

## Appendix II. Description of the regeneration standards used for forage species

(updated March 2006)

According to the recommendation of the meeting (see p. 10) the information previously published in the report of the Linz meeting was updated. Additional data were provided by: J.P. Sampoux (France), L. Horváth (Hungary), S. Alexanian (Russian Federation), V. Meglič (Slovenia), M. Murillo (Spain), V. Ryabchoun (Ukraine) and I. Thomas (United Kingdom).

For some items of the regeneration procedure, the preferred/acceptable values had been indicated as follows:

Item of regeneration procedure	Preferred	Acceptable
<b>site</b>		
greenhouse/cabins (yes/no)	yes	
field/cages (yes/no)		
field/isolation with other crops (yes/no)	no	yes
<b>insects as pollinator</b>		
<i>natural</i> population / <i>commercial</i> product		
insect species (specify if known)		
<b>crop used as isolation</b> (specify; n.a. for cages)		
<b>isolation distance</b> between plots (n.a. for cages)		
<i>length</i> (m)		>50 m
<i>width</i> (m)		>50 m
<b>plants per accession</b> ( <i>number</i> )	100	30
<b>distance between single plants</b>	0.20 m	
<b>scoring of traits:</b>		
time of flowering (yes/no)		
others (specify)		
<b>selection</b> in accessions (yes / no) (elimination of other crop plants and weeds)	yes	
<b>harvesting</b>		
<i>once</i> / <i>several</i> (times)		
as <i>balanced</i> / <i>unbalanced</i> bulk	balanced	unbalanced
<b>drying</b>		
in <i>dry room</i> / <i>greenhouse</i> / using <i>drying equipm.</i>	dry room	drying equipm.
<b>threshing and cleaning</b>		
<i>manual</i> / <i>with machines</i>	manual	with machines
<b>final drying</b>		
<i>temperature, relative humidity</i> (specify)		
<i>final moisture content</i>	3-7%	
<b>viability testing before storage</b> (yes/no)	yes	
<b>seed packaging and storage</b>		
base and duplicate collection	per plant	bulk
active collection	balanced bulk	bulk
<b>information management</b>	IT based	

## Regeneration standards used for forage species – Belgium, Bulgaria, Czech Republic, France

Item of regeneration procedure	DvP, Belgium		IPGR, Bulgaria		OSEVA, GRS, Czech Rep	RIFC, Czech Rep	INRA-GEVES, France	
	for grasses	for legumes	for grasses	for legumes	for grasses	for legumes	for grasses	for legumes
site								
greenhouse/cabins (yes/no)	no	no	no	yes	no	no	if field isolation not available	if field isolation not available
field/cages (yes/no)	no	no	no	yes	no	yes		
field/isolation with other crops (yes/no)	yes	yes	yes	no	yes	yes	preferred	preferred
<b>insects as pollinator</b>								
natural population / commercial product		natural		commercial		natural		natural populations in field
insect species (specify if known)		bumble bees		bumble bees		bumble bees		<i>Bombus terrestris</i> in greenhouses
crop used as isolation (specify; n.a. for cages)	rye		rye		rye or triticale	rye or other	possibly triticale ( <i>Triticum X Secale</i> )	
<b>isolation distance</b> between plots (n.a. for cages)								
length (m)	15	1000	15		20	200	100 m (if surrounded by triticale) to 300m (if no triticale)	300 m
width (m)	15	1000	18		20		100 m (if surrounded by triticale) to 300m (if no triticale)	300 m
plants per accession (number)	100	100	49	30-50	49	15-100	natural pop. (100 to 200 plants), landraces (1000 plants)	natural pop. (100 to 200 plants), landraces (1000 plants)
distance between single plants	0.4 m	0.7 m	0.25 m		0.25 m	0.15 m	50 to 70cm (if field)	50 to 70cm (if field)
<b>scoring of traits:</b>								
time of flowering (yes/no)	yes		yes	yes	yes	yes	no	no
others (specify)	morphol. traits	shape, colour			descriptor list	descriptor list	no	no
selection in accessions (yes / no) (elimination of other crop plants and weeds)	yes	yes	yes	yes	yes	yes	yes	yes
<b>harvesting</b>								
once / several (times)	once	once	several	several	several	several	once	several
as balanced / unbalanced bulk	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced / balanced	unbalanced / balanced
<b>drying</b>								
in dry room / greenhouse / using drying equipm.	drying equipm.	drying equipm.			greenhouse	in lab	dry room (ambient air)	dry room (ambient air)
<b>threshing and cleaning</b>								
manual / with machines	with machines	with machines	manual		with machines	with machines	with machines	with machines
<b>final drying</b>								
temperature, relative humidity (specify)			20°C, 20%		23°C, 3%	23°C, 3%	35°C (if needed)	35°C (if needed)
final moisture content					4-6%	4-6%	not measured until now	not measured until now
viability testing before storage (yes/no)	yes	yes	yes		yes	yes	yes	yes
<b>seed packaging and storage</b>								
base and duplicate collection	bulk	bulk	bulk		bulk	bulk	bulk	bulk
active collection	bulk	bulk	bulk		bulk	bulk	bulk	bulk
<b>information management</b>			IT based	IT based	IT based	IT based	database	database

## Regeneration standards used for forage species – Germany, Hungary, Italy, Lithuania

Item of regeneration procedure	IPK-Malchow, Germany		Institute for Agrobotany, Hungary		DBVBA, Italy		LIA, Lithuania	
	for grasses	for legumes	for grasses	for legumes	for grasses	for legumes	for grasses	for legumes
<b>site</b>								
greenhouse/cabins (yes/no)	no	yes	no	no	yes	yes	no	yes
field/cages (yes/no)	no	yes	no	no	yes	yes	no	yes
field/isolation with other crops (yes/no)	yes	no	yes	yes	no	no	yes	no
<b>insects as pollinator</b>								
natural population / commercial product		commercial		natural				
insect species (specify if known)		bumble bees		natural populations	<i>Apis mellifera</i>	<i>Apis mellifera</i>		<i>Apis mellifera</i>
<b>crop used as isolation</b> (specify; n.a. for cages)	rye	n.a.	other grasses	any		n.a.	rye	n.a.
<b>isolation distance</b> between plots (n.a. for cages)								
length (m)	20	n.a.	10 m	150 m		n.a.	15-20	n.a.
width (m)	20	n.a.	10 m	150 m		n.a.	15-20	n.a.
<b>plants per accession</b> (number)	49	15-30	> 100	> 50	50	50	49-64	25-35
<b>distance between single plants</b>	0.25 m	0.3 m	3-6 cm	5-10 cm	0.5-0.6 m	0.5-0.6 m	0.25 m	
<b>scoring of traits:</b>								
time of flowering (yes/no)	yes	yes	yes	no	no	no	sometimes	sometimes
others (specify)	morphol. traits	morphol.	descriptor list					
<b>selection</b> in accessions (yes / no) (elimination of other crop plants and weeds)	yes	yes	yes	yes	yes	yes	yes	yes
<b>harvesting</b>								
once / several (times)	several	several			several		several	several
as <i>balanced</i> / <i>unbalanced</i> bulk	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced
<b>drying</b>								
in <i>dry room</i> / <i>greenhouse</i> / using <i>drying equipm.</i>	dry room	dry room	natural	natural	yes	yes	greenhouse	
<b>threshing and cleaning</b>								
<i>manual</i> / <i>with machines</i>	with machines	with machines	manual and with machines	manual and with machines	yes	yes	with machines	
<b>final drying</b>								
temperature, relative humidity (specify)	21°C, 30%	21°C, 30%	21°C, 30%	21°C, 30%	yes	yes	20°C, 10-15%	
final moisture content	<8%	< 8 %						
<b>viability testing before storage</b> (yes/no)	yes	yes	yes	yes	yes	yes	yes	
<b>seed packaging and storage</b>								
base and duplicate collection	bulk	bulk	bulk	bulk	yes	yes	bulk	
active collection	bulk	bulk	bulk	bulk	yes	yes	bulk	
<b>information management</b>	IT based	IT based	yes	yes	yes	yes	IT based	

## Regeneration standards used for forage species – The Netherlands, Nordic countries, Russian Federation

Item of regeneration procedure	CGN, Netherlands		NGB, Nordic countries		VIR, Russian Federation	
	for grasses	for legumes	for grasses	for legumes	for grasses	for legumes
<b>site</b>						
greenhouse/cabins (yes/no)	no	no	no	no	yes	yes
field/cages (yes/no)	yes	yes	no	yes		
field/isolation with other crops (yes/no)	yes	yes	yes	no	yes	yes
<b>insects as pollinator</b>						
<i>natural</i> population / <i>commercial</i> product				yes	natural	natural
insect species (specify if known)						
<b>crop used as isolation</b> (specify; n.a. for cages)	Triticale, wheat		rye	n.a.	perennial plants	perennial plants
<b>isolation distance</b> between plots (n.a. for cages)						
<i>length</i> (m)	40	40	100	n.a.		
<i>width</i> (m)	50	50		n.a.		
<b>plants per accession</b> ( <i>number</i> )	70 (min.25)	70 (min.25)	49	49	100-150	100-150
<b>distance between single plants</b>	0.25 m	0.5 m	0.3-0.5 m	0.3-0.5 m	0.20-0.90 m	0.20-0.90 m
<b>scoring of traits:</b>						
time of flowering (yes/no)	no		no	no		
others (specify)						
<b>selection</b> in accessions (yes / no) (elimination of other crop plants and weeds)	yes	yes	yes	yes	yes	yes
<b>harvesting</b>						
<i>once</i> / <i>several</i> (times)	by hand	by hand			several	several
as <i>balanced</i> / <i>unbalanced</i> bulk	balanced	balanced	balanced/ unbalanced	unbalanced	balanced	balanced
<b>drying</b>						
<i>in dry room</i> / <i>greenhouse</i> / <i>using drying equipm.</i>	dry room				dry room	dry room
<b>threshing and cleaning</b>						
<i>manual</i> / <i>with machines</i>	yes	yes	manual / with machines	manual/ with machines	manual	manual
<b>final drying</b>						
<i>temperature, relative humidity (specify)</i>	15°C, 15%					
<i>final moisture content</i>	5%		5%	5%	3-7%	3-7%
<b>viability testing before storage</b> (yes/no)	yes	yes	yes	yes	yes	yes
<b>seed packaging and storage</b>						
base and duplicate collection	laminated foil bags		bulk	bulk	bulk	bulk
active collection			bulk	bulk	balanced bulk	balanced bulk
<b>information management</b>	IT based		IT based	IT based	IT based	IT based

## Regeneration standards used for forage species – Slovakia, Slovenia, Spain

Item of regeneration procedure	BSLL, Slovakia	BSHS, Slovakia	RIPP, Slovakia		Agricultural Institute, Slovenia		JDE, Spain	
	for grasses	for legumes	for legumes	for legumes	for grasses	for legumes	for grasses	for legumes
<b>site</b>		<i>Faba</i> , <i>Pisum</i> sp., <i>Vicia</i>	<i>Lupinus</i> sp.	clover, alfalfa, other forage legumes			<i>Lolium multiflorum</i> , <i>L. perenne</i> , <i>Festuca arundinacea</i> , <i>Dactylis glomerata</i> , <i>Agrostis tenuis</i> , <i>Poa</i> sp.	annual <i>Medicago</i> and annual <i>Trifolium</i>
greenhouse/cabins (yes/no)	no	no	no	no	no	no	no	no
field/cages (yes/no)	no	no	no	yes	no	yes	no	no
field/isolation with other crops (yes/no)	yes	yes	farmers field/no	no	yes	yes	yes	no
<b>insects as pollinator</b>								
natural population / commercial product				yes		natural		
insect species (specify if known)				<i>B. terrestris</i>		<i>Apis mellifera</i> , bumble bees		
<b>crop used as isolation</b> (specify; n.a. for cages)	wheat, barley, maize	wheat		<i>B. lapidarius</i>	wheat	wheat	wheat, rye	
<b>isolation distance</b> between plots (n.a. for cages)								
length (m)		6 m		n.a.	50	50	30	2
width (m)		1 m		n.a.	50	50	30	2
<b>plants per accession</b> (number)	30-50	360	50-100	15-50	50-100	30	50	150-200
<b>distance between single plants</b>	0.5 m	0.1 m	0.4 m	0.25 m	0.15-0.3 m	0.25-0.5 m	0.5	0.15 m
<b>scoring of traits:</b>								
time of flowering (yes/no)	yes	yes	yes	no	yes	yes	no	yes
others (specify)	descriptor list	7 traits	descriptor list		descriptor list	descriptor list		morphological traits
<b>selection</b> in accessions (yes / no) (elimination of other crop plants and weeds)	yes	yes	yes	yes	yes	yes	yes	yes
<b>harvesting</b>								
once / several (times)				once/several*	once/several*	once/several*	once	by hand
as <i>balanced</i> / <i>unbalanced</i> bulk	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced	unbalanced
<b>drying</b>								
in <i>dry room</i> / <i>greenhouse</i> / using <i>drying equipm.</i>	greenhouse	greenhouse	greenhouse	greenhouse	attic, using drying equipment	attic, using drying equipment	dry room	dry room
<b>threshing and cleaning</b>								
<i>manual</i> / <i>with machines</i>	with machines	with machines	with machines	manual/ with machines*	manual/with machines*	manual/with machines	with machines	manual/ with machines
<b>final drying</b>								
temperature, relative humidity (specify)	20°C, 15%	20°C, 15%	20°C, 15%	20°C, 15%			20°C	20°C, 15%
final moisture content	4-6%	4-6%	4-6%	4-6%	<8%	<8%	4-6%	5%
<b>viability testing before storage</b> (yes/no)	yes	yes	yes	yes	yes	yes	no	yes
<b>seed packaging and storage</b>								
base and duplicate collection	bulk	bulk	bulk	bulk	bulk/glass jars	bulk/glass jars		
active collection	bulk	bulk	bulk	bulk	bulk	bulk	bulk	bulk
<b>information management</b>	IT based	IT based	IT based	IT based	IT based	IT based	IT based	IT based

\* according to  
species

\* according to  
species

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