中国工程科技知识中心
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《农业水土资源监控研究》专题快报

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【动态资讯】

1．农业农村部、江西省人民政府联合印发方案共建绿色有机农产品基地试点省

【中国农网】近日，农业农村部、江西省人民政府联合印发《农业农村部、江西省人民政府共建江西绿色有机农产品基地试点省工作方案（2021-2025年）》，力争通过部省共建，到2025年，江西农业绿色发展产地环境持续改善，绿色有机农产品生产能力稳步增强，品牌市场认可度和影响力显著提升，农产品质量安全监管能力不断提高，产业体系基本建立，统筹推进农业生产和产品两个“三品一标”的体制机制基本形成，绿色有机农业全面发展。一是推进绿色有机产业全面发展。二是推进标准化生产水平全面提高。三是推进绿色有机农业产地环境全面改善。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFElK6AddGYAAg80A-8XBE399.pdf

2．深刻认识新一轮全国高标准农田建设规划的重要意义

【农民日报】近日，国务院已正式批复《全国高标准农田建设规划（2021-2030年）》（以下简称《规划》），明确以推动高质量发展为主题，以提升粮食产能为首要目标，坚持新增建设和改造提升并重、建设数量和建成质量并重、工程建设和建后管护并重，健全完善投入保障机制，加快推进高标准农田建设，提高建设标准和质量，为今后十年全国高标准农田建设明确了目标任务、“时间表”和“施工图”。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFEkdiACdGAABZ4rEnEbxI841.pdf

3．稻花香里话种粮

【农民日报】3800人口的南堤村是纯农业村，有耕地面积1.2万多亩，加之紧临汇流入

海的沧浪渠，水土资源颇为丰富。20世纪五六十年代，这里还在种植水稻，后来因为上游来水减少、污染加重，只好改种玉米、杂粮等作物。近年来，随着沧浪渠沿途加力环境治理，水质显著改善、水量明显增多，南堤村人又燃起了重现鱼虾遨游、稻花飘香的美好愿望。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFEkTqAfNw3ADT81UDpSZQ814.pdf

4．国务院批复实施全国高标准农田建设规划（2021—2030年）

【中国农网】《规划》实施要以习近平新时代中国特色社会主义思想为指导，深入贯彻党的十九大和十九届二中、三中、四中、五中全会精神，认真落实党中央、国务院决策部署，立足新发展阶段，完整、准确、全面贯彻新发展理念，构建新发展格局，以推动高质量发展为主题，以提升粮食产能为首要目标，坚持新增建设和改造提升并重、建设数量和建成质量并重、工程建设和建后管护并重，健全完善投入保障机制，加快推进高标准农田建设，提高建设标准和质量，为保障国家粮食安全和重要农产品有效供给提供坚实基础。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFElfCAHVS4AAh5N0S-gL4878.pdf

5．定边县：推广软体集雨窖项目 开创旱地节水灌溉新模式

【新华网】 今年，定边县遭遇重度干旱，农作物严重受损，为有效破解旱作区农业发展与水资源短缺的矛盾，定边县委县政府推动实施软体集雨窖项目，收集、蓄存天然降水用于旱作区农业灌溉或养殖。项目建成后，将有效减少水土流失，改善小流域生态环境，保护黄河流域生态治理。秋时节，定边县新安边镇新安边村的一块梯田上，绿意盎然，庄稼长势喜人。在今年全县普遍遭受严重干旱的情况下，能保持这样的长势，得益于当地村民安装的一种新型软体集雨水窖，及时灌溉，保证了农作物的正常生长。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFEk82AUI_hAFHNkys8vrQ413.pdf

6．广西：秋粮丰收在即 高标建设显成效

【中国农网】今年8月，广西来宾市武宣县遭遇严重旱情。据该县气象部门统计，1-8月全县降水量仅为620毫米，比往年同期少了四成左右，降水量创有观测登记记录以来倒数前三位。“6万多亩高标准农田项目区耕地在此次旱情中基本不受影响，灌溉用水得到有效保障，真正做到了‘旱能灌’，对确保粮食生产丰收打下坚实基础。”武宣县农业农村

局相关负责人介绍，2019年以来，全县大力实施高标准农田建设项目，通过合理的路网、渠道布局，水资源利用效率明显提高，目前项目区内所有渠道通水到田，禾苗长势良好，秋粮丰收在望。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFElneAddeNAAv57jMIlss902.pdf

7．同心耕耘结硕果　高原奋进谱新篇

【农民日报】金秋九月，青稞飘香，牛羊肥壮。从拉萨河谷到“后藏粮仓”，大小农机具在田间轰鸣，处处是农牧民忙碌丰收的景象。西藏高原上农牧业高质量发展，农牧区面貌大变样，农牧民生活甜如蜜。幅员辽阔的雪域高原，近70％的人口是农牧民，农牧业仍然是生存发展的根基。近年来，西藏牢牢稳住农牧业基本盘，发挥了三农“压舱石”作用。“十三五”期间，西藏农牧业有了高质量发展。据了解，西藏2020年粮食产量达到103万吨，连续6年稳定在100万吨以上，比“十二五”末增长2.4％；青稞产量79.5万吨，比“十二五”末增长12.2％，青稞良种覆盖率超过90％，比2015年提高5％，青稞单产比2015年增加16.6公斤；蔬菜产量达到100.03万吨，夏季主要城镇自给率超过85％；肉奶产量达到101.51万吨，肉奶人均占有量位居全国前列；农作物耕种收综合机械化率达到65％。回望“十三五”，西藏农牧业取得质的飞跃，这离不开西藏各级的努力，更离不开农业农村部、各援藏省市的关心支持和无私援助。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFEkoWATf43AFiWNb6-UcM984.pdf

8．湖南“十四五”自然资源发展规划出炉 到2025年，耕地保有量5520万亩；森林覆盖率不低于59%

【新华网】近日，省政府办公厅印发《湖南省“十四五”自然资源发展规划》，规划从要素保障、耕地保护、空间格局、调查监测、产权制度改革、生态保护修复、矿业转型发展、地灾防治、测绘地理信息、治理能力等方面对全省“十四五”自然资源事业发展作出总体部署，提出到2025年，生态保护红线面积4.21万平方公里；耕地保有量5520万亩；永久基本农田保护面积4471万亩；城乡建设用地面积不超过13559平方公里；森林覆盖率不低于59%。

链接:

http://agri.ckcest.cn/file1/M00/02/F7/Csgk0WFEkyyAGbQcABtPMjGDHMk335.pdf

1．基于层次分析法的农业用水水平评估

文献源：水电能源科学,2021-09-17

摘要：针对松辽流域农业用水监管缺少科学、易行的用水水平衡量技术依据与方法的问题,分析了农业用水水平影响因素,采用层次分析法建立包含3个准则层指标、18项指标的评估体系及其无量纲化标准,构建农业用水水平评估模型,量化评估了松辽流域3个大型灌区的用水水平。结果表明,评估方法能直接反映灌区的用水水平,可灵活运用于灌区在目标层、准则层、指标层上对比评价各项指标,具有一定的推广价值。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFil2AURW4AAcPrMRMOPQ480.pdf

2．典型石漠化区不同植被土壤水分对降雨的响应

文献源：森林与环境学报,2021-09-15

摘要：为了揭示石漠化地区不同植被类型土壤水分对降雨响应特征,选取花椒地、山豆根地、金银花地、撂荒地进行土壤水分原位监测,分析土壤水分在小雨、中雨、大雨、暴雨4种降雨事件中的响应过程,探究植被类型的降雨响应补给特征。结果表明:土壤层稳定程度对植被土壤储水量有影响,土壤水分变异系数越大,土壤层相对活跃,则土壤储水量相对较少;各植被土壤水分对降雨响应具有滞后性,表现为山豆根地>花椒地>撂荒地>金银花地。金银花地对降雨响应快,敏感性高。在不同降雨事件中,暴雨事件中各植被土壤水分响应最快;降雨量越大,土壤剖面有效补给量越多。各植被有效补给量表现为撂荒地(13.93 mm)>金银花地(13.90 mm)>山豆根地(12.28 mm)>花椒地(10.50 mm);当降雨量达到一定范围后,有效补给效率会下降,各植被有效补给效率表现为中雨>小雨>大雨>暴雨,撂荒地、花椒地、山豆根地大雨事件有效补给效率同小雨事件相比分别减少3.92%、0.24%、0.43%,金银花地减少12.11%;在雨季金银花地土壤保水性能高,对降雨响应较为敏感,有效补给量和补给速率较高,土壤储水量丰富。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFihqAWQuhAB3j1WzbUr0770.pdf

3．注重荒漠区胡杨林生态保护与修复的汊渗轮灌研究

文献源：水利学报,2021-09-15

摘要：针对传统生态调度“只放不灌”“大水漫灌”造成的生态水利用效率低、灌溉面积有限等实际问题，本文基于荒漠区耐旱性植被胡杨特殊的生物节律，提出汊渗轮灌的灌溉理念，明确了汊渗轮灌的定义、内涵，构建了汊渗轮灌系统和灌溉模式，搭建了汊渗轮灌的基本框架。以我国最大的内陆河塔里木河下游为例，基于汊渗轮灌的灌溉模式优化

塔河下游原有的工程布局，构建双通道+沟道、汊河的面状生态输水新方式，制定了大西海子水库实时生态调度方案，与胡杨林的汊渗轮灌系统相结合，实现了2020年塔河下游生态调度与汊渗轮灌的应用实践。研究表明：（1）相比于以前生态水在河道和台特玛湖无效蒸发，此次生态水量的蒸发量仅占总水量的0.4%，生态水的利用效率超过83%，大大提高了生态水的利用效率；（2）试验区地下水位提升0.28～0.84 m，地下水存储水量约128万m3，初步实现了储水于地下的“地下生态水银行”，保障了生态调度与汊渗轮灌的可持续性；（3）汊渗轮灌新增生态输水长度7 km，新增胡杨林生态修复面积60万m2，为胡杨林的漂种、发芽、生长等健康生境提供了良好保障。研究成果可为荒漠区保护性植被的生态保护与修复提供新的思路和方法。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFiimAG57uABAzansyWDo275.pdf

4．基于复合多目标方法的灌区水资源优化配置

文献源：农业机械学报,2021-09-15

摘要：针对传统灌区水资源多目标模型求解过程中难以兼顾多维配置要求的问题，基于目标协调度、可持续发展指数、目标实现度3个指标提出了一种复合多目标方法。为验证该方法有效性，以甘肃省黑河中游17个灌区间水资源优化配置为例，以经济效益、社会效益、生态效益为目标函数构建多目标优化模型，并分别使用传统方法与复合多目标方法进行求解。结果表明，使用复合多目标方法所获得的优化配置方案可以将灌溉水利用系数提高5.42%～7.57%。结果验证了传统多目标模型在协调多个冲突目标方面较单目标模型有显著优势，而复合多目标方法所获得的优化方案更能体现决策者对研究区域种植业发展与灌区水资源配置的多元要求。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFikqAQ95IAAvSP0khWvo219.pdf

5．基于种养平衡的吉林省辽河流域农田畜禽粪便负荷研究

文献源：农业环境科学学报,2021-09-15

摘要：为了明确吉林省辽河流域畜禽养殖污染现状，优化调整产业养殖生产布局，本文结合国内外相关研究核算了畜禽粪便产生量和农田负荷量，并基于种养平衡理论进行畜禽养殖环境承载力分析。结果显示，2017年吉林省辽河流域畜禽粪便产生量达537.59万t，农田粪便平均负荷量为5.43 t·hm^{-2}·a^{-1}，其中辽源市区的农田粪便负荷量最大，为12.09t·hm^{-2}·a^{-1}。畜禽养殖环境承载力平均值为131.39 kg·hm^{-2}（以N计）、20.65 kg·hm^{-2}（以P计），其中四平市区的氮环境承载力最小(78.6 kg·hm^{-2})，辽源市区的磷环境污染

风险值最大（1.08），东辽县的氮和磷污染风险等级均达到了II级。根据畜禽养殖环境承载力和粪便负荷风险评估，研究表明辽源市区畜禽粪便污染情况最为严重，该区域属于氮和磷污染中等风险区，对农田环境产生了威胁，此外四平市区属于氮污染中等风险区和磷污染低风险区，东辽县属于氮和磷污染低风险区。流域内其余市县的畜禽养殖环境承载力和粪便负荷量则处于安全范围，对周围农田环境基本无影响。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFimyANdNpAAyfc0EhXHU546.pdf

6．Aggregate Structure of Native and Arable Soils of Different Geneses: Morphological and Rheological Characteristics

文献源：PHYSICAL PROPERTIES　OF SOILS,2021-09-14

摘 要： Aggregates and capillary-saturated pastes from loamy soddy-podzolic soils (Albic Glossic Retisol (Lomic, Cutanic)), typical and vertic chernozems (Haplic Chernozems (Loamic, Aric, Pachic) and Verti?sols), and yellow soils (Alisols) were studied by scanning electron microscopy (SEM) and on a Reotest-2 rotary viscometer with a coaxial cylindrical system. Aggregates of plow horizons of Retisols and Chernozems have less pronounced porosity and denser packing of their microaggregates in comparison with native soils. Microaggregation of the plow layer of Vertisols is observed at high magnifications, while in the humus hori?zon of the fallowed Vertisol, the section of the aggregate has a massive structure. The study of the rheological behavior of the soils revealed the predominance of condensation-crystallization structural bonds in the plow layers, whereas coagulation structures prevailed in the deeper horizons. However, in the upper horizons of Vertisols, coagulation structure is well developed and thixotropy occurs. The limit of a plastic-viscous break?down of the structure is higher in soils that are not involved in agricultural use, and the Shvedov limit corre?sponding to the beginning of deformation processes, on the contrary, is lower. All studied soil samples had several strength limits, which indicates the hierarchical organization of the structure of soil aggregates.

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFEouuABb-0ACLFEdD26cI001.pdf

7．Analysis of Characteristics and Driving Factors of Land-Use Changes in the Tarim River Basin from 1990 to 2018

文献源：Sustainability,2021-09-14

摘要： Land-use and cover change is an important indicator for exploring global change trends, with in-depth research on land use and its driving factors being of particular significance in forging ecologically sustainable development. The present work used the Tarim River Basin as the study area, while the land-use transfer matrix, normalized difference vegetation index (NDVI), regional center-of-gravity model, and night-time-light remote-sensing mutual correction method were employed to explore temporal and spatial characteristics of land-use change and its driving factors. The results show the following. (1) From 1990 to 2018, land-use types in the study area significantly changed, with the cultivated land increasing by 73.9% and grassland area decreasing at a rate of 6.38 × 104 hm2 per year. (2) Areas with a natural vegetation NDVI above 0.2 appeared to follow a growth trend, with an area growth of 259.12 × 104 hm^2 at a rate of 14.39 × 104 hm^2/a. Average annual temperature and precipitation showed a fluctuating upward trend. (3) The center of gravity of land-use type area moved significantly. The center of gravity of cultivated land was moving in the same direction as the GDP and population center of gravity, migrating to the northeast. The migration distance of the center of gravity of cultivated land area was 212.59 km, the center of gravity migration rate of GDP was 14.44 km/a, and the population center of gravity was 812.21 km. (4) During the study period, the brightness of night lights in the study area was distributed in a circular shape, with more in the northwest and less in the southeast. Brightness gradually increased and showed an expansion trend, increasing from 0.3% to 6.3%. Among the influencing factors of spatial change of land-use change, natural factors such as climate change were related to the process of land-use/-cover change in the Tarim River Basin. Overall, human activities had the most obvious impact on land-use change.

链接:

http://agri.ckcest.cn/DOI: 10.3390/su131810263

8．Influence of Land Use on the Physical Properties of Chernozems in the Forest-Steppe Zone of Western Siberia

文献源：PHYSICAL PROPERTIES OF SOILS,2021-09-14

摘要： The land use type and agricultural practices significantly affect the aggregate state and many physical properties of soils. In this study, we provide a comparative assessment of the bulk density, water holding capacity of disturbed samples (WHC), and structural state (dry sieving method) of Luvic Greyzemic Chernozems under different land uses (long-used

arable land, newly developed arable land, 27-yr-old abandoned land, and virgin steppe) in the Cis-Altai forest-steppe soil province of Western Siberia. At each site, three mixed samples were taken from the layers of 05, 510, 1020, and 2030 cm of the humus horizon. The influence of land use on the bulk density was only seen for the upper 5-cm layer, in which the decompaction after 27 years of abandonment was statistically significant. Differences in the bulk density between the two croplands and between the abandoned and virgin lands were insignificant. Changes in the WHC under the impact of land use were manifested for the upper 20-cm layer. In six years of using the previously abandoned land for growing cereals, the aggregate-size distribution of the soil became almost identical to that in the old?arable soil. Judging the amount of agronomically valuable aggregates and the structural coefficient value, the aggregate state of all the studied soils can be assessed as excellent. Thus, Luvic Greyzemic Chernozems of the forest-steppe zone in Western Siberia are characterized by the high tolerance towards agrogenic impact and retain their natural crumbgranular structure for a long time of their using for crop production.

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFEoWeAObDQABI0zWBhN-Y935.pdf

9．种植密度和灌溉定额对机采棉田土壤盐分特征的影响

文献源：生态学杂志,2021-09-14

摘要：非充分或欠灌条件下增加植物密度被认为是一种新的棉花节水生产技术，特别是在干旱且生育期很短的中国新疆棉区。增加种植密度能够增加冠层覆盖度，增加总耗水量，改变根区的盐分分布。本研究开展了种植密度(低密度M1，13.5万株·hm^{-2}；中密度M2，18万株·hm^{-2}；高密度M3，22.5万株·hm^{-2})和灌溉定额[重度亏缺W1(50% ETC，作物需水量)，3150 m^3·hm^{-2}；轻度亏缺W2(75% ETC)，4050 m^3·hm^{-2}；充分灌溉W3(100% ETC)，4980 m3·hm-^{2}]互作的大田试验，分析了其对0～60 cm土壤盐分含量、均匀系数、表聚系数、变化量和脱盐率的影响。结果表明：随种植密度的增加，土壤盐分的含量和表聚系数均显著降低，而盐分分布均匀性增加；增加灌溉定额能降低不同种植密度的土壤含盐量，但盐分分布由“膜内底聚型”逐渐向“膜内表聚性”转变，且盐分分布均匀性则明显降低；不同处理下盐分变化和脱盐率均具有显著差异，随种植密度的增加，盐分变化和脱盐率逐渐降低；而随灌溉定额的增加，则完全相反；以低密与轻度亏缺灌溉、中密与充分灌溉、高密与充分灌溉组合的盐分变化量和脱盐率最高，分别是0.041 g·kg^{-1}和18.2%、0.041 g·kg^{-1}和25.6%、0.055 g·kg^{-1}和30.50%。在不同密度种植条件下，土壤盐分的变化对不同灌溉定额的反应敏感程度不一致；在灌溉条件在3150～4050

$m^3 \cdot hm^{-2}$(50%～75% ETC)时，推荐种植密度为13.5万株·hm^{-2}；灌溉定额为4980 $m^3 \cdot hm^{-2}$(100% ETC)时，种植密度为18～22.5万株·hm^{-2}，可在节约用水的同时，有效降低土壤盐渍化水平，且保持较高的产量水平。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFijmAd3glABTjb7-Fm0A047.pdf

10．Use of Remote Sensing to Assess the Water-Saving Effect of Winter Wheat Fallow

文献源：sustainability,2021-09-13

摘要：Winter wheat fallow policy has a greater effect on water resource management, and the water-saving effect in the fallow process of winter wheat can provide data support for precise water resource utilization planning. In order to evaluate the water resource consumption of winter wheat and the related effect from winter wheat fallow, this study searched the changing trends of cultivated land evapotranspiration under five different scenarios through the object-oriented extraction method and a SEBS model based on multi-source data. The results indicated that the evapotranspiration during winter wheat growing period was higher than that of winter wheat fallow land, and there was no big difference in evapotranspiration between the fallow land during harvesting and the emergence of new crops. The evapotranspiration of winter wheat was higher than that of various fallow land, and the evapotranspiration of abandoned land was higher than other fallow land in the winter wheat growing season. From this point, this study concludes that the fallow land policy can effectively reduce evapotranspiration during the growing of winter wheat, which is conducive to the sustainable exploiting of water resources.

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFEoJOAV4ysAFuig04weII471.pdf

11．Productivity, biodiversity trade-offs, and farm income in an agroforestry versus an arable system

文献源：ScienceDirect,2021-09-11

摘要：The uptake of diversified farming systems is constrained by a scarcity of evidence regarding financial costs, benefits, and risks. Here, we evaluate the productivity and projected farm income of an agroforestry system, where apples are integrated with arable crops, by combining primary data with ecosystem service and cost-benefit models. Our ecosystem service assessments included: 1) weed and pest associations with arable yields; 2)

apple seed set as a proxy for pollination, and; 3) carbon sequestration. Arable yields were up to 11% lower in agroforestry than arable systems, and were significantly negatively associated with weed cover in both systems. Apple yields in agroforestry were similar to typical yields from comparable orchards. Apple seed set was significantly higher in agroforestry than conventional orchards for one of two varieties. Predicted gross mixed income was higher in agroforestry than arable systems in 15 of 18 productivity scenarios over 20 years, which was supported by a case-study. Apple yield and price were the major determinants of gross mixed income. Payments for carbon sequestration were predicted to contribute 47% to 88% of agroforestry establishment costs. This study demonstrates how a diversified farming system can improve farm income, but grant support would reduce the initial negative cash-flow.

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFigCAHh4iAA6UHpaLHyI342.pdf

12．黄土丘陵区农耕地与撂荒地土壤水分特征及对降雨的响应分析

文献源：干旱区资源与环境,2021-09-10

摘要：土壤水分是黄土丘陵区植被恢复和生态建设的重要限制因子,其对植被的生长状况具有重要的影响。植被恢复工程的推进和区域城镇化的提速,致使大量农耕地被撂荒,为探明人工恢复和自然恢复对黄土丘陵区土壤水分的影响,选取山西省冯家沟农耕地和撂荒地作为研究对象,基于2018-11月至2019-10月逐日降雨量和土壤含水量的长期观测数据,系统分析了土壤水分的动态变化规律及对降雨变化的响应过程。结果表明:1)农耕地各月土壤含水量均大于撂荒地且差异显著($p<0.05$)。农耕地各土层土壤含水量均大于撂荒地且差异显著($p<0.05$),农耕地最大含水量出现在40～60cm土层,而撂荒地最大含水量在20～40cm土层。2)除35.3mm降雨外农耕地和撂荒地随着降雨量的增加土壤含水量的增加量和土层的响应深度均呈增加的趋势。研究发现适当的人工恢复比自然恢复更有利于土壤水分的储存,为黄土高原东部地区农业生产和植被恢复提供一定的理论数据支持。

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFFin2AYDs_ADWktbbh2Rc753.pdf

13．Determining Food Stability to Achieve Food Security

文献源：Sustainability,2021-06-28

摘 要： Food security, as part as public health protection, constitutes one of the main

objectives for countries aiming to ensure the health of all their citizens. However, food security is compromised worldwide by conflict, political instability, or economic crises, both in developed and developing countries. Conversely, because of the importance of agriculture to the economies of rural areas both in developed and developing countries, this sector can contribute to improving food stability, as well as to furthering food security. Thus, livestock and traditional meat products represent a key factor in ensuring food availability. Overall, biosecurity measures improve animal welfare by decreasing the occurrence of diseases that compromise the stability by causing fluctuations in the availability of meat and animal-derived food products such as milk, eggs, or traditional fermented products. As a consequence, an absence of biosecurity measures affects food security (in its quantitative definition, as described above) as well as the productive, sanitary, and environmental sustainability of the rural environment. Products of animal origin support local trade and the regional economy, while contributing to the availability of foods without great external dependence. The manufacture of foods of animal origin aims to create products that are durable and that maintain food availability for long periods of time, even during seasons with scarce resources. Thus, dry-cured or fermented meat products play an important role in food availability. Food security also refers to food access under healthy economic conditions; therefore, knowledge of the main tools that guarantee the safety of these kinds of food products is essential to achieving food stability and further food security.

链接:

http://agri.ckcest.cn/file1/M00/0F/C9/Csgk0GFEnVeAYU6cAASLqPaLkww025.pdf

主编：赵瑞雪　　本期编辑：陈亚东
地址：北京市海淀区中关村南大街12号　　邮编：100081
电话：010-82106649　　邮件地址：agri@ckcest.cn