



LABORATORIO di RICERCA e ANALISI SEMENTI - LaRAS

Alma Mater Studiorum – Università di Bologna

Dipartimento di Scienze Agrarie dal 1/1/2018 Dipartimento di Scienze e Tecnologie Agro-Alimentari

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ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DIPARTIMENTO DI SCIENZE E TECNOLOGIE
AGRO-ALIMENTARI

Accredited to the International Seed Testing Association (ISTA) – Laboratory Member ITDL0100

PRICE LIST FOR TESTING AND CERTIFICATION (VAT excluded)

(valid from January 1st 2024)

A TEST SERVICES				
<p>Urgent service for analysis. LaRAS is committed to deliver the results within the second working day following the date of sample receipt. A 50% extra charge will be applied for this service. For germination tests (and similar growth tests), urgent service will imply start of testing within 2 working days following the date of sample receipt.</p> <p>For GMO detection, an additional “fast” service is offered. In this case, the results will be sent within the third working day following the date of sample receipt. A 30% extra charge will be applied for this service.</p> <p>LaRAS can decline urgent requests if their fulfilment is not compatible with the current workload.</p>				
<p>Extra charge for long time germination test. An extra charge of 1.74€ and 3.50€ is applied when the duration of germination test exceeds 10 and 14 days, respectively (See linked table)</p>				
<p>Sample return. For expensive or particularly valuable seeds, during the analysis request, the Customer can request the return of the sample at the end of the tests. However, LaRAS will keep at least 25 seeds to ensure the identity of the sample. The cost of the service is Euro 3.50.</p>				
1	Purity, Germination and Mechanical Purity tests	EURO		
	<i>Species Group</i>	<i>Purity</i>	<i>Germination</i>	<i>Mechanical Purity</i>
a.	Winter cereals	16.30	24.40	51.70
b.	Summer cereals and pulses	16.30	25.70	51.70
c.	Beet (non-pelleted seeds)	20.90	32.00	56.10
d.	Alfalfa, clovers, vetches and brassicas	26.80	34.40	71.50
e.	Small-seeded grasses (<i>Agrostis, Poa, Phleum, etc.</i>)	34.20	35.20	88.80
f.	Medium-seeded grasses (<i>Lolium, Festuca, etc.</i>)	29.50	30.50	79.60
g.	Horticultural, flowering and other plants with small seeds (carrot, lettuce, parsley and similar species)	25.00	30.30	73.30
h.	Horticultural, flowering and other plants with big seeds (radish, cucumber, sunflower, etc.)	22.30	28.60	61.60
i.	Pelleted seeds (all species)	29.30	37.10	-
l.	Coated or Encrusted seed (all species)	29.30	37.10	-
m.	"Mixture (for Purity and/or Germination tests on the mixture the identification and separation of components are necessary)"	Purity (for each component)	Germination (for each component)	Separation of components
	- Small-seeded mixture	31.80	33.60	47.90
	- Large-seeded mixture	20.90	29.80	39.90
n.	Germination: “first count” (intermediate count, all species)			19.40
o.	For uncleaned the cost of purity test is calculated by the hourly rate. The same for coated/encrusted seeds (for removal of coating material).			56.10/h
p.	A 30% extra charge is applied for germination test of uncleaned seeds.			-
q.	Determination of “number of beet germs” on sand or paper			14.30

2	Vigour test	
a.	<i>Cold test</i>	38.40
b.	<i>Electrical conductivity</i> (It requires <i>Humidity test</i> , please, see n° 4)	32.80
c.	<i>“Accelerated ageing”</i> (It requires <i>Humidity test</i> , please, see n° 4)	42.40
d.	<i>Radical emergence test</i>	(see Germination test)
3	Determination of Other Seeds by Number	
a.	Determination of the number of seeds of species other than those under test (including <i>Cuscuta</i> and <i>Orobanchae</i>) on cleaned seeds other than alfalfa and clovers (test conducted on the official weight according to ISTA Rules 2020 Table 2C or different weight)	56.10/h
b.	Determination of the number of seeds of species other than those under test on <i>uncleaned</i> seeds or on cleaned seeds heavily infested by seeds of the searched species	56.10/h
c.	Determination of red caryopses in rice (test conducted on the official weight according to ISTA Rules 2020 Table 2C)	22.90
d.	Determination limited to <i>Cuscuta seeds</i> in alfalfa and clovers	
	Test sample up to: 200 g	15.40
	500 g	27.40
	1000 g	35.30
	2000 g	70.40
4	Moisture test	
a.	<i>Oven</i> method without grinding	20.90
b.	<i>Oven</i> method with grinding	30.70
c.	Additional cost whenever <i>pre-drying</i> is necessary	5.90
5	Thousand-seed weight (TSW)	15.30
6	Hectolitre weight	15.30
7	Seed grading	18.30
8	Percentage by Weight of species other than those under test, artificially coloured seeds, different material, special impurities, alterations, damages, etc.	56.10/h
9	Other Determinations and Services not included in this list Costs of these tests will be calculated by applying the hourly rate	56.10/h
10	Identification of the species or variety on morphological characteristics	
a.	From macroscopic characteristics of the seed (without purity analysis)	18.70
b.	From microscopic examination, or with chemical reagents, or U.V. rays etc. of seeds or seedlings (for seed species and objectives to be agreed)	32.40
c.	From characteristics of the seedlings (incubators/room germinators): rate to be defined in relation to the species	
d.	From field or greenhouse crop test cost will be defined by species	

11	Species or variety identification and verification on a molecular basis by comparison between sample and control using SSR markers					
a.	<ul style="list-style-type: none"> - 30 electrophoretic profiles are tested (for example: 15 of the sample, 10 of the control sample, 5 of reference varieties; other combinations as requested by the customer). - Test includes DNA extraction from dry materials (seeds, flours) or lyophilized (leaves, fruits). For fresh samples please see "Other Services" - Test is conducted with a multiplex set (simultaneous amplification of two or more markers sets in a single reaction) 					
			Seeds and leaves	Flours, pasta, etc.		
		- with 1 set of SSR	262.30	131.20		
		- with 2 set of SSR	393.30	196.70		
		- with more than 2 sets SSRs sets price to be agreed				
	SSR markers set available for different species and number of markers for set					
	<ul style="list-style-type: none"> - Durum wheat, common wheat, dicoccum, and spelt: 2 sets (6 markers); - Rice: 1 set (6 markers); - Sunflower: 6 sets (6 markers) - Melon: 2 set (4/5 markers) 					
	For orders placed within 4 months DISCOUNTS are applied, such as in the table below					
	Number of samples	Discount %	1 Multiplex SET		2 Multiplex SET	
			Single sample amount (Euro)		Single sample amount (Euro)	
			Seeds and leaves	Flours, pasta, etc.	Seeds and leaves	Flours, pasta, etc.
	up to 2	-	262.30	131.20	393.30	196.70
	from 3 to 8	20	209.80	104.90	314.60	157.30
	from 9 to 14	24	199.30	99.70	298.90	149.50
	from 15 to 20	28	188.90	94.50	283.20	141.60
	over 21	30	183.60	91.80	275.30	137.70
12	Varietal purity verification with molecular markers					
a.	Varietal purity verification with SSR, SCAR, CAPS, SNP, RAPD markers					
	<ul style="list-style-type: none"> - Prices per single sample (96 individuals, controls included). For CAPS the price must be increased by 25%. - SSR markers are available for vegetable (watermelon, asparagus, carrot, melon, tomato, zucchini), cereals (durum wheat, bread wheat, dicoccum, spelt, rice, and corn), and industrial crops (sunflower). For other species, markers on request. 					
		- For single marker			349.00	
		- For any other further marker			174.50	
		For SSR multiplex:				
		- duplex (2 markers)			436.30	
		- triplex (3 markers)			507.50	
		- 1 duplex + 1 simplex			610.80	
		- 2 duplex			671.80	
		- 1 multiplex set (4/6 markers)			558.20	
		- 2 multiplex set (8/12 markers)			697.90	
	for orders placed within 4 months DISCOUNTS are applied. such as in the table below					
	Number of samples	Discount %	1 Multiplex SET		2 Multiplex SET	
			Single sample amount (Euro)		Single sample amount (Euro)	
	up to 2	-	558.20		697.90	
	from 3 to 8	20	446.60		558.30	
	from 9 to 14	24	424.20		530.40	
	from 15 to 20	28	401.90		502.50	
	over 21	30	390.70		488.50	
b.	Preliminary screening with markers for detection of polymorphisms between parental lines of hybrids					
	<ul style="list-style-type: none"> - Prices refer to 10 individuals for line (recommended number) - Test is conducted with the same type of markers used for varietal purity 					
		- For single marker			49.10	
		- For any further marker			31.10	

13	Marker Assistant Selection (MAS)	
a.	Molecular testing service (RAPD. SSR. SCAR. CAPS. SNP) supporting plant breeding	
	- Prices refer to single sample (96 individuals. controls included). For CAPS the price must be increased by 25%.	
	- For single marker	434.90
	- For any further marker	217.50
	MAS Assays available for	
	Tomato	Tomato spotted wilt virus (SW-5). <i>Meloidogyne</i> spp. (Mi-23). Tomato yellow leaf curl virus (TY-1/TY-2/TY-3). <i>Verticillium wilt</i> (Ve2). Tomato mosaic virus (Tm-1/Tm-2). <i>Pyrenochaeta lycopersici</i> (Py-1). <i>Fusarium wilt</i> (I-2. I-3). Tomato gray leafspot (Sm). <i>Fusarium crown and root rot</i> (Frl)
	Pepper	Tospovirus Tomato spotted wilt virus (TSW). Pepper mild mottle virus (Pvr-4)
	Melon	<i>Fusarium oxysporum</i> f.sp. <i>melonis</i> (Fom-1/Fom-2)
	Onion	Cytoplasmic male sterility (orfA501 - 5' cob). Downy mildew (DMR)
	Sunflower	Sulfonylurea tolerance. Cytoplasmic male sterility (CMS - PET1). Fertility restoration (Rf1)
	Wheat	<i>Fusarium head blight</i> . Soil-borne cereal mosaic virus. Brown rust. Powdery mildew. Low assortment of cadium. Imidazolinone tolerance
	Bean	Bean common mosaic virus (BCMV)
	Broccoli	Cytoplasmic male sterility (Ogura-CMS)
14	GMO DETECTION by PCR methods	
	- Test conducted on this species: corn. soya bean. cotton. rape. tomato. alfalfa. sorghum. bean. petunia. pumpkin.	
	- Assays available on request for other species.	
	- For single orders over 10 samples , a 20% discount is applied. for those over 20 samples 25% .	
	- For orders .over an 8-month period starting from the first sending, larger than	
	- 30 samples ⇒	discount 35%
	- 40 samples ⇒	discount 40%
	- 70 samples ⇒	discount 45%
	- 120 samples ⇒	discount 50%
a.	Qualitative determination	
	i. DNA extraction and single PCR assay	92.50
	ii. For any further assay	46.30
	iii. Full screening for Corn and Soya bean	139.00
	iv. Corn and Soya bean: event identification	324.20
b.	Quantitative determination	
	i. DNA extraction and single PCR assay	185.10
	ii. For any further assay	92.50
	Assays	Target analyzed
	Screening ^(1 e 2)	P35S; T-nos; P-FMV
	Gene-specific assay ⁽¹⁾	bar; Cry9(c); CryIA(b); CryIA(c); epsps; nptII; pat; barnase
	Construct -specific assay ^(1 e 2)	Bt11; Bt176; GA21; Mon810; T25; TC1507; GTS40-3-2
	Event -specific assay ⁽²⁾	corn: BT11; GA21 MON810; MON863; NK603; TC1507; T25
		Soy bean: GTS 40-3-2; MON89788; A2704-12
		cotton: Mon531; Mon1445; GHB614; LLCotton25
		rape: RT73; RF3
	(1) PCR end point; (2) PCR real time	
	- Tests are conducted on 3000 seeds. unless otherwise requested	
	- For each sample all determinations are conducted on DNA extracted in duplicate	
	- Amplification of a species-characteristic gene is included in each determination	



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15	Seed coated test	
	Treatment of a seed sample before germination test	17.30
	Quantification and verification of vitality of nitrogen-fixing bacteria on inoculated seeds	80.90
	Specific microbial analysis of microorganism-treated seeds	138.60
	Seed <i>dust-off</i> test	115.50

B OTHER SERVICES

1	Mechanical cleaning with laboratory equipment	
	Seed processing with air screen cleaner. gravity table. indented cylinder. etc. for small seed lots intended for multiplication or field testing	56.10 /h
2	Sample preparation and DNA extraction	
	Prices refer to a microplate (containing up to 96 individuals)	
	Sampling leaves from seedlings provided by the client	50.90
	Freeze-drying and vacuum sealing of samples	25.20
	Grinding and DNA extraction from dry (seeds. flour) or lyophilized samples (leaves. fruits)	207.60
	DNA quantification	50.90
3	Consulting	
	Consulting about various themes	100-150/h
4	Sample storage	
	Sample storage in air-conditioned room. for a year or less	54.60

C CERTIFICATION RATES

1.	Official sealing (labels or adhesive tapes. mechanical pressure seals. plastic or adhesive tags)	0.53
2.	LaRAS certificate (original. duplicate or provisional)	6.00
3.	ISTA International Certificate (original. duplicate o provisional)	6.50

D SAMPLING AND SEALING RATES

1.	Hourly rate (for every hour the sampler stays out of the office)	56.10 /h
	Travel expense (with car or public transport)	
	- mileage refund	0.47/km
	- tolls	See bills
	- public transport tickets	See bills
	Possible board and lodging	See bills
	Creation of an official "sub-sample"	6.00
	Creation of working sample through mixing of small samples (bags. cans. etc.)	56.10 /h

Invoices must be paid to:

ALMA MATER STUDIORUM – UNIVERSITA' DI BOLOGNA - DIPARTIMENTO DI SCIENZE E TECNOLOGIE AGRO-ALIMENTARI

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