spp.*), reed-grass (*Phragmites communis*), sprangle top (*Scolochloa festucacea*), and other wild grasses, sedges and rushes which grow commonly in moist meadows and have a recognized feeding value.

(Continued on page 18)

Group III—

Class requirements	
Class	Mixture percentages
Upland-----	Upland grasses (over 20 per cent of which shall be other than wheat-grass) and not over 10 per cent legumes.
Wheat-grass-----	Wheat-grass with not over 20 per cent other upland grasses and/or legumes.
Midland-----	Midland grasses or a mixture of midland and upland grasses with over 40 per cent midland grasses.
Upland-Midland Mixed.	A mixture of upland and midland grasses with over 10 per cent but not over 40 per cent midland grasses and not over 10 per cent legumes.
All classes-----	-----

¹ Does not apply to hay graded No. 3 on account of foreign material in which case it may have more than 30 per cent green color.

Grades for high green color hay.—Hay of any numerical grade of any of the above classes which has 75 per cent or more green color shall have the words "High Green Color" added to the grade designation, as: "U. S. No. 1 Upland, High Green Color."

Prairie Hay

Grade requirements		
U. S. grade No.	Per cent green color	Maximum per cent foreign material
1.....	60 or more.....	10
2.....	30 or more.....	15
3.....	Less than 30 ¹	20
1.....	60 or more.....	10
2.....	30 or more.....	15
3.....	Less than 30 ¹	20
1.....	60 or more.....	10
2.....	30 or more.....	20
1.....	60 or more.....	10
2.....	30 or more.....	15
3.....	Less than 30 ¹	20
Sample grade	Hay of the above classes which does not meet the requirements of the numerical grades, or which contains more than a trace of injurious foreign material, or which has any objectionable odor, or which is heating, hot, wet, moldy, musty, caked, or otherwise of distinctly low quality.	

Grades for coarse prairie hay.—Hay of any numerical grade of any of the above classes which is coarse shall have the word "Coarse" included in and made a part of the grade designation, as: "U. S. No. 2 Coarse Upland."

(Continued from page 15)

Wheat-grass shall be that upland grass most commonly called western wheat-grass (*Agropyron smithii*) but occasionally known locally as bluestem, bluejoint, Colorado bluestem, alkali-grass, salt-grass, or western rye-grass.

Legumes shall be vetches, sweet clover, and other leguminous plants which are not coarse and woody, which have a recognized feeding value and which occur in prairie meadows.

Coarse prairie hay shall be prairie hay which contains 30 per cent or more of stalks with diameters greater than that of No. 12 steel wire (approximately ten one-hundredths of an inch) by steel wire gage standards

Foreign material shall be weeds, wire-grasses, and needle-grasses (*Aristida spp.* and *Stipa spp.*), and such sedges, rushes and other plants as are coarse or not suitable for feeding purposes; also other objectionable matter which occurs naturally in hay.

Injurious foreign material shall be poisonous plants, wild barley or squirreltail grass (*Hordeum jubatum*), or other harsh bearded grasses such as needle-grass (*Stipa spp.*) with the needles attached, and other matter which is injurious when fed to livestock.

Green color.—The term “per cent green” employed in these standards represents the amount of green color (green appearance) in field-cured hay computed as a percentage of the 100 per cent green color of hay produced so as to have received no discoloration from maturity, sun bleach, dew, rain, or other damage.

Percentages.—The standards for mixture percentages and foreign material are based upon percentages by weight of the total hay. The standard for coarse prairie hay is based upon percentages by count of the upland and midland grasses. The standards for color are based upon color determinations ascertained by the Munsell color system and the method of use thereof prescribed by the United States Department of Agriculture, which determinations are expressed in popular terms as “per cent green.”

JOHNSON AND JOHNSON MIXED HAY (GROUP IV)

DEFINITIONS

For the purposes of the United States standards for Johnson and Johnson mixed hay:

Johnson grass as a part of any class may include not to exceed 10 per cent (of the total hay) of early cut cane hay and 10 per cent (of the total hay) of other grasses.

Fine Johnson hay shall be Johnson hay which contains no matured seed heads and no Johnson grass stalks having diameters greater than that of No. 11 steel wire (approximately twelve one-hundredths of an inch), but which may contain 30 per cent of Johnson grass stalks having diameters greater than that of No. 13 steel wire (approximately nine one-hundredths of an inch) by steel wire gage standards.

Coarse Johnson hay shall be Johnson hay which contains (a) more than 30 per cent of Johnson grass stalks with diameters greater than that of No. 10 steel wire (approximately thirteen one-hundredths of an inch), by steel wire gage standards, (b) more than 30 per cent of stalks bearing matured seed heads, or (c) more than 30 per cent of any combination of (a) and (b).

Grasses shall be Paspalum, Bermuda grass, crab-grass, early cut broom sedge, early cut pigeon grass (sometimes called foxtail or wild millet), and such other cultivated and wild grasses, sedges and rushes as occur in Johnson

hay meadows and are not coarse in texture and which have a recognized feeding value.

Legumes shall be alfalfa, lespedeza, yellow trefoil (black medic), vetches, clover, and other leguminous plants which are not coarse and woody and which have a recognized feeding value.

Alfalfa as a part of any class may include not to exceed 10 per cent (of the total hay) of other legumes.

Lespedeza as a part of any class may include not to exceed 10 per cent (of the total hay) of other legumes.

Foreign material shall be weeds, wire-grasses and needle-grasses (*Aristida spp.* and *Stipa spp.*), matured broom sedge, late cut pigeon grass (sometimes called foxtail or wild millet), and such sedges, rushes and other plants as are coarse or not suitable for feeding purposes; also cornstalks, stubble, chaff, and other objectionable matter which occurs naturally in hay.

Injurious foreign material shall be sand burs, poisonous plants, wild barley or squirreltail grass (*Hordeum jubatum*) or other harsh bearded grasses, and other matter which is injurious when fed to livestock.

Green color.—The term “per cent green” employed in these standards represents the amount of green color (green appearance) in field cured hay computed as a percentage of the 100 per cent green color of hay produced so as to have received no discoloration from maturity, sun bleach, dew, rain, or other damage.

(Continued on page 24)

Group IV.—Johnson and

Class requirements	
Class	Mixture percentages
Johnson -----	Johnson grass with not over 10 per cent legumes.
Johnson Light Grass Mixed.	A mixture of Johnson grass and other grasses with over 10 per cent but not over 30 per cent other grasses and not over 10 per cent legumes.
Johnson and Grass Mixed.	A mixture of Johnson grass and other grasses with over 30 per cent but not over 60 per cent other grasses and not over 10 per cent legumes.
Johnson Light Alfalfa Mixed.	A mixture of Johnson grass and alfalfa with over 10 per cent but not over 30 per cent alfalfa.
Johnson Alfalfa Mixed	A mixture of Johnson grass and alfalfa with over 30 per cent Johnson grass and over 30 per cent alfalfa.
Johnson Light Lespedeza Mixed	A mixture of Johnson grass and Lespedeza with over 10 per cent but not over 30 per cent Lespedeza.
All classes -----	-----

Grades for high green color hay.—Hay of any numerical grade of any of the above classes, the color of which is 15 per cent or more higher than the minimum color requirement for the U. S. No. 1 grade of the same class, shall have the words "High Green Color" added to the grade designation, as: "U. S. No. 1 Fine Johnson, High Green Color," or "U. S. No. 1 Johnson Alfalfa Mixed, High Green Color."

Johnson Mixed Hay

Grade requirements			
U. S. grade No.	Per cent green color		Maxi- mum per cent foreign material
	Johnson and other grasses	Alfalfa	
1.....	45 or more.....	.....	10
2.....	25 or more.....	.....	15
3.....	Less than 25 ¹.....	.....	20
Coarse ².....	.....	.....	20
1.....	45 or more.....	.....	10
2.....	25 or more.....	.....	15
3.....	Less than 25 ¹.....	.....	20
1.....	45 or more.....	.....	10
2.....	25 or more.....	.....	15
3.....	Less than 25 ¹.....	.....	20
1.....	45 or more.....	.....	10
2.....	25 or more.....	.....	15
3.....	Less than 25 ¹.....	.....	20
1.....	45 or more.....	60 or more.....	10
2.....	25 or more.....	30 or more.....	15
3.....	Less than 25 ¹	Less than 30 ¹	20
1.....	45 or more.....	.....	10
2.....	25 or more.....	.....	15
3.....	Less than 25 ¹.....	.....	20
Sample grade	Hay of the above classes which contains more than 20 per cent foreign material, or which contains more than a trace of injurious foreign material, or which has any objectionable odor, or which is heating, hot, wet, moldy, musty, caked, or otherwise of distinctly low quality.		

¹ Does not apply to hay graded No. 3 on account of any other factor.

² U. S. Coarse Johnson hay shall be hay of coarse texture.

Grades for fine Johnson hay.—Hay of any numerical grade of the class Johnson which is fine shall have the word "Fine" included in, and made a part of, the grade designation, as: "U. S. No. 1 Fine Johnson," "U. S. No. 2 Fine Johnson," "U. S. No. 3 Fine Johnson."

(Continued from page 21)

Percentages.—The standards for mixture percentages and foreign material are based upon percentages by weight of the total hay. The standards for fine and coarse Johnson hay are based upon percentages by count of the Johnson grass. The standards for color are based upon color determinations ascertained by the Munsell color system and the method of use thereof prescribed by the United States Department of Agriculture, which determinations are expressed in popular terms as “per cent green.”

MIXED HAY (GROUP V)

Mixed hay shall be hay not classified under the United States standards for timothy, clover and grass hay; alfalfa and alfalfa mixed hay; prairie hay; or Johnson and Johnson mixed hay; and which contains, either singly or in combination, 50 per cent or more of timothy, clover, alfalfa, upland and midland grasses, Johnson grass, or other grasses as defined in the United States standards for hay.

Grades for mixed hay.—Mixed hay shall be graded according to the color and foreign material requirements for the kind of hay which predominates in the mixture. The grade designation for mixed hay shall include successively, in the order named, the letters "U. S.," the number of the grade or the words "Sample grade," as the case may be, the words "Mixed Hay," the approximate percentage of each kind of hay which constitutes 10 per cent or more of the mixture written in the order of importance, and such statements about texture and leafiness as may be pertinent.

IMPORTANT FEATURES OF UNITED STATES HAY STANDARDS

HAY GROUPS

United States hay standards comprise standards for five major groups of hay, namely: Group I—Timothy, Clover and Grass Hay; Group II—Alfalfa and Alfalfa Mixed Hay; Group III—Prairie Hay; Group IV—Johnson and Johnson Mixed Hay; and Group V—Mixed Hay. These groups, with the exception of Mixed Hay, are based on the combinations of various kinds of hay commonly found in association in the chief areas of production and the chief markets in the United States. Timothy, clover and grass hays, for example, belong in one group because such kinds of hay are grown in quantity in the same geographic regions and often in mixtures with each other. The groups Alfalfa and Alfalfa Mixed Hay, Prairie Hay and Johnson and Johnson Mixed Hay are founded on similar conditions and facts.

The group Mixed Hay comprises combinations of various kinds of hay mixed in proportions that are uncommon in production and therefore not definitely recognized in the hay trade. Mixed hay in the United States standards, however, is confined to hay in which not less than 50 per cent of the commodity is hay of the groups Timothy, Clover and Grass; Alfalfa and Alfalfa Mixed; Prairie; and Johnson and Johnson Mixed. Thus mixed hay containing over 50 per cent of peanut hay, soybean hay, lespedeza, or some other kind of hay for which there are no United

States standards, is not included in the definite group called Mixed Hay.

Additional hay groups will be brought under United States standards from time to time such as Grain Hay and Lespedeza Hay, or other kinds of hay that may develop in commercial importance.

Each group of hay in United States standards has its classes, grades and definitions.

HAY CLASSES

In all United States hay standards the term "class" is used to describe the kind of hay or the mixtures of various kinds, and has no reference whatever to quality or condition. Class names, such as Timothy, Clover, Alfalfa, Timothy Light Clover Mixed, Grass Hay, Alfalfa Light Grass Mixed, Johnson Alfalfa Mixed, etc., are as descriptive of the kinds and mixtures of hay as necessary terseness will permit. The first word in each class name usually indicates the kind of hay which predominates in that class. Succeeding words, if any, in the class names, indicate the kind of hay mixed with the predominating kind and whether the mixture is comparatively light or in an amount too great to be considered as a light mixture. The following examples will serve to illustrate the descriptive character of the class names. The class name Timothy implies straight or pure timothy and such is the case except for the small tolerances of grasses and clovers that are permitted in the class to meet the practical conditions of timothy production. The class name Timothy

Light Clover Mixed plainly describes a type of mixed hay in which the timothy predominates and in which the clover portion is of minor importance. Similarly, the class name Clover Light Timothy Mixed describes a type of hay in which clover predominates and in which timothy is of minor importance. The class name Timothy Medium Clover Mixed describes a mixed hay of two principal kinds, each kind being present in amounts too great for either of the light mixtures. The same methods are followed in the class names for alfalfa and alfalfa mixed hay, Johnson and Johnson mixed hay, and prairie hay.

Each class of hay in the United States standards is based upon definite specifications for the mixtures permitted as shown in the column entitled "Mixture percentages." The class specifications must be interpreted through the definitions accompanying the set of standards for each group in order to fully understand the class requirements. For example, the words timothy, clover, grasses, alfalfa, etc. appear constantly in the class specifications and for the purposes of these standards these words are accurately defined under the definitions for each group of standards. In the definitions it is stated that "timothy as a part of any class may include not to exceed 10 per cent (of the total hay) of other grasses; that clover may include 10 per cent of other legumes; that alfalfa may include 10 per cent of other legumes; and that grasses shall be redtop, bluegrass and certain other grasses." Thus when the class specifica-

tions are interpreted through the definitions it is understood, though not stated in the specifications, that timothy may contain 10 per cent of bluegrass or other grasses; that clover may contain 10 per cent of vetches or other legumes; or that alfalfa may contain 10 per cent of clover or other legumes, and that, in each instance, the 10 per cent allowance of a foreign kind of hay is considered as a part of the kind of hay named as a class constituent.

The various classes of hay in United States standards have been designed to include the well defined kinds and mixtures of hay that are of chief commercial importance in the United States. The great majority of hay markets and shipping points, considered separately, can make use of but a few of these hay classes because a class of hay such as Alfalfa Light Johnson Mixed, common in the South Atlantic States, is unknown in the Middle Western States, or Alfalfa Light Grain Mixed, common in the Pacific Coast States, is unknown in the North Atlantic States. The hay classes in United States standards are national in scope and each market or producing region will use such classes as are of local importance.

HAY GRADES

Numerical grades and Sample grade.—In all United States hay standards the term “grade” is used to describe the quality of hay. The quality varies in all classes of hay according to the conditions under which the hay was produced. Each class of hay, except Midland in

the prairie hay standards, is divided into three numerical grades, namely: U. S. No. 1, U. S. No. 2 and U. S. No. 3, each such grade having different quality requirements. In all classes there is a Sample grade for inferior hay not good enough for the numerical grades.

In the timothy, clover and grass hay; Johnson and Johnson mixed hay; and prairie hay standards, color is the most important grading factor with foreign material a grading factor of secondary importance. In the alfalfa and alfalfa mixed hay standards, the grading factors are leafiness, color and foreign material, of which leafiness is the most important.

The numerical grades and Sample grade define the quality and condition of the greater part of the hay crop of the United States. They have been designed to cover the bulk run of the good, fair and poor quality hay in the trade in a definite and practical manner. In United States standards the numerical grades are supplemented with special grades to describe and emphasize the unusual superior or inferior qualities of certain kinds of hay.

Special grades to supplement numerical grades.—United States hay standards recognize the fact that such characters as exceptional green color in all kinds of hay, coarse texture in clover hay, fine and coarse texture in alfalfa and Johnson hay, and soft texture in alfalfa hay, affect palatability and feed value and thus create price differentials from the average of the bulk run of hay. These characters occur in but a small part of the hay crop, and can not be

used as practical grading factors on a common basis with the color, leafiness and foreign material specifications employed in the grading of the bulk run of hay. To do so would complicate unduly the numerical grades.

These unusual characters must be described, however, in some specific manner in the inspection and grading of hay, otherwise wide spreads of value and price would occur occasionally in the same grade between the hay, on the one hand, which meets the requirements of any numerical grade and the hay, on the other hand, which possesses one or more of these unusual characters in addition to the requirements of the same numerical grade.

This problem of describing and emphasizing the unusual characters of hay is met in United States standards by the use of special grades entitled "Grades for high green color hay," "Grades for coarse clover hay," "Grades for fine and coarse alfalfa hay," "Grades for soft alfalfa hay," "Grades for coarse prairie hay," and "Grades for fine Johnson hay," which appear in paragraph form after the tabulated standards and numerical grades. These special grades are so arranged that the designation for the special grade, based on some exceptional quality, may be included in and made a part of the usual numerical grade designation. For example, a lot of hay classifying as Timothy Medium Clover Mixed which meets all the requirements of the No. 1 grade and in addition thereto has an exceptional amount of green color, is graded U. S. No. 1 Timothy Medium Clover Mixed, High Green Color instead of

U. S. No. 1 Timothy Medium Clover Mixed, which would be the grade designation in case no special grades were available for high green color hay. Other examples to illustrate the combination of special grades with numerical grades may be had in the grade designations U. S. No. 1 Soft Fine Alfalfa, High Green Color, U. S. No. 2 Coarse Upland, and U. S. No. 2 Fine Johnson.

These special grades in United States hay standards are to be considered as terse descriptions of the unusual superior or inferior characters in hay which may be employed when necessary to supplement the numerical grade description and to differentiate such hay from the common run of hay that is described by the numerical grades.

NOTATION OF DESCRIPTIVE INFORMATION ON CERTIFICATES

In the application of United States hay standards the grade of any lot of hay may be lowered on the basis of one grading factor only. A lot of clover hay, for example, may meet the requirements of the No. 1 grade as to color yet be graded No. 2 on account of containing 15 per cent of foreign material. Another lot of clover hay grades No. 2 because it contains 15 per cent foreign material and has the greenish brown color that accompanies the No. 2 grade. Both lots of hay are graded U. S. No. 2 Clover yet the first lot is of more value than the second. In a case of this character Federal inspectors are instructed to write

a notation on the certificate for the first lot of hay so that the certificate reads as follows: "U. S. No. 2 Clover (on account of foreign material)" which notation indicates that the grade was made on foreign material only and that the color of the hay was good enough for the higher grade.

When hay is graded U. S. Sample grade, Federal inspectors are instructed to show on certificates (1) that the hay is U. S. Sample grade, (2) the reasons for assigning this grade, and (3), if possible to determine it, the grade to which the hay would be entitled but for the factor that placed it in Sample grade. For example: U. S. Sample grade Clover (Account foreign material, otherwise U. S. No. 2 Clover); U. S. Sample grade Alfalfa (Account heating, otherwise U. S. No. 1 Alfalfa); U. S. Sample grade Timothy (Stained and musty).

Certain unusual problems are found also in alfalfa hay inspection where the grade requirements include leafiness as well as color and foreign material. For example, one lot of alfalfa may meet the color requirements of the No. 1 grade yet be graded No. 2 on account of a lack of leafiness sufficient for the No. 1 grade. Another lot of alfalfa may meet the leafiness requirements of the No. 1 grade yet be graded No. 2 on account of a lack of color sufficient for the No. 1 grade. Both lots of hay are graded U. S. No. 2 Alfalfa because both lots are deficient in one of the requirements for the No. 1 grade.

The lot of hay having the color requirements of the No. 1 grade and the leafiness requirements of the No. 2 grade might be in greater demand in some markets at certain times because of its color than the other type of No. 2 Alfalfa. Vice versa in markets where dairy hay is in great demand the lot of alfalfa having a high degree of leafiness and the color of the No. 2 grade would be considered a better type of hay by many buyers than the lot of hay which had the color of the No. 1 grade but was deficient in leafiness. In order to make Federal inspection certificates descriptive and valuable to any shipper or receiver in interpreting the quality of alfalfa hay, Federal inspectors are instructed to write notations on certificates to supplement the grade designations in such instances as have been noted above. Thus the first lot of hay would be graded U. S. No. 2 Alfalfa (on account of lack of leafiness), and the second lot U. S. No. 2 Alfalfa (leafiness good enough for No. 1).

Ordinarily, and with the few exceptions previously noted, the grade designation is the only written evidence of the quality of the hay which appears on a Federal certificate. The full meaning of the grade designation must be determined from the standards and the definitions accompanying the standards. On the specific request, however, of any person interested in the ownership of hay a complete statement of the facts relative to the quality and condition of the hay may be noted on a certificate in addition to the grade designation.

For example, the facts supplementing grade designations can be written on certificates, by request, as follows: U. S. No. 2 Soft Fine Alfalfa (on account of foreign material, rakings. Leafiness and color good enough for No. 1), or U. S. No. 3 Timothy (overripe), or U. S. Sample grade Timothy (distinctly low quality badly stained).

DEFINITIONS

The definitions accompanying each group of standards provide full explanations for all terms and words of significance in the class and grade specifications. The standards contain many terse terms and many key words that require precise definition to be fully understood, such as "per cent green color," "soft alfalfa," "coarse alfalfa," "fine Johnson hay," "upland grasses," "midland grasses," "foreign material," "injurious foreign material," "grasses," "grain hay," "legumes," and either timothy, clover, alfalfa, or Johnson grass as a part of any hay class.

One illustration based upon the grade designation U. S. No. 2 Coarse Alfalfa will serve to show the use of the definitions in the interpretation of the grade designation. The class requirements for the class Alfalfa involve an interpretation of the words alfalfa and grasses. These words, as used in connection with a part of any hay class, are explained under definitions and the word alfalfa, for example, is defined so as to include 10 per cent of other legumes which are not coarse and woody. The grade

requirements of leafiness, color, and foreign material for the No. 2 grade are explained and defined in the definitions under the paragraphs entitled "Percentages," "Green color," and "Foreign material." The special grade for coarse texture, which has been included with the numerical grade in the complete grade designation, is based upon a definite standard for coarseness which is shown under definitions in the paragraph entitled "Coarse alfalfa hay," where it is stated that "Coarse alfalfa hay shall be alfalfa hay which contains 30 per cent or more of round, hard stalks with diameters greater than that of No. 12 steel wire."

Any grade designation may be traced through the definitions in a similar manner to ascertain the definite specifications on which the designation is based.

IMPORTANT FEATURES OF FEDERAL HAY INSPECTION

Federal hay inspection is authorized by a clause in the annual Appropriation Acts for the Department of Agriculture. In the Appropriation Act of February 10, 1925 (Public 390, 68th Cong.), this clause reads as follows:

For enabling the Secretary of Agriculture to investigate and certify to shippers and other interested parties the class, quality, and/or condition of cotton and fruits, vegetables, poultry, butter, hay, and other perishable farm products when offered for interstate shipment or when received at such important central markets as the Secretary of Agriculture may from time to time designate, or at points which may be conveniently reached therefrom, under such rules and regulations as he may prescribe, including payment of such fees as will be reasonable and as nearly as may be to cover the cost for the service rendered: *Provided*, That certificates issued by the authorized agents of the Department shall be received in all courts of the United States as prima facie evidence of the truth of the statements therein contained.

ORGANIZATION OF FEDERAL HAY INSPECTION SERVICE

A Federal Hay Inspection Service has been organized in the Hay, Feed, and Seed Division of the Bureau of Agricultural Economics under the authority quoted in the preceding paragraph. The general plan of this service provides for the employment of Federal hay inspectors at important central markets and at shipping points under cooperative agreements between the Bureau of Agricultural Economics and organizations such as State Departments of Agriculture, commercial exchanges, and dealers' or growers' associations.

The Bureau of Agricultural Economics trains the inspectors employed under these agreements in the use of the United States hay standards and in the Department's methods of inspecting hay. After the inspectors complete this training satisfactorily they are licensed as Federal hay inspectors and the Bureau supervises their work during the life of the license. The organization cooperating with the Bureau pays the inspector for his work and pays all other local expenses, such as office rent, necessary to the proper conduct of the work.

The organization cooperating with the Bureau usually collects the fees charged for inspections made under agreements of this kind. The funds obtained in this way are divided between the local organization and the United States Department of Agriculture in such a manner that both are recompensed as nearly as possible for the expense incurred by them in the conduct of the service.

The work of the local inspectors is supervised by Department hay standardization specialists and supervising inspectors located at central points in the large hay producing and consuming areas. The supervising inspectors not only assist in supervising the work of the local inspectors but also are available to make inspections at points in their territory where no other inspectors can be obtained and to assist producers, dealers and consumers in obtaining all benefit possible from the Federal hay standards and hay inspection service.

LOCATION OF INSPECTORS AND DESIGNATION OF MARKETS

Federal hay inspectors are located at all points where arrangements for their employment under

the plan previously outlined can be made with some suitable organization. If there is sufficient demand for inspection at any place to pay the expense of having an inspector but no suitable organization is prepared to cooperate with the Bureau in employing an inspector, the Bureau may locate an inspector at that place who is a full-time Government employee or arrange to supply inspection service in any other manner that may appear desirable.

Distributing and consuming markets at which inspectors are located are designated by the Secretary of Agriculture as important central markets for the inspection of hay. The inspectors located at such markets also will inspect hay received at all points within a reasonable distance of these markets in so far as they have time for work of that kind. Inspectors located in producing areas usually are available for inspection of hay at any point near their headquarters.

Persons interested in having a hay inspector located at any place should write the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C. Communications of this sort should outline as fully as possible the situation at the point where inspection is desired, including the name of any State or local organization with whom the Bureau might cooperate in establishing the service, the probable number and kind of inspections which such an inspector would make annually, and the fee which might be charged for each inspection.

QUALIFICATIONS OF INSPECTORS

All Federal hay inspectors must complete satisfactorily a course of training provided by the

Bureau of Agricultural Economics before being designated or licensed as inspectors. The training course usually covers a period of three to four weeks. Men admitted to these training schools are required to have at least a common-school education and to have had either sufficient experience in handling and marketing hay or college training along agricultural lines to qualify them to grasp readily the principles on which the United States hay standards are based. In other words, the schools are for the purpose of training men already familiar with hay to apply properly the United States standards and not for the purpose of making hay inspectors of men who know nothing about hay.

Those entering the schools also are required to furnish a certificate from a physician stating that they have normal color vision. A person having any indication of color blindness can not become a competent hay inspector.

INSPECTORS' TRAINING SCHOOLS

The schools for training inspectors are held at the hay standardization laboratories of the bureau in Washington and Kansas City and at other points where needed. There is no regular time for these schools but they are held whenever a sufficient number of persons require training. After inspectors are first designated or licensed they are brought together at central points in different sections from time to time for additional training and discussion of problems relating to their work. Such meetings usually last from three days to a week and are of material aid in keeping the work of the inspectors uniform at all times.

FEDERAL HAY INSPECTION CERTIFICATES

Regulations of the Secretary of Agriculture governing the inspection of hay require each inspector to issue an inspection certificate for each lot of hay inspected by him. The law provides that all such certificates are receivable in all courts of the United States as *prima facie* evidence of the truth of the statements they contain. A number of the States also have similar laws making these certificates acceptable as *prima facie* evidence in their State courts.

KINDS OF INSPECTION AVAILABLE

To take care of various conditions existing in the hay trade it has been necessary to provide several forms of inspection known respectively as partial inspections, complete inspections, sample inspections, and appeal inspections.

Partial inspections are made when not enough of the hay in the lot is seen to permit the inspector to make a complete inspection. For example, a car-door inspection is a partial inspection. In such cases the inspector issues a partial inspection certificate. This certificate has the words "Partial Inspection" printed in red, in large type, diagonally across its face. The certificate states the part of the lot examined by the hay inspector and the quality and condition only of the part actually seen by the inspector.

Additional partial inspections may be obtained when a complete inspection can not be made but when a statement is desired about the quality and condition of a different part of the lot than that covered by previous partial inspections, or for the purpose of ascertaining whether there has been any change in the

quality or condition of the hay since the previous inspection or for the purpose of obtaining an up-to-date certificate. Certificates issued on such additional partial inspections not only state the portion of the lot examined by the inspector and the quality and condition thereof, but also the results of all previous partial inspections.

Complete inspections are made only when the inspector either sees every bale in the lot or a sufficiently representative portion of the lot to permit him to determine the quality and condition of the entire lot. In such cases the inspector issues a complete inspection certificate which gives a statement of the quality and condition of all hay in the lot without any qualifications. Complete inspection usually can be made on hay that is being loaded into or unloaded from cars or stored in public warehouses in piles of not more than 10 or 12 tons each. It also can be used for what is commonly known as plug inspection of car lots, providing the plug removed from the car is of sufficient size and is taken from the center back to each end.

Complete inspections may be original inspections or may follow one or more partial inspections of the same lot. When a complete inspection follows a partial inspection, all of the hay in the lot covered by previous partial inspections at the same place, together with the remainder of the lot not previously inspected, must be available for the complete inspection. The certificate for such a complete inspection refers specifically to the certificates for all previous partial inspections.

Ordinarily only one complete inspection can be made at the same place but a second complete inspection can be obtained at the same

place for the purpose of ascertaining whether there has been any change in the quality or condition of the hay since the previous inspection or for the purpose of obtaining an up-to-date certificate.

Sample inspections are inspections of small samples taken from larger lots and delivered to the inspector's office. This provides means for obtaining the grade of a lot which is located too far from the inspector's office to permit the expense of having an inspector examine the hay personally. Sample inspection certificates show the size of the sample examined by the inspector and state that the quality and condition shown is that of the sample only. The value of a certificate of this kind depends largely on whether the sample is truly representative of the lot from which it was taken. In case a controversy is to be settled by means of a sample inspection, all interested parties should agree upon a representative sample for this purpose before sending it to the inspector. Samples for inspection are not required to be of any particular size but must be large enough to permit the inspector to determine all factors affecting their quality and condition.

Appeal inspections can only follow complete inspections or sample inspections at the same place. An appeal inspection involves a question of the accuracy of the inspection from which the appeal was taken. Therefore an appeal inspection is never made by the inspector who made the original inspection but by an inspector designated specifically for that purpose by the Chief of the Bureau of Agricultural Economics. An appeal inspection certificate gives a clear statement of the quality and condition of all hay in

the lot and refers specifically to all previous inspections superseded by it.

No appeal inspection may be taken from an inspection made at any other place, but a new complete inspection of the same lot may be obtained and an appeal may then be taken from such inspection upon compliance with the regulations of the Secretary of Agriculture.

WHO RECEIVES CERTIFICATES

The original of any form of Federal hay inspection certificate is always delivered to the person who made application for the inspection. A copy of each original inspection certificate is also sent to the shipper of the hay if he is known and if he is not the applicant for the inspection. Copies of inspection certificates for hay which has been inspected previously and of appeal inspection certificates are sent to all interested parties, if known, except the carriers, and to such carriers as have been applicants for previous inspections.

STANDARDS USED IN MAKING FEDERAL INSPECTIONS

The law establishing Federal hay inspection authorizes the Secretary of Agriculture to certify the quality and condition of hay, but the law does not provide the manner in which the quality and condition shall be stated. The quality and, to a large extent, the condition of hay can best be expressed by using the United States hay standards for hay to which they are applicable. Federal hay inspectors are instructed to use the United States standards for all kinds of hay for which such standards have been established. In

addition, certificates must show any other facts, such as poor baling, which affect the value of the hay but are not covered by the standards. For hay to which United States standards do not apply inspectors are instructed either to issue certificates which describe the quality and condition of the hay as nearly as possible or to use any other standards with which they are familiar and which they can interpret.

WHAT FEDERAL INSPECTION CERTIFICATES SHOW

All Federal inspection certificates show the date on which the inspection was made and the amount of hay in the lot inspected together with the identification and location of the hay at the time of inspection. Partial inspection certificates also show the portion of the lot actually examined by the inspector.

Following these items all certificates show the class and grade of all the hay examined according to the United States standards whenever these standards apply.

Notations about factors affecting the grade may follow the class and grade as already explained in the description of the standards. If there is more than one class or grade of hay in the lot the amount of each class and grade seen by the inspector is stated separately, the largest amount being named first.

Statements about other conditions affecting the value of the hay but which do not affect the class or grade are placed below the class and grade. These include poor baling, defects in cars in which the hay is loaded and other similar information.

FEES AND CHARGES

The Secretary of Agriculture authorizes certain fees and charges to be collected for the work of Federal inspectors. These vary somewhat at different points depending on the volume of business at that point, the accessibility of localities where inspections ordinarily are made, and other factors.

The fees are the amounts charged for the actual work of making inspections and appeal inspections. The charges cover amounts which inspectors are permitted to charge for their time and travel expenses when making inspections at points away from their regular stations. Schedules of fees and charges at any point where inspectors are located may be obtained upon application to the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

HOW TO OBTAIN INSPECTION

Any person having a financial interest in a lot of hay who desires to obtain inspection of the lot should make application for inspection to any Federal hay inspector. The application should give the necessary information to permit the inspector to determine whether the inspection can be made under the act authorizing the service and to locate the hay for the purpose of making the inspection. The applicant should arrange also with the inspector for payment of the necessary fees and charges. The inspector receiving the application will either arrange to make the inspection or have it made by some other inspector or advise the applicant why the inspection can not be made.

Anyone desiring an inspection who does not know the location of an inspector should make application direct to the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C. Applications made in this way will be referred to the nearest inspector for attention or the applicant will be advised when inspection can not be made. Anyone wanting all hay inspected which is shipped or received by him can file an application to that effect in a similar manner.

IMPORTANCE OF TIME OF CUTTING

To produce the top grades which command the highest market prices:

Timothy, other grasses or clover should be cut not later than full bloom. Mixtures of timothy and clover should be cut when the clover is in full bloom, or not later than when one-half the clover heads have begun to turn brown. Mixtures of timothy and such early maturing grasses as bluegrass should be cut when the grasses are in full bloom and prior to the time when the grasses have lost their green color.

Alfalfa should be cut when one-tenth to one-fourth in bloom. If new growth has started from the crowns alfalfa should be cut without regard to bloom. Alfalfa mixed hay should be cut when the alfalfa has arrived at the proper stage of maturity without regard to the other kinds of hay in the mixture.

Losses in leafiness occur and the stems become coarse and woody when alfalfa is allowed to pass beyond the full bloom stage prior to cutting, thus lowering the grade and sale value of the hay in the consuming markets.

Prairie grasses should be cut before the plants commence to turn brown from dry weather or maturity. Prairie grasses such as bluestem become stemmy at maturity and when cut in this condition the hay may grade "coarse," as well as to lack sufficient color for the No. 1 grade.

Johnson grass should be cut when the heads have started to emerge from the boot, or not later than when one-half of the heads have emerged. When Johnson grass is cut after the heads have fully emerged the hay is of lower grade and market value because of the coarse woody stems, viable seed, or insufficient green color.

To meet the color and texture requirements of "U. S. No. 1 Fine Johnson, High Green Color" grade, Johnson grass should be cut prior to, or not later than, the forming of the heads in the boot.

IMPORTANCE OF GOOD BALING

Poorly baled hay includes principally bales that are ragged, bales having wires of unequal tension, and bales of varying lengths. Such hay is discriminated against in hay markets because it is unsightly and difficult to handle. When hay is poorly baled a notation to that effect is made on Federal certificates.



